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Ph.D. thesis

Entrepreneurship in the Wine Industry.
A matter of Risk and Reward

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Introduction

The wine industry in Italy, and specifically in the North Eastern Italian Regions, can be considered one of the most important sectors for the economy. Over the past two decades Italian winemakers, the vast majority being small independent producers, have experienced a number of economic, social and political challenges. These include changing worldwide production and consumption patterns, fiercer competition, particularly from the New World producers, and increasing regulation. The Italian wine industry is now part of an industry which is characterized by high competition, high barriers to entry, sophisticated consumers and overproduction (Beverland and Lockshin, 2006; Montaigne, 2010; Terblanche *et al.*, 2008). The implications of these trends are of particular significance to the Italian wine industry given the importance of winemaking for the Italian agricultural economy.

The Italian wine industry comprises a number of regional clusters, *i.e.* groups of firms from the same or related industries located in geographical proximity (Bell, 2005). Networks can be established as a form of entrepreneurial marketing cooperation in an attempt to acquire social capital within industry clusters (Casson and Guista, 2007; Felzensztein and Gimmon, 2009). The benefits of networks promote innovation through improved exploitation of knowledge as it is transferred more easily through proximity where local firms are embedded (Bell, 2005; Shaw, 2006; Suire and Vicente, 2008). However, more recently, it has been suggested that entrepreneurial marketing cooperation might transcend regional clusters to tap industry-specific knowledge at the international level (Felzensztein and Gimmon, 2009; Morrison and Rabellotti, 2009). Given the current context within the Italian wine industry, the challenge for small wineries is therefore twofold: to defend current positioning's through brand differentiation and the exploitation of product-market development opportunities through engaging in cooperative business relationships and networks.

Wine quality has been increasingly viewed as critical to the success of online businesses, with the growing understanding that it is one of the main aspect of customer satisfaction and loyalty: it can be considered as one of the most important keys to sustain the marketplace especially for online agrifood businesses in Italy and specifically for the wine sector.

Hence wine market in North East of Italy can be seen as an example of entrepreneurial activity and business practice including business promotion on the

Internet. One of the important resource for economic growth of the wine sector is the development of Small and Medium Enterprises (SMEs).

Research has shown that entrepreneurial orientation and an attractive Internet are important for organizational success. But the literature on entrepreneurial orientation and web quality has indicated that there is a need for further research in business of SMEs, especially in a traditional sector like that of wine production. Moreover, research in these areas is still lacking in Italy.

This thesis concerns two lines of research that can be considered relevant for wine SMEs located in Italy.

The first one concentrates on the moderating role of agglomeration and network and the relationship between *Entrepreneurial Orientation* (EO) and firms performance.

The second line proposes a framework to compare the web quality to costumers' perceptions and preferences.

For each one of these lines of research first a review of the existent literature was made and then an empirical research has been carried out.

The first part of this study improves the research on the effect of EO on business performance through investigating the integrative mechanisms that ensure complementarity among some firm's aspects.

The literature on EO, which has confirmed the positive relationship between EO and firm performance, depends on several contingencies.

EO addresses entrepreneurial strategy making and focuses on the extent to which firms are characterized by a decision-making style that is proactive, risk taking and innovative, as they pursue opportunities (Miller, 1983; Covin and Slevin, 1989, 1991). Regarding the determinants of EO, research has revealed the importance of both the environment in which the firm operates (external factors) (*e.g.* Lumpkin and Dess, 2001; Zahra, 1991) and organizational variables (internal factors) (*e.g.* Wiklund and Shepherd, 2003).

This suggests a configurational approach that involves the simultaneous and joint consideration of strategy, organizational and environmental characteristics. In this perspective this research trier to give a better understanding of the EO-performance link by the concomitant consideration of agglomeration and network as moderators. The findings of this first analysis make several contributions to the entrepreneurship literature by investigating together the role of agglomeration and network in a configurational model for small firms in the wine sector.

Following the recommendations by Lumpkin and Dess (1996), this thesis tests the relevance of the configurational approach by comparing a configurational model of EO and performance to contingency models and a universal (direct effect) model. More specifically, we ask the following questions:

- *Does an EO affect small business performance?*
- *Is the relationship between an EO and small business performance moderated by agglomeration?*
- *Is it moderated by the existence of networks?*

To answer these questions, we first assess the independent effect of these variables, then two-way interaction effects, using a sample of 234 small wine Italian firms. Firstly, taking in to account consideration the findings by Dess *et al.* (1997) and other configurational research, we incorporate resources and the environment into a configuration of how EO affects small business performance. Thereby, we advance the research on the value of entrepreneurial-type strategies. Secondly, single indicators have typically been used to operationalize small firm performance (Wiklund, 1998). However, a multidimensional approach to capturing performance should be used when investigating the effects of EO, as outcomes may be favorable in some dimensions but not in others (Lumpkin and Dess, 1996).

Most studies of EO and performance use cross-sectional designs. However, it may take considerable time for the effects of EO to materialize (Lumpkin and Dess, 1996). Specifically, Venkatraman (1989) argues that longitudinal designs are needed in configurational studies. To empirically test whether an EO actually leads to better performance, longitudinal data are necessary where EO is measured at one point in time and performance outcomes are measured later. We therefore use such a longitudinal design.

The second part of the study aims to contribute to the e-quality literature by addressing the following research question:

- *Do satisfaction and playfulness moderate the relationship between the main e-quality dimensions and loyalty?*

In order to answer this question, specific data were collected from a sample of 2.782 users of the nine wine consortia websites of Friuli Venezia Giulia Region between 2013 and 2014. A structured questionnaire using a multi-item measurement was

employed to evaluate the nine wine consortia websites. A Structural Equation Model (SEM) analysis was conducted to test a holistic model. The 58-item instrument measures seven dimensions of web quality:

1) usability,
2) design,
3) speed,
4) information,
5) contact,
6) navigability,
7) content.

These measures were re-adapted and abridged from the specific literature (*e.g.* Abdinnour *et al.,* 2005; Akinci *et al.,* 2010; Barnes and Vidgen, 2012; Barnes and Vidgen, 2002; Ladhari, 2010; Natarajan *et al.,* 2012; Parasuraman *et al.,* 2005; Sigman and Boston, 2013; Yoo and Donthu, 2001). The aim is to investigate the moderating effects of perceived playfulness and customer satisfaction by comparing sites in relation to the effects of the components of a site's quality. This thesis develops a structural equation model for analyzing the direct and indirect effects between the different items that defined *web quality:*

- satisfaction,
- playfulness,
- loyalty.

This thesis is divided into five chapters.

Chapter One reviews the literature dealing with entrepreneurial orientation, and takes in to account its dimensions: risk taking, proactiveness, innovativeness, and competitive aggressiveness. It also evaluates prior work on the relationship between the level of entrepreneurship orientation and the firms' performance, focusing on the SMEs'.

Chapter Two reviews the literature relative to agglomeration and clusters. It provides a historical view of the development of the various types of industrial districts and agglomerations.

Chapter Three describes the wine sector in the world and in particular the situation in Friuli Venezia Gulia. It aims at introducing the consortia rules in that specific sector.

Chapter Four develops the hypotheses of the influence of cluster on wine sector, and presents the research model. It outlines the available research design methods as well as the ones applied in this study under the following main headings: research approach and strategy, sample selection, measurement strategy, data collection strategy, and data analysis strategy. It also describes the results of the statistical analysis of the data collected for this study.

Chapter Five centers on the hypotheses relative to the relationship between e-quality and customer satisfaction, and presents the research model. It outlines the available research design methods and the ones applied in this study under the following main headings: research approach and strategy, sample selection, measurement strategy, data collection strategy, and data analysis strategy. Then provides a description of the results of the statistical analysis of the data collected for this study.

1 Entrepreneurial Orientation

1.1 Entrepreneurship

In the early 19th century, Jean-Baptiste Say, a French economist, defined *entrepreneurship* (*i.e.*, the practice of the entrepreneur) as a process involving the shifting of economic resources from an area of low productivity to an area of higher productivity and greater yield.

Also Schumpeter (1934), investigated the role of the entrepreneur. Schumpeter perceived entrepreneurship to be a "meta-economic event" such as the introduction of a new technology, which causes a major market change. For example, a *meta-economic* event could be the impact of the development of airplanes on the world's oceangoing passenger liner industry. In the Schumpeterian model of economics, managers in large firms typically continue to use traditional conventional approaches where demand is stable, and they remain confident of having an accurate understanding of customers' needs. Schumpeter posited that entrepreneurship is the process most likely to prevail in those circumstances where the market is in disequilibrium and customers have unfulfilled needs. The author emphasized that the distinguishing attribute of the entrepreneur was not risk taking but the willingness to exploit innovation to succeed when competing with existing firms. According to Schumpeter, innovation could include a range of possible alternative actions:

a) developing a new product or service,
b) creating a new production process,
c) identifying new markets,
d) discovering new sources of supply,
e) creating new organizational forms.

Later a broader view of entrepreneurship and the characteristics that define the entrepreneur emerged amongst management theorists. Hisrich and Peters (1992) redefined entrepreneurship as the process of "creating something different by devoting the necessary time and effort, assuming the accompanying financial, psychological, and social risks and receiving the resulting rewards of monetary and personal satisfaction".

Miller (1983) proposed that the extent to which top managers take risks, favor change, and exploit innovation to achieve a competitive advantage demonstrates the entrepreneurial orientation of a firm. Hills and LaForge (1992) echoed this definition. On the basis of a review of research, they concluded that being a successful entrepreneur requires the presence of certain *attributes*, especially an ability to create a new organization that exploits innovation and develops a unique operation to support business growth. Georgell *et al.,* (2000) described "being entrepreneurial" as being willing to take risks, being innovative, and having an ambition to grow. The authors suggested that the core competencies for entrepreneurship are a capacity for changing business processes, the launching of new products or services, and a capacity for planning. They noted that not all small businesses are equipped with these capabilities and that not all owners or managers are necessarily predisposed towards them.

Covin and Slevin (1988) defined an entrepreneurial style in terms of the extent to which "managers are inclined to take business-related risks, favor change and innovation, and compete aggressively with other firms". A no entrepreneurial (or conservative) style includes being risk-averse, no innovative, passive, and reactive. Covin and Slevin developed a measure of entrepreneurial style based upon previous theories and research by Khandwalla (1977) and Miller and Friesen (1982).

The term entrepreneurship has been used for decades, yet to this day there is little consensus about its definition (Williams *et a.,*. 2010). Many perspectives can be found in the literature but the most common themes include (Morris *et al.,* 2008):

a) creation of wealth,
b) creation of enterprise,
c) creation of innovation,
d) creation of change,
e) creation of employment,
f) creation of value,
g) creation of growth.

Considerable effort has recently been put into developing a uniform definition. For example, Morris *et al.* (2008) performed a keyword analysis of the definitions of entrepreneurship found in relevant literature and found 18 keywords used at least five times. Subsequently, they defined entrepreneurship according to the definition of Stevenson and Jarillo-Mossi (1986) that ''entrepreneurship is a process of creating value

by bringing together a unique package of resources to exploit an opportunity'', because this definition captured all the core keywords of entrepreneurship encountered in their research. This definition does not limit the kind of organizations in which entrepreneurial activities may appear. Indeed, entrepreneurial behavior is not only possible in new ventures, but also in firms regardless of their size and age (Kraus *et al.*, 2011). The entrepreneurial activities of existing and established firms have for example been described as corporate entrepreneurship (Burgelman 1983; Zahra 1993), entrepreneurial orientation (Lumpkin and Dess, 1996; Wiklund, 1999), or intrapreneurship (Antoncic and Hisrich, 2001, 2004).

Within the present thesis, the entrepreneurial activities of an established firm will be referred to as its Entrepreneurial Orientation. EO refers to the decision-making styles, practices, processes and behaviors that lead to *entry* into new or established markets with new or existing goods or services (Lumpkin and Dess, 1996; Wiklund and Shepherd, 2003; Walter *et al.*, 2006). This definition of EO is consistent with the view that EO leads to new market entry in either new or existing markets, but also explicitly recognizes that this can be achieved with either new or existing goods or services. In a manner of speaking then, a firm that is entrepreneurial oriented ventures into new or existing markets, with innovations that are either based on new or existing products and services, in a manner that is appreciative of the uncertainty and incurs risk in doing so.

Although widespread agreement exists that entrepreneurs engage in innovative activities, one area of ongoing debate within the literature is the degree to which entrepreneurs can also be characterized as risk takers. Brockhaus (1982), for example, echoed the views of Schumpeter. This author confirmed the findings of other researchers by being unable to identify any statistically significant difference between the risk-taking propensity of a group of entrepreneurs and a group of managers working in the large-firm sector. Brockhaus suggested that some researchers might have reached an erroneous conclusion about risk taking because of either reliance on anecdotal information or failure to recognize that a multitude of factors influence risk taking. The factors include variables such as the nature of the industry, prevailing economic conditions, the age of the business, the size of the firm, and the educational or experiential levels of the respondents.

Within the field of Small Medium Enterprises research, the factors influencing the performance of firms have attracted widespread interest among researchers. One area of accepted consensus in the entrepreneurship literature is the perspective that high growth firms are entrepreneurial organizations that have enjoyed success due to the development

and launch of new products. Chaganti and Chaganti (1983) conducted a study that illustrated support for this perspective. They determined that the highest level of market performance in small manufacturing firms is among those organizations that offer a broad range of products, use innovation to update their product line frequently, and are prepared to respond positively to market demands for product customization. Romano (1990) posited that the entrepreneur's key skill is using product innovation to achieve advantage over competitors. Iansiti (1995) concluded that new products are the key source of momentum by which to achieve sustained market growth. Similarly, Zara and Nielsen (2002) perceived the success of the entrepreneur as being the ability to launch new products that attract new customers or permit entry into new markets.

Entrepreneurship as a field of study is relatively young (Cooper *et al.*, 1997)[1]. The definition of entrepreneurship has evolved from a trait or supply side (who is the entrepreneur) to a context or demand side approach (the influence of firms and markets on how, where, and why new enterprises are founded) (Thornton, 1999). The literature on entrepreneurship and development defines entrepreneurship as either the creation of new economic activity (Low and MacMillan, 1987; Shane and Venkataraman, 2000), often resulting in the creation of new organizations (Schumpeter, 1934; Gartner, 1989; Reynolds, 1999), or the pursuit of innovation (Schumpeter, 1934; for a review, see Wennekers and Thurik, 1999; Davidsson *et al.*, 2001). From the work of Birch (1981), entrepreneurship was measured in terms of size. Yet, if entrepreneurship is the creation of new organizations, it is not consistent to measure it in terms of existing firms. Now the focus is on the phenomenon itself given data availability not only on new firms creation (Reynolds *et al.*, 2001) but also on the entrepreneurial process – *i.e.* the gestation, birth, and growth of firms[2] (Reynolds, 2000).

[1] For a review of the evolution of the entrepreneurship field over time and its relation with other disciplines refer to Livesay (1982), who reviews historical definitions of entrepreneurship and the theories of entrepreneurship; Gartner (1989), who after a literature review and critic of the trait approach (who the entrepreneur is) proposes that entrepreneurship is the creation of new organizations (what the entrepreneur does); the two special issues of *Entrepreneurship Theory and Practice* (1991, vol. 16 (2), and 1992, vol. 16 (3)), interdisciplinary perspective and the contribution of different disciplines to the field, and vice versa; Bechard (1997), who studies the most often quoted references in five academic journals, categorizes the contributions in three levels: praxeology, scientific disciplines, and epistemology, and draws two paradigms: that of the economy of entrepreneurs and that of the society of entrepreneurs; Cooper, *et al.*, (1997), who present an informal history of the field of entrepreneurship; Thornton (1999), who traces the evolution of entrepreneurship theory to Weber and contrast the supply side to the demand side approach to entrepreneurship, and proposes to integrate both approaches using sociological frameworks; and Shane and Venkataraman (2000), who draws upon previous research to create a conceptual framework for the entrepreneurship field.

[2] This information is gathered by the *Entrepreneurial Research Consortium*, which is a panel study of business startups in 10 countries (Reynolds, 2000).

1.2 Literature review of the entrepreneurial orientation

There has been lately some discussion about the terminology regarding firm level entrepreneurship (Dess and Lumpkin, 2005; Covin and Lumpkin, 2011; George and Marino, 2011).

This study adopts the terminology of *Entrepreneurial Orientation*, when referring to firm-level entrepreneurship, as Covin and Lumpkin (2011) noted that the concept of EO is well established as a focus of scholarly attention and is a construct used increasingly often when referring to firm-level entrepreneurship. Their analysis revealed that among papers published between 2008 and 2010 in this domain, 109 adopted the term *entrepreneurial orientation*, while only 66 studies followed the term *corporate entrepreneurship*. In spite of the fact that earlier publications (Zahra, 1993; Dess and Lumpkin, 2005) suggest that *entrepreneurial orientation* represents a firm's orientation toward, rather than actual entrepreneurship behavior, up-to-date publications imply that "occasional exhibition of firm-level entrepreneurial behavior is insufficient to infer the existence of an EO" (Covin and Lumpkin, 2011).

This thesis follows that line of thought and considers EO to consist of sustained behavioral patterns, which presence enables entrepreneurship to be recognized as a defining attribute of the organization. These specific behavioral patterns are frequently viewed as consisting of three dimensions: innovation, risk-taking and proactiveness (Miller, 1983). Viewed collectively, they constitute a composite construct indicating a firm's overall level of EO (Covin and Slevin, 1991).

The traditional 9-item Miller/Covin and Slevin scale[3] incorporated items that reflect both dispositions and behaviors manifested by organizations at different strategic business units (Covin and Lumpkin, 2011). This thesis recognizes these widely applied dimensions and continuing with a four-dimension definition, to maintain consistency and avoid confusion within the field (*i.e.* risk-taking, proactiveness, innovativeness, and competitive aggressiveness).

EO refers to a firm's strategic orientation, capturing specific entrepreneurial aspects of decision-making styles, methods, and practices. As such, it reflects *how* a firm operates rather than *what* it does (Lumpkin and Dess, 1996). Miller (1983) summarizes the characteristics of an entrepreneurial firm:

[3] Appendix 4.

"*An entrepreneurial firm is one that engages in product market innovation, undertakes somewhat risky ventures, and is first to come up with ''proactive'' innovations, beating competitors to the punch.*"

EO *i.e.,* the sustained exhibition of firm-level entrepreneurial behavior (Covin and Lumpkin, 2011) is a construct of central interest in management studies since the seminal work of Miller (1983). Its importance to firms' survival and prosperity (Lumpkin and Dess, 1996; Rauch *et al.,* 2009) opens up a quest for the identification of its determinants (Covin and Slevin, 1991; Zahra, 1993).

The resource-based view provides the theoretical underpinnings for understanding when resources support a firm's competitive advantage and, ultimately, its performance. Competitive advantage is supported by resources that are valuable, rare, inimitable, and non-substitutable (Barney, 1991). However, possessing such resources alone does not guarantee superior performance; instead, managers need to orchestrate their resources to realize any potential advantage (Morrow *et al.*, 2007; Sirmon *et al.*, 2008).

Thus, *resource orchestration* "is concerned with the actions leaders take to facilitate efforts to effectively manage the firm's resources" (Hitt *et al.*, 2011; Ndofor *et al.*, 2011). More specifically, managers influence firm performance by structuring the firm's resource portfolio, bundling resources, and leveraging those resources in the marketplace (Ireland *et al.*, 2003; Sirmon *et al.*, 2007). Thus, it is through leveraging processes that performance effects are realized (Hitt *et al.*, 2011).

Two critical elements of leveraging are *mobilizing* and *coordinating*. Helfat *et al.* (2007) argued a *vision* or direction for the use of resources is needed for effective leveraging. Sirmon *et al.* (2011) referred to this generally as mobilizing. Next, *coordinating* the mobilized resources is necessary to maintain their effective integration (Sirmon *et al.,* 2011). Specifically, Helfat *et al.* (2007) argued that coordination "keep(s) co-specialized assets in value-creating co-alignment." Mobilization and coordination are particularly useful when knowledge resources, or the specific expertise possessed by individuals in a given domain, are in play (Postrel, 2002). When valuable knowledge is bound within individuals, social complexities complicate its leveraging (Nonaka, 1994). As such, to effectively leverage knowledge resources requires that individuals understand their shared purpose as well as cooperate in pursuit of that purpose.

There has been an intense debate regarding the dimensionality of EO and the interdependence among its dimensions (Covin *et al.*, 2006; Knight, 1997; Kreiser, *et al.*,

2002; Lumpkin and Dess, 1996). Two models of EO have emerged (George, 2011): the reflective versus the formative second-order models. According to the reflective model, the dimensions co-vary and changes in EO result in changes in each dimension such that they *reflect* the higher order construct. In contrast, the formative model EO is *formed* by combining its dimensions; changes in EO are the result of changes in one or more dimensions that do not necessarily co-vary.

While there is no single agreed definition of EO, it is commonly regarded as firm-level entrepreneurship (Covin and Wales, 2011) focused on opportunity recognition and exploitation: "more precisely, EO is a Strategic Business Unit (SBU) level phenomenon where the "unit" can range from a non-diversified small to medium-sized enterprise to a single business unit of a multibusiness firm" (Covin and Lumpkin, 2011). EO can be considered to be the specific manner in which firms act upon opportunities (Miller, 1983), or as activities that lead to new entry (Lumpkin and Dess, 1996). It has been recommended that measurement models of EO (aggregate versus independent) should derive from research objectives, and there is no single best approach for EO research (Covin and Wales, 2011; Wales *et al.*, 2011).

Although the literature in the field of entrepreneurship demonstrates the existence of multiple paradigms, none of them is dominant (Montiel *et al.*, 2012). In past decades, the EO study has become a central theme in the literature on entrepreneurship and strategy, as several authors consider entrepreneurship a phenomenon at the organizational level (Covin and Wales, 2012). The EO helps to characterize the company's behavior along a continuum that ranges from highly conservative to highly entrepreneurial and the company's position in this continuum describes its EO (Basso *et al.*, 2009). This original construct can be found in Miller's work (1983), although he admits that he never used the EO term in his initial ideas (Miller, 2011).

For Stevenson and Jarillo (1990), a company has entrepreneurial behavior if their actions and processes are oriented to the recognition and exploitation of entrepreneurial opportunities.

From a more general approach, EO refers to the trends, processes and behaviors that lead a company to enter new markets, whether with new or with existing products (Lumpkin and Dess, 1996). On the other hand, there is interest in the EO because it is considered a predictive variable of company performance, *i.e.* if a company adopts EO and becomes more entrepreneurially oriented it will have a better performance (Rauch *et al.*, 2009).

Miller's (1983) initial approaches were adopted in the academic literature, so that Covin and Slevin (1989) conceptualized the company's entrepreneurial behavior based on three variables: *innovativeness*, *risk taking* and *proactiveness*. These authors stated that these variables covariated and that the covariance source was a construct which they called *entrepreneurial posture*. At this point the Miller/Covin and Slevin's (1989) scale emerged. Subsequently, Lumpkin and Dess (1996) postulated that these variables are insufficient to explain entrepreneurship at the organizational level, as the business posture would require other dimensions. These authors assured that the original variables could independently covariate among them, contradicting what had been established by Covin and Slevin (1989) and should be modeled in a combination of new variables called EO. In addition to the initial variables, the *competitive aggressiveness* and *autonomy* variables were included. To Lumpkin and Dess (1996), the *innovativeness* indicates the company's trend of supporting new ideas and fostering creative processes. *Risk taking* is the company's tendency to work on projects whose benefits are uncertain. *Proactiveness* is about taking initiatives and pursuing new business opportunities in emerging markets. *Competitive aggressiveness* is facing competition in order to enter new markets or to improve the competitive position. Finally, *autonomy* is the degree to which organizational factors (people and team) act independently, making decisions and pursuing opportunities.

The prominence of the concept within management research stems from the assumption that EO represents a continuous variable (or set of variables) upon which all organizations can be positioned or plotted. This assumption contributes to the view that all organizations fall somewhere along a conceptual continuum ranging from conservative (the "low" end) to entrepreneurial (the "high" end) (Barringer and Bluedorn, 1999; Covin and Slevin, 1998) or in a multidimensional conceptual space that captures the domain of "being entrepreneurial" (Antoncic and Hisrich, 2004; Lumpkin and Dess 1996). As such, investigations of EO have targeted organizations' orientations toward entrepreneurial activity irrespective of whether they are young or old, small or large, public or private, etc. Given EO's broad applicability it is, perhaps, not surprising that the concept has been extensively adopted in past research. Nonetheless, EO researchers often acknowledge variations in how the latent construct is or should be conceptualized (Covin *et al.*, 2006; Lumpkin and Dess, 1996), factors that have direct measurement-related implications.

Unfortunately, as discussed by George (2006), EO researchers have often explicitly or implicitly mischaracterized the type of measurement model employed in

their studies, referring, for example, to an EO scale as a formative measure when it is not. Inappropriately inferring the nominal meaning of the EO construct from the results of data analysis (*i.e.*, evidence pertaining to the construct's empirical meaning) is also a common occurrence. Moreover, while evidence suggests that there is a most commonly employed EO measure - namely, the Miller/Covin and Slevin scale (Rauch *et al.*, 2009) - and that the scale itself has been the subject of careful scrutiny in several empirical investigations (*e.g.*, Knight, 1997; Kreiser *et al.*, 2002), little progress has been made in the development of new approaches to EO's assessment since Lyon *et al.* (2000) issued this challenge to researchers a decade ago.

In general, measurement concerns have not yet broadly captured the interest of EO researchers, perhaps because studies employing the Miller/Covin and Slevin (1989) scale and its variants have repeatedly yielded findings that are arguably theoretically interesting. A consequence of the scale's recognized value may be minimal felt need among researchers to explore alternative EO measures.

The entrepreneurship research started in the United States of America and until the year 2000 most studies are conducted in this country setting. Later, researchers performed studies in, among other places, Sweden (Wiklund and Shepherd, 2003, 2005), Slovenia (Antoncic and Hisrich,2001, 2004; Antoncic, 2006), South Africa (Goosen *et al.*, 2002), China (Chen *et al.*, 2005; Tang *et al.*, 2008; Tang and Rothenberg 2009), Greece (Dimitratos *et al.*, 2004), Finland (Jantunen *et al.*, 2005), Germany (Walter *et al.*, 2006), Vietnam and Thailand (Swierczek and Ha, 2003), Netherlands (Kemelgor, 2002; Stam and Elfring, 2008), United Kingdom (Hughes and Morgan, 2007), Turkey (Kaya, 2006), Belgium (Sapienza *et al.*, 2005), Singapore (Keh *et al.*, 2006), and Italy (Majocchi and Zucchella, 2008, Minniti, 2005).

These and other previous research have shown that EO and/or some of its dimensions may differ across countries and cultures (*e.g.*, Knight, 1997; Kreiser *et al.*, 2002; Thomas and Mueller, 2000). Other than Knight, Kreiser *et al.*, and Li *et al.*, (2008), international EO studies do not address the cross-cultural validity of the EO scale. As noted by Steenkamp and Baumgartner (1998), the validity of models developed in one country must be examined in other countries as well. Yet, simply utilizing scales in a cross-cultural manner does not go far enough in determining if the scale is cross culturally valid (*i.e.*, the scale is measuring the same constructs in both cultures). The leading concern in extending theory and constructs across cultures is to determine if the

instruments (*i.e.*, scales) created to measure those constructs are invariant across cultures (Hui and Triandis, 1985).

EO is well-established in strategy and entrepreneurship research in the United States but is in its infancy in non-U.S. business settings. This is problematic in that EO has been tied empirically to firm performance (Covin and Slevin, 1989; Rauch *et al.*, 2009; Runyan *et al.*, 2008; Wiklund and Shepherd, 2005), and there is growing support for the position that culture has an important impact on entrepreneurial behavior (Kreiser *et al.*, 2002; Mueller and Thomas, 2001). Kreiser *et al.* posited that national culture likely plays "... a significant role in determining the overall level of a firm's entrepreneurial orientation." Thus, with EO's positive effect upon firm performance empirically confirmed (Rauch *et al.*, 2009) and the growing proposition that different cultures will impact EO, establishing the cross-cultural equivalence of EO is crucial.

1.3 EO dimensions

Miller (1983) identified risk taking and innovativeness as the two primary areas of behavior that contribute to entrepreneurial success. Risk taking is the act of entering into a costly commitment with an uncertain future. Innovation is the act of creating new combinations. Proactiveness was added to the conceptualization of an EO to indicate an organization's goal to be first among contenders to reach a customer (Lieberman and Montgomery, 1988). Lumpkin and Dess (1996) added autonomy and competitive aggressiveness to the set. Autonomy is the ability to take independent action. Competitive aggressiveness is the act of risking conflict and retribution, rather than merely accepting a harmonious coexistence.

However, only a few researchers allow the dimensions described above to vary within their model and create a truly multidimensional EO model. The discussion lies in not whether the dimensions can differ from each other but is based on the belief that an entrepreneurial firm should score on all three dimensions (Covin *et al.*, 2006). This issue is an important one because Lumpkin and Dess (1996) posited that not all of the dimensions of EO would directly or positively affect business performance under different circumstances. Thus, to more fully appreciate the influence of EO, assessing the relative impact of each dimension of EO separately is arguably necessary.

There is a stream of research that suggests that the various sub-dimensions of an EO co-vary (*e.g.*, Covin and Slevin, 1989), thereby implying that EO would reduce to a

single or unidimensional variable. For example, Covin *et al.* (2006) treated EO as a unidimensional construct but acknowledge that their reason for doing so was the unique context (China) where the research was conducted. However, despite the close connections and correlations sometimes evident among the various dimensions of EO, other researchers posit EO be treated as multidimensional, and proposed that EO dimensions may vary independently, depending on the environmental context (Lumpkin and Dess, 1996).

In the present study we consider EO as a latent construct which is manifested in the degree to which an organization is innovative, proactive, risk-taking, and competitive aggressive. This would be consistent with the description provided by Stam and Elfring (2008) that EO is 'the simultaneous exhibition of innovativeness, proactiveness, and risk taking' and the argument put forth by Lumpkin and Dess (1996).

In studies testing EO as a multidimensional construct, some have found it to be composed of two factors (Knight, 1997; Richard *et al.*, 2004), while others have found it to be composed of three factors (Kreiser *et al.*, 2002). Kreiser *et al.* were one of a few to have tested the EO construct as unidimensional, bidimensional, and multidimensional. They found strong support for modeling EO as multidimensional. Testing for dimensionality, however, is problematic in the EO area.

A review of the literature on EO's dimensions are summarized in Table 1:

Table 1. EO dimensions in literature

Papers	**EO dimensions**
A configurational approach of the relationship between EO and Growth of FF (Casillas *et al.* 2010).	Innovativeness, Risk Taking, Proactiveness.
A critical examination of the EO-performance relationship (Andersen, 2010).	Innovativeness, Risk Taking, Proactiveness.
Clarifying the Entrepreneurial Orientation Construct and linking it to Performance (Lumpkin and Dess, 1996).	Risk Taking, Innovativeness, Proactiveness, Competitive Aggressiveness, Autonomy
Contextual influences on the CE-performance relationship: a longitudinal analysis (Zahra and Covin, 1995).	Innovativeness, Risk Taking, Proactiveness.
Corporate Entrepreneurship in Family Firms: a family firms (Kellermanns and Eddleston, 2006).	Innovativeness, Risk Taking, Proactiveness
Cross-cultural reliability and validity of a scale to measure firm entrepreneurial orientation (Knight, 1997).	Innovativeness, Risk Taking, Proactiveness
Cross-national invariance of the EO scale (Hansen *et al.*, 2011).	Innovativeness, Proactiveness, Risk Taking

Culture, Entrepreneurial Orientation and Global Competitiveness (Lee and Peterson, 2011).	Innovativeness, Proactiveness, Risk Taking, Competitive Aggressiveness, Autonomy
Deconstructing the relationship between entrepreneurial orientation and business performance at the embryonic stage of firm growth. (Hughes and Morgan, 2007).	Risk Taking, Innovativeness, Proactiveness, Competitive Aggressiveness, Autonomy
Entrepreneurial Behavior in Family Firms: a replication study (Weismeier-Sammer, 2011).	Innovativeness, Risk Taking, Proactiveness.
Entrepreneurial Orientation and Business Performance- A replication study (Frank *et al.*, 2010).	Innovativeness, Risk Taking, Proactiveness.
Entrepreneurial Orientation and firm performance: the role of knowledge creation process (Hui-Li *et al.*, 2009).	Innovativeness, Risk Taking, Proactiveness, Competitive Aggressiveness, Autonomy
Entrepreneurial Orientation and Growth of SMEs: a causal model (Moreno and Casillas, 2008).	Innovativeness, Proactiveness, Risk Taking
Entrepreneurial Orientation and New Venture performance: the nod rating role of intra- and extra industry social capital (Stam and Elrig, 2008).	Innovativeness, Risk Taking, Proactiveness.
Entrepreneurial Orientation and small business performance: a configurational approach (Wiklund and Sheperd, 2005).	Innovativeness, Risk Taking, Proactiveness.
Entrepreneurial Orientation in Family Firms: a generational perspective (Cruz and Nordqvist, 2012).	Innovativeness, Risk Taking, Proactiveness.
Entrepreneurial Orientation of Family Firms: Family and environmental dimensions (Casillas *et al.*, 2010).	Innovativeness, Risk Taking, Proactiveness.
Entrepreneurial Orientation, Learning Orientation and Firm Performance (Wang, 2008).	Innovativeness, Risk Taking, Proactiveness, Competitive Aggressiveness
Entrepreneurial Orientation, risk taking and performance in family firms (Naldi *et al.*, 2007).	Risk Taking, Innovativeness, Proactiveness
EO in cross cultural research: assessing measurement invariance in the Construct (Runyan and Ge, 2011).	Innovativeness, Proactiveness, Risk Taking
EO: the role of institutional environment and firm attributes in shaping innovation and Proactividad (Dickson, 2004).	Innovativeness, Risk Taking, Proactiveness.
Exploring an inverted u-shape relationship between EO and performance in Chinese ventures (Tang *et al.*, 2008).	Innovativeness, Proactiveness, Risk Taking
Internal capabilities, external networks, and performance: A study based on technology based ventures.(Lee, *et al.*, 2001).	Innovativeness, Risk Taking, Proactiveness
Linking two dimensions of EO to firm performance: the moderating role of environment and industry life cycle. (Lumpkin and Dess, 2001).	Proactiveness, Innovativeness, Risk Taking, Competitive Aggressiveness
Strategic management of small firms in hostile and benign environments (Covin and Slevin, 1989).	Innovativeness, Proactiveness, Risk Taking
Strategic process effects on the EO-sales growth rate relationship (Covin *et al.*, 2006).	Innovativeness, Risk Taking, Proactiveness.

The effect of intrapreneurship on corporate performance (Felício *et al.*, 2012).	Risk Uncertainty, Risk Challenges, Competitive Energy, Autonomy, Innovativeness, Proactiveness,
The effects of EO and Marketing Information on the performance of SMEs (Keh *et al.*, 2006).	Innovativeness, Risk Taking, Proactiveness.
The moderating impact of internal social exchange processes on the EO-performance relationship (De Clercq *et al.*, 2009).	Innovativeness, Risk Taking, Proactiveness.
Understanding and measuring autonomy: an EO perspective (Lumpkin *et al.*, 2009).	Innovativeness, Proactiveness, Risk Taking

Source: our elaboration.

Prior researchers have suggested that there is a set of organizational processes from which strategic decisions evolve (Hart, 1992; Rajagopalan *et al.*, 1993). These take the form of patterns or modes that can be characterized and identified across organizations (Hart, 1992). The dimensions of a firm's strategy-making processes may be viewed as encompassing the entire range of organizational activities that involve planning, decision making, and strategic management. Such processes also encompass many aspects of the organization's culture, shared value system, and corporate vision (Hart, 1992; Pascale, 1985). In attempting to identify the variables that are relevant to organizational modes and models of strategic decision processes, many researchers have focused on delineating the dimensions of strategy making. For example, Miller and Friesen (1978) identified 11 strategy-making process dimensions, including addictiveness, analysis, integration, risk taking, and product-market innovation. In his study of structural influences on decision-making processes, Fredrickson (1986) proposed dimensions such as proactiveness, rationality, comprehensiveness, risk taking, and assertiveness. Hart's (1992) integrative framework for strategy-making processes combined various dimensions into five "distinctive modes of strategy making": command, symbolic, rational, transactive, and generative. Miles and Snow (1978) considered multidimensional aspects of organizational processes to formulate a typology that includes prospectors, defenders, analyzers, and reactors. In a similar vein, we believe there is a fundamental set of Strategy-Making Process (SMP) dimensions that underlies nearly all entrepreneurial processes. The study of a firm's entrepreneurial orientation is analogous to Stevenson and Jarillo's (1990) concept of entrepreneurial management, in that it reflects the organizational processes, methods, and styles that firms use to act entrepreneurially.

The next subsections clarify the dimensions of risk taking, proactiveness, innovativeness, and competitive aggressiveness. Although we view each of these

dimensions as salient to an EO, our discussion also reflects the argument that they may vary independently in a given context.

1.3.1 Risk taking

The early entrepreneurship literature equated the idea of entrepreneurship with working for oneself (*i.e.*, seeking self-employment rather than working for someone else for wages) (Cantillon, 1734; Shane, 1994). Along with this type of work came the idea of assuming personal risk. Cantillon (1734), who was the first to formally use the term entrepreneurship, argued that the principal factor that separated entrepreneurs from hired employees was the uncertainty and riskiness of self-employment. Thus, the concept of risk taking is a quality that is frequently used to describe entrepreneurship.

Risk has various meanings, depending on the context in which it is applied. In the context of strategy, Baird and Thomas (1985) identified three types of strategic risk:

a) *venturing into the unknown*,
b) *committing a relatively large portion of assets*,
c) *borrowing heavily*.

The first of these definitions conveys a sense of uncertainty and may apply generally to some types of risk often discussed in the entrepreneurship literature, such as personal risk, social risk, or psychological risk (Gasse, 1982). As a term in financial analysis, risk is used in the context of the familiar risk-return trade-off, where it refers specifically to the probability of a loss or negative outcome. This is essentially the definition that Miller and Friesen adopted when they defined risk taking as "the degree to which managers are willing to make large and risky resource commitments- *i.e.*, those which have a reasonable chance of costly failures" (1978). Both the notion of high leverage from borrowing and heavy commitment of resources is consonant with this definition of risk taking. Thus, firms with an entrepreneurial orientation are often typified by risk-taking behavior, such as incurring heavy debt or making large resource commitments, in the interest of obtaining high returns by seizing opportunities in the marketplace. It can be argued that all business endeavors involve some degree of risk, such that it is not meaningful to think in terms of "absolutely no risk."

Thus, the range of risk-taking behavior extends from some nominal level "safe" risks, such as depositing money in a bank, investing in T-Bills, or restocking the shelves- to highly risky actions, such as borrowing heavily, investing in unexplored technologies,

or bringing new products into new markets. Beyond this general point of agreement, however, methods of accounting for and measuring risk vary widely.

Brockhaus (1980), for example, focused on risk propensity, which he defined as "perceived probability of receiving the rewards" associated with the successful outcome of a risky situation. He used an early version of Kogan and Wallach's (1964) choice dilemmas questionnaire that assessed risk preferences by presenting respondents with 12 hypothetical situations and asking them to "choose between a safe alternative and a more attractive but risky one".

Sitkin and Pablo (1992), in their model of risk behavior, distinguished between risk perceptions, risk preferences, and risk propensity. Their use of the term risk propensity "is consistent with Brockhaus's (1980) conceptualization of the term, but it does not conform either to his formal definition (which includes preferences) or to his empirical operationalization (which measures perceptions, rather than propensities or preferences)" (Sitkin and Pablo, 1992). Instead, they regard risk propensity as a mediator between risk preferences and risk behavior, arguing that "the general desire to avoid or pursue risks (*i.e.*, risk preferences) does not determine specific risk behaviors, but rather it affects the general likelihood of a person's behaving in more or less risky ways (*i.e.*, risk propensity)" (1992).

Other factors also may be important to predicting risk taking, such as how the risk problem is framed (Kahneman and Tversky, 1979), results of past risk taking (Thaler and Johnson, 1990), and the ability to perform under risky conditions (Slovic *et. al,* 1980).

These attempts to more clearly understand risk taking stem, in part, from researchers not being able to find consistent patterns when investigating risk taking associated with entrepreneurship. Numerous investigators have reported inconsistencies in the risk-taking propensity of individuals who engage in new entry (*e.g.*, Brockhaus, 1982) and equivocal relationships between risk taking and performance (*e.g.*, Begley and Boyd, 1988). Particularly salient is that most studies of entrepreneurially related risk taking investigate individuals rather than firms. This brings up another type of problem with measuring risk, namely that a risk-averse individual, or one who prefers to study an opportunity thoroughly before embarking on it, may not advocate risk avoidance by the whole firm. That is, an individual aversion to a specific new-venture opportunity may be overcome by either careful study and investigation or confidence in a good idea. The result may be that, at the level of the firm, risks are taken that would not be taken by a firm member.

Effectively operationalizing firm-level risk taking, therefore, remains an area for future development. Presently, however, there is a well-accepted and widely used scale based on Miller's (1983) approach to EO, which measures risk taking at the firm level by asking managers about the firm's proclivity to engage in risky projects and managers' preferences for bold versus cautious acts to achieve firm objectives. Venkatraman (1989) used a similar approach, asking managers the extent to which they followed tried-and-true paths or tended to support only projects in which the expected returns were certain.

Palich and Bagby (1995) found that entrepreneurs tend to categorize business situations as possessing less risk than non-entrepreneurs. In other words, "entrepreneurs may not think of themselves as being any more likely to take risks than non-entrepreneurs, but they are nonetheless predisposed to cognitively categorize business situations more positively". Busenitz (1999) also argued that entrepreneurs tend to view situations more favorably than non-entrepreneurs, and his results indicated that "entrepreneurs do indeed use representativeness more in their decision making and are more overconfident than managers in large organizations" (Busenitz, 1999).

Another definition of risk-taking refers to a tendency to take bold steps such as venturing into unknown new markets (Lumpkin and Dess, 2001; Wiklund and Shepherd, 2005). It is associated with a willingness to commit large amounts of resources to projects for which the cost of failure may be high (Keh *et al*, 2006; Baker and Sinkula, 2009). Firms with an EO are often characterized by risk-taking behavior, such as taking on large debts or making large resource commitments with a view to securing high returns by seizing opportunities in the marketplace.

Risk taking is often used to describe the uncertainty that follows from behaving entrepreneurially. Entrepreneurial behavior involves investing a significant proportion of resources to a project prone to failure. The focus is on moderated and calculated risk-taking instead of extreme and uncontrolled risk-taking (Morris *et al.*, 2008) but the value of the risk-taking dimension is that it orients the firm towards the absorption of uncertainty as opposed to a paralyzing fear of it.

1.3.2 Proactiveness

Proactiveness is the emphasis on being the first to take action. The ability and willingness of leaders to conceptualize and implement a plan for opportunistic expansion provides for a first mover advantage to help capitalize on a market opportunity (Lieberman and Montgomery, 1988).

Proactiveness can be theoretically distinguished from innovation. Innovativeness conveys novelty and invention, whereas proactiveness may simply involve the implementation of new measures that are largely imitations. Further, proactiveness emphasizes aligning services and products with the perceived emerging market, rather than exploiting the existing market.

The impact of proactiveness on performance for commercial organizations is positive when it leads to a beneficial first-mover advantage.

Proactiveness represents a "first mover" orientation of the firm, encapsulating a firm's ability to stay ahead of its competitors in anticipating future changes. Risk-taking orientation reflects a firm's "tolerance of uncertainty" and capture a firm's willingness to involve in and make risky investments.

Proactiveness refers to processes which are aimed at ''seeking new opportunities which may or may not be related to the present line of operations, introduction of new products and brands ahead of competition and strategically eliminating operations which are in the mature or declining stages of the life cycle'' (Venkatraman, 1989). Indeed proactiveness concerns the importance of initiative in the entrepreneurial process. A firm can create a competitive advantage by anticipating changes in future demand (Lumpkin and Dess 1996), or even shape the environment by not being a passive observer of environmental pressures but an active participant in shaping their own environment (Buss, 1987).

Proactiveness is an opportunity-seeking, forward-looking perspective characterized by the introduction of new products and services ahead of the competition and acting in anticipation of future demand.

Proactiveness refers to a posture of anticipating and acting on future wants and needs in the marketplace, thereby creating a first-mover advantage *vis-à-vis* competitors (Lumpkin and Dess, 2001). Proactiveness basically describes an opportunity-seeking, forward-looking perspective involving the introduction of new products or services ahead of the competition. It also acts in anticipation of future demand to create change and shape the environment. With such a forward-looking perspective, proactive firms are able to capitalize on emerging opportunities (Chow, 2006; Keh *et al*, 2006). Proactive firms can create first-mover advantages, target premium market segments and "skim" the market ahead of competitors (Lumpkin and Dess, 2001). Therefore, proactiveness is expected to be valuable in securing superior firm performance (Baker and Sinkula, 2009; Hugehs and Morgan, 2007; Lumpink and Dess, 2001).

Knight (1997) argued that the emphasis of proactiveness is on "aggressive execution and follow through, driving toward achievement of the firm's objectives by whatever reasonable means are necessary." Porter (1980) posited that, in certain situations, firms could utilize proactive behaviors in order to increase their competitive positioning in relation to other firms. Lieberman and Montgomery (1988) argued that first-mover firms were able to gain significant advantages over follower firms. They defined such first-mover advantages in terms of the ability of pioneering firms to earn higher economic profits through such advantages as technological leadership and increased buyer-switching costs.

Stevenson and Jarillo (1990) studied the formation of proactive behaviors in entrepreneurial firms. In their study, they conceptualized proactiveness as the organizational pursuit of business opportunities that were deemed by the firm to be positive or favorable. This view is consistent with a recent definition offered by Lumpkin and Dess (2001), in which proactiveness is viewed as an "opportunity-seeking, forward-looking perspective involving introducing new products or services ahead of the competition and acting in anticipation of future demand to create change and shape the environment."

The previous literature review provides robust theoretical support for the proposition that risk taking, innovation, and proactiveness may make unique contributions to a firm's overall level of entrepreneurial orientation. Zahra *et al*. (1999) argued that the "Miller (1983) measure and the Covin and Stevin (1988) extensions have both served the field well, and no one can question their merit. We remain concerned that researchers might have prematurely agreed on a common measure without establishing its dimensionality or other psychometric properties" (Zahra *et al.*, 1999). Dess, *et al*. argued that "an appreciation of the multidimensionality and independence of the sub dimensions of an "entrepreneurial orientation" (*e.g.*, risk taking, proactiveness, innovativeness) can enhance normative and descriptive theory building" (Dess *et al.*, 1999).

The term proactiveness is defined in *Webster's Ninth New Collegiate Dictionary* as "acting in anticipation of future problems, needs, or changes." As such, proactiveness may be crucial to an entrepreneurial orientation because it suggests a forward-looking perspective that is ac-companied by innovative or new-venturing activity. In an early formulation, Miller and Friesen argued that the proactiveness of a firm's decisions is determined by answering the question, "Does it shape the environment (high score) by

introducing new products, technologies, administrative techniques, or does it merely react?" (1978).

Later, proactiveness was used to depict a firm that was the quickest to innovate and first to introduce new products or services. This is suggested by Miller's description of an entrepreneurial firm as one that is "first to come up with 'proactive' innovations" (1983). Although the idea of acting in anticipation of future demand is an important component of entrepreneurship, the idea of being first to market is somewhat narrowly construed. A firm can be novel, forward thinking, and fast without always being first. Miller and Camp (1985), for example, in their study of 84 SBUs, found that the second firm to enter a new market was as pioneering as the first entrant and just as likely to achieve success via proactiveness.

Therefore, consistent with Miller and Friesen's (1978) earlier definition, Venkatraman (1989), suggested that proactiveness refers to processes aimed at anticipating and acting on future needs by "seeking new opportunities which may or may not be related to the present line of operations, introduction of new products and brands ahead of competition, strategically eliminating operations which are in the mature or declining stages of life cycle". Thus, a proactive firm is a leader rather than a follower, because it has the will and foresight to seize new opportunities, even if it is not always the first to do so.

1.3.3 Innovativeness

Schumpeter was one of the first scholars to argue that innovation, as evidenced by the creation and development of new products and processes, was the fundamental undertaking of the entrepreneurial organization (1942). Since this conceptualization, other researchers have also considered innovation to be at the very heart of entrepreneurship (Covin and Miles, 1999; Jennings and Young, 1990; Schollhammer, 1982).

Entrepreneurial innovation can be defined as the "willingness to support creativity and experimentation in introducing new products/services, and novelty, technological leadership and R&D in developing new processes" (Lumpkin and Dess, 2001). In recognizing the importance of innovation, Jennings and Young (1990) defined corporate entrepreneurship as "the process of developing new products or new markets. Consistent with this definition, an organization is entrepreneurial if it develops a higher than average number of new products or new markets within that industry." Zahra (1993) argued that a "distinguishing characteristic of an entrepreneurial company is its strong

commitment to creating and introducing new products to the market, especially well before the competition."

Covin and Miles (1999) theorized that innovation was the single factor most critical in defining corporate entrepreneurship. They argued that after considering "the various dimensions of firm-level entrepreneurial orientation identified in the literature ... innovation, broadly defined, is the single common theme underlying all forms of corporate entrepreneurship". While they did not dismiss the existence of other dimensions of entrepreneurial orientation, they felt that these other dimensions were antecedents, consequences, or correlates of innovation. However, they concluded that "without innovation there is no corporate entrepreneurship regardless of the presence of other dimensions".

Schumpeter also added that (1942) an economic process of "creative destruction," by which wealth was created when existing market structures were disrupted by the introduction of new goods or services that shifted resources away from existing firms and caused new firms to grow. The key to this cycle of activity was entrepreneurship: the competitive entry of innovative "new combinations" that propelled the dynamic evolution of the economy (Schumpeter, 1934). Thus *innovativeness* became an important factor used to characterize entrepreneurship. Innovativeness reflects a firm's tendency to engage in and support new ideas, novelty, experimentation, and creative processes that may result in new products, services, or technological processes.

Although innovations can vary in their degree of *radicalness* (Hage, 1980), innovativeness represents a basic willingness to depart from existing technologies or practices and venture beyond the current state of the art (Kimberly, 1981). There are numerous methods by which to classify innovations (Downs and Mohr, 1976), but perhaps the most useful distinction is between *product-market innovation* and *technological innovation*. Until recently, most research has focused on technological innovativeness, which consists primarily of product and process development, engineering, research, and an emphasis on technical expertise and industry knowledge (Cooper, 1971; Maidique and Patch, 1982). Product-market innovativeness suggests an emphasis on product design, market research, and advertising and promotion (Miller and Friesen, 1978; Scherer, 1980).

Even this broad categorization may be hard to distinguish; however, because innovativeness frequently represents considerable overlap and blending of product-market and technological innovation, as in the case of technologically sophisticated new products

designed to meet specific market demand. In either case, innovativeness is an important component of an EO, because it reflects an important means by which firms pursue new opportunities.

Evidence of firm innovativeness may take several forms. In the broadest sense, innovativeness may occur along a continuum from a simple willingness to either try a new product line or experiment with a new advertising venue, to a passionate commitment to master the latest in new products or technological advances. To capture this range of activity, numerous methods have been employed to measure innovativeness. For example, in a study of innovative responses to changes in the environment, Karagozoglu and Brown (1988) asked managers from 56 firms about their willingness to discard old beliefs and explore new alternatives and the way in which they valued and rewarded experimentation. The level of expenditures and number of resources dedicated to research and development also represent a firm's involvement in innovation activities. In terms of human resources, Hage (1980) argued that the more professionals and specialists in a firm, such as engineers and scientists, the higher the level of innovation.

Miller and Friesen (1982) examined the *technocratization* of firms and found that higher levels of innovativeness were associated with greater reliance on technically trained specialists. Miller (1987, 1988) used R&D costs as a percentage of sales to measure financial resources devoted to innovation. Thus, even though these factors may vary by industry, a simple count of financial or human resources committed to innovation activities may be useful for operationalizing innovativeness.

For product-market innovativeness, Miller (1987, 1988) asked members of firms to indicate the percentage of total sales spent specifically on the costs of initiating and implementing product-market innovations. Another frequently used marketing-related method for assessing innovation is to investigate the number of new product or service introductions and the frequency of changes in services or product lines (Covin and Slevin, 1989; Miller and Friesen, 1982).

Regarding technological innovativeness, the emphasis shifts to achieving competencies in the latest technologies and production methods and the development of advanced manufacturing processes. This important aspect of innovativeness is lacking in most of the studies based on Miller's (1983) concept of innovativeness, which focused exclusively on the product-market aspect of innovation activities. Subsequent researchers have endeavored to capture this additional aspect of innovativeness, for example, Zahra and Covin (1993), who focused on *technology policy*, that is, the firm's commitment to

"acquiring, developing, and deploying technology." In this context, firms were asked to rate the extent to which they emphasize technological development and seek to build a reputation for trying new methods and technologies. Another approach that extended efforts to measure innovativeness was used by Saleh and Wang (1993), who, in a study that compared highly innovative firms to low innovators, supplemented the Miller-based approach with questions about efforts to synthesize disparate efforts across functional lines and flexibility in adapting new processes.

1.3.4 Competitive aggressiveness

Competitive aggressiveness is another dimension of entrepreneurship that is frequently mentioned in the literature. Competitive aggressiveness refers to a firm's propensity to directly and intensely challenge its competitors to achieve entry or improve position, that is, to outperform industry rivals in the marketplace. As suggested previously, competitive aggressiveness is characterized by responsiveness, which may take the form of head-to-head confrontation, for example, when a firm enters a market that another competitor has identified, or reactive, for example, when a firm lowers prices in response to a competitive challenge. Competitive aggressiveness also reflects a willingness to be unconventional rather than rely on traditional methods of competing.

Examples of this and other forms of competitive aggressiveness available to new entrants include adopting unconventional tactics to challenge industry leaders (Cooper *et al.*, 1986), analyzing and targeting a competitor's weaknesses (Macmillan and Jones, 1984) and focusing on high value-added products while carefully monitoring discretionary expenses (Woo and Cooper, 1981). Similarly, Porter (1985) recommended three approaches for aggressively pursuing existing firms:

a) *doing things differently*, that is, reconfiguration;
b) *changing the context*, that is, redefining the product or service and its market channels or scope;
c) *outspending the industry leader*.

Thus, competitive aggressiveness, which refers to firm responsiveness directed toward achieving competitive advantage, is an important component of an EO.

The importance of this variable as a dimension of EO was highlighted in a study of the entrepreneurial processes of U.S. firms in global markets, in which Dean (1993) found that competitive aggressiveness explained considerably more variance (37%) in

corporate entrepreneurship than did any other strategy or structural variable analyzed. Evidence of competitive aggressiveness may take several forms. Covin and Covin (1990), for example, asked managers if they adopted a "very competitive 'undo-the-competitors' posture" or preferred to "live-and-let-live." Activities aimed at overcoming rivals may include, for example, setting ambitious market-share goals and taking bold steps to achieve them, such as cutting prices and sacrificing profits (Venkatraman, 1989) or spending aggressively compared to competitors on marketing, product service and quality, or manufacturing capacity (MacMillan and Day, 1987). The breadth and speed of new entry also may indicate an aggressive posture. A "fast-followers" approach often is used by firms to aggressively bring new products to market. This approach is accomplished by speeding up the product-development cycle time. Miller and Camp found that the most successful aggressive firms were those that did not shy away from broadly defined markets "in terms of the number, sizes, and types of their customers, as well as the breadth of their product line" (1985).

Scales developed by Ginsberg (1985) and Khandwalla (1977) also were used to focus on the aggressiveness of competitive processes used by managers to pursue rivals.

Competitive aggressiveness is the intensity of a firm's effort to outperform rivals and is characterized by a strong offensive posture or aggressive responses to competitive threats.

There has been a tendency in the entrepreneurship literature to equate proactiveness with competitive aggressiveness. The terms are often used inter-changeably, for example, in the case in which Covin and Slevin (1989) explained that their model of entrepreneurial strategic posture consists of innovativeness, proactiveness, and risk taking which they defined as "characterized by frequent and extensive technological and product in-novation, an aggressive competitive orientation, and a strong risk-taking propensity by top management" (1989, emphasis added).

Although closely related to competitive aggressiveness, there is an important distinction between it and proactiveness that needs to be clarified. Proactiveness refers to how a firm relates to market opportunities in the process of new entry. It does so by seizing initiative and acting opportunistically in order to "shape the environment," that is, to influence trends and, perhaps, even create demand. Competitive aggressiveness, in contrast, refers to how firms relate to competitors, that is, how firms respond to trends and demand that already exist in the marketplace.

The two ideas are similar, because, as Porter (1985) suggested, the market is the playing field for competitors. But proactiveness has more to do with meeting demand, whereas competitive aggressiveness is about competing for demand. Combining these distinct concepts inappropriately may explain why Stuart and Abetti (1987) found that a variable labeled "strategic aggressiveness," in which they joined the notions of "first-to-market" with a "highly offensive" posture, was not useful as a predictor of new-entrant success. To further clarify these concepts, it may be useful to consider the proactiveness continuum.

The conceptual opposite of proactiveness is passiveness (rather than reactiveness), that is, indifference or an inability to seize opportunities or lead in the marketplace. Reactiveness, in contrast, suggests a response to competitors. This approach is consistent with Chen and Hambrick, who stated that "a firm should be both proactive and responsive in its environment in terms of technology and innovation, competition, customers, and so forth. Proactiveness involves taking the initiative in an effort to shape the environment to one's own advantage; responsiveness involves being adaptive to competitors' challenges" (1995). An EO, therefore, involves both pro-activeness in pursuing opportunities and the will to respond aggressively to competitors.

1.4 EO performance

1.4.1 Effects of firm level entrepreneurship: state of research

The first contemporary empirical insights into the EO-firm performance relationship were exploratory in character and raised questions rather that provided answers, for example a pioneer study by Zahra in 1986. The positive association encouraged further research, provoked discussion and provided worthy conceptual contributions. The research that followed was mostly explanatory, of empirical character often adapting the contingency perspective.

Some studies have found that firms with a more entrepreneurial orientation perform better. Others have failed to find this positive relationship. This raises the question of whether EO is always an appropriate strategic orientation or if its relationship with performance is more complex. The notion that the relationship between an EO and performance is different for different types of businesses is not new.

For example, Lumpkin and Dess (1996) in their conceptual model suggest that factors internal and external to the firm may moderate the relationship between EO and

performance. Empirically, research has found that the effect of EO on performance may be different in different types of environments (*i.e.*, external factors). Research has also found that entrepreneurial strategies require considerable financial resources to be successful. While previous studies have highlighted the importance of a contingent approach (two-way interaction), greater insight into performance might be gained through investigating the orchestrating themes and integrative mechanisms that ensure complementarity among a firm's various aspects.

A greater understanding is gained by the concomitant consideration of EO, access to capital, and environmental dynamism (three-way interaction). The nature of the configurations suggests that businesses that face performance constraints, in terms of a stable environment and limited access to capital, can be superior performers if they have a high EO. This finding is consistent with the saying that *necessity is the mother of invention.* Apparently, a high EO provides businesses the ability to find and/or discover new opportunities that can differentiate them from other firms and create a competitive advantage.

Among the legacy of studies that have taken place over the years, the business performance consequences of EO have not always been clear. Recently, Rauch *et al.* (2009) performed a meta-analysis of the relationship between EO and business performance. Their study included 51 thesis and showed a significant positive relationship between EO and business performance. The control variable for cultural differences between continents included by the authors turned out to be statistically insignificant, meaning that the relationship between EO and business performance is "of similar magnitude in different cultural contexts" (Rauch *et al*,. 2009).

Covin and Slevin (1989) found that there is a larger positive effect of entrepreneurship on business performance in hostile environments, while there seems to be no significant relation in benign environments.

Also, other researchers have included environment as a moderator or as a control variable in their models. Lumpkin and Dess (2001) found environmental hostility to be a significant moderator in the relationship between EO and firm profitability. Wiklund and Shepherd (2003) use environmental munificence and heterogeneity as control variables within their research on knowledge-based resources and EO.

In theory, for an entrepreneurial orientation to affect firm-wide behavior and be adopted as an organizational mindset, it is necessary for employees across the firm to participate in the entrepreneurial actions captured within an EO on a voluntary basis.

Lumpkin and Dess (1996) commented on the extent to which employees were involved in the use of entrepreneurial activity as supported (or otherwise) by the culture and structure of the firm. In corporate entrepreneurship research, Ireland *et al.* (2009) posited that buy-in into an entrepreneurial vision for the business depends on "top-level managers [working] to create organizational architectures in which entrepreneurial initiatives flourish without their direct involvement". These authors, similar to Lumpkin and Dess (1996), suggest that the structure and culture of the firm should encourage "a proclivity toward such qualities as decentralized decision making, low formality, wide spans of control, expertise-(vs. position)-based power, process flexibility, free-flowing information networks, and loose adherence to rules and policies… greater mechanization implies the opposite", as well as "being highly committed to work and willing to accept responsibility for outcomes resulting from it" (Ireland *et al.*,2009).

Similar points can be drawn from the work of Hornsby *et al.* (2002) in that employee involvement shapes their understanding of top managers' willingness to facilitate and support entrepreneurial behavior. When coupled with a voluntary acceptance of work discretion and autonomy, the EO of the firm would be expected to be more effective.

Stam and Elfring (2008) investigated whether and how the founding team's intra and extra industry networks influence the performance of new ventures. From their research, it can be concluded there is a strong relationship between EO, measured by its network, and performance, but that it is weakened in firms with low social capital. Wiklund and Shepherd (2005) concluded after reviewing previous research that "the differences [among study findings] reflect the fact that EO may sometime, but not always, contribute to improved performance". The meta-analysis of Rauch *et al.* (2009) nonetheless leads to an aggregate conclusion that an overall significant relationship between EO and business performance exists. Still, what these studies do suggest is that the value of EO might vary and so it is necessary for researchers to better appreciate the context in which EO is used by firms (*e.g.*, Stam and Elfring, 2008).

EO is considered the "driving force behind the organizational pursuit of entrepreneurial activities" (Covin and Wales, 2011). It captures a company's institutional embodiment of the entrepreneurial perspective (Ma and Tan, 2006). It represents a frame of mind and a perspective on entrepreneurship that is reflected in a company's corporate culture and its ongoing processes (Covin and Slevin, 1991; Lumpkin and Dess, 1996). As such, EO determines the decision-making style and practice in a company, is linked to

company strategy formulation, and shapes the attitudes of individual members of the company as well as their behavior (Covin and Slevin, 1989).

Based on the idea that firms benefit from newness and responsiveness, EO is said to lead to superior performance (Rauch *et al.*, 2009). Effects on performance may be manifold and encompass larger profits, higher growth, and nonfinancial aspects such as stakeholder satisfaction (Lumpkin and Dess, 1996; Zahra and Covin, 1995). Consequently, Lumpkin and Dess argue that research testing propositions in the context of EO should capture the overall performance, incorporating different indicators and the objectives of the firm. Although EO is often equated with entrepreneurial behavior, research points to the need to differentiate between the two concepts. While considering EO an important antecedent of entrepreneurial activity, previous research highlights that EO is not a direct measure of entrepreneurial behavior. EO has been described as reflecting a disposition toward, rather than actual involvement in, entrepreneurial activity (*e.g.*, Dess *et al.*, 2003; Lumpkin and Dess, 1996; Wiklund and Shepherd, 2003; Zahra, 1991). That leads to a definition of EO as the "willingness of a firm to engage in entrepreneurial behavior" (Wiklund, 1998) and "the policies and practices that provide a basis for entrepreneurial decisions and actions" (Rauch *et al.*, 2009).

In line with these definitions, Wiklund and Shepherd consider EO as capturing "a firm's organization toward entrepreneurship" (2003). Lumpkin and Dess (1996) separate orientation and behavior by clarifying that the EO dimensions "do not [...] represent entrepreneurship", while defining entrepreneurship as "new entry", and describing EO as only a corollary concept "lead[ing] to new entry".

Drawing on the Resource Based Views (RBV) of the firm, entrepreneurship in existing firms may lead to competitive advantages and to superior performance (Alvarez and Barney, 2002; Dess *et al.*, 2003; Hult and Ketchen, 2001). In previous studies, EO has been shown to be a good predictor of the outcomes of entrepreneurial behavior (Rauch *et al.*, 2009), generally justifying its use as a proxy for the effects of entrepreneurship in existing firms (Wiklund, 1998). However, a closer look at the RBV calls into question the EO-entrepreneurial behavior consistency and thus the eligibility of the EO as a direct predictor of the outcomes of entrepreneurial efforts. As already discussed, EO refers to a firm's strategic orientation, capturing entrepreneurial aspects of decision-making styles and practices (Wiklund and Shepherd, 2003). As such, EO reflects how a company operates rather than what it does (Lumpkin and Dess, 1996). Drawing on the Value, Rarity, Imitability, Organization (VRIO) framework as part of the RBV

(Barney, 1991), the way a firm is organized can influence the feasibility of exploiting the competitive potential of its resources and capabilities. Applying the VRIO framework, Wiklund and Shepherd decide that "EO represents how a firm is organized in order to discover and exploit opportunities" (2003). As a capability, EO represents the glue that may bind other resources together, enabling a company to deploy them advantageously (Zhou *et al.,* 2005), a finding that led those researchers to consider EO antecedent to initiating innovative activities (Zhou *et al.*). In their interactive model of corporate entrepreneuring, Hornsby *et al.,* (1993) highlighted that even when the decision to act intrapreneurially is made, several factors such as a lack of resources to hand or existing organizational barriers may inhibit the actual implementation of the intrapreneurial idea. Wiklund and Shepherd (2003) found initial empirical evidence for a gap between EO and entrepreneurial behavior. Several more configurational approaches supported the ideas that EO does not automatically develop into entrepreneurial activity and that performance benefits of EO are low when no corresponding entrepreneurial behavior takes place (*e.g.*, Lumpkin and Dess; Moreno and Casillas, 2008; Wiklund and Shepherd, 2005).

Performance has been defined by the *Mirriam-Webster Dictionary*[4] as the fulfillment of a claim, promise, or request but there is no consensus to what *firm performance* is. Firm performance in its broadest sense as the outcomes of organizational activities can be characterized in financial and non-financial parameters (Chenhall and Langfiels-Smith, 2007). Financial performance is often measured using traditional accounting *Key Performance Indicators* (KPIs) such as sales growth, return on assets or return on sales. The advantage of these measurements is their general availability, since every profit oriented organization produces these figures for the yearly financial reporting. However, balance sheet manipulations and choices of accounting methods may also lead to values that allow only limited comparability of the financial strength of companies (Chenhall and Langfield-Smith, 2007).

The non-financial performance can be measured using operational KPIs. Market share, innovation rate or customer satisfaction are prominent examples. Some non-financial parameters pose a challenge, since there are no universal indicators of, for example, company's social performance. Thus many researchers use self-reported measures to operationalize performance (Chenhall and Langfield-Smith, 2007).

[4] www.merriam-webster.com.

EO-firm performance relationship has always been at the heart of EO research. Research into the nature, determinants and effects of firm level entrepreneurship has grown rapidly ever since 1980ies. The coexisting convictions regarding EO are rather completing than competing, all referring to the identification, evaluation and pursuit of opportunity (Stevenson and Jarillo-Mossi, 1986; Jones and Butler, 1992; Shane and Venkataram, 2000).

1.4.2 Measuring performance

Defining organizational performance constitutes a complex problem, and a consensus on the definition of organizational performance is yet to be achieved (de La Villarmois, 2001). However, as identified by authors such as Quinn and Rohrbaugh (1983) and Tangen (2004), there are two dominant perspectives, one being objective/economic/rational (productivity, efficiency, profitability, competitiveness, etc.), the other being subjective/political/systemic (coherence, value of human resources, satisfaction of stakeholders, adaptability, etc.). The definition of organizational performance used within the performance measurement literature reflects this diversity in terms of the number of performance dimensions to be covered by performance measurement systems in organizations (Marchand and Raymond, 2008).

In the work of Kaplan and Norton (1992) on organizational performance measurement, emphasis has been put on the firm's strategic objectives. Shortly after, the notion of performance started to be viewed from an enlarged stakeholder perspective. Not only the interests and expectancies of owners and shareholders were taken into account but also of other concerned entities such as customers, employees, suppliers, and government (Bititci *et al.*, 1997). Interest in sustainable development is now observed (*e.g.* Hubbard, 2009), further extending this stakeholder orientation to society and future generations, even overtaking the focus on strategy (Neely *et al.*, 2002).

Performance can be defined as a notion relative to the value/cost ratio, where cost is a monetary measure of the resources consumed, and where value is a judgment made by society on the utility of the firm's products/services in response to society's needs (Lorino, 2001).

As reviewed by Marchand and Raymond (2008) the dimensions of performance measured as proposed in the literature were initially mainly financial (profitability, liquidity, and financial health), then more balanced with an operational perspective (*e.g.* costs, responsiveness, quality, productivity and flexibility). A balanced, holistic, and

integrated performance measurement approach should allow for an evaluation of the organization in its entirety and an integration of all functions/dimensions in balance with the importance given to each, in view of the firm's strategic objectives (Garengo *et al.*, 2005; Neely *et al.*, 2002), including external benchmarks in addition to internal measures (Sinclair and Zairi, 2000). Consequently, a holistic, balanced and integrated performance measurement necessarily relies on various types of indicators, managed in a co-ordinated way.

Performance measurement of an organization is ideally based on the specific *performance logic* of that organization. The firm's performance logic is a notion that refers to the set of cause-effect relationships by which organizational determinants (*e.g.* management practices) produce certain results in the form of increased or decreased performance (Marchand and Raymond, 2008). Specific to each firm, these causal paths of performance refer to a state of ideal equilibrium that is also specific to each firm (Drucker, 1954; Ridgway, 1956).

Measuring performance in respect of the firm's specific logic of performance provides a holistic and integrated basis for performance management. However, tracing or defining the performance logic of a firm requires an important analytical work that can be consuming in resources and time (Bourne *et al.*, 2002; Frigo, 2002; Neely, 1999; Neely *et al.*, 2000; Neely *et al.*, 2002). To simplify the task of modeling the firm's performance logic, performance measurement frameworks were proposed by a number of researchers, each of these frameworks adopting a specific management perspective, *e.g.* strategic-based management, as is the case for Kaplan and Norton's (1992, 1996) *Balanced Scorecard*, and stakeholder-based management, as for Neely *et al.*'s (2002) *Performance Prism*, probably the two best known frameworks for performance measurement.

Referring to pre-existing performance measurement frameworks (a set of performance indicators with causal links) can have a drawback however, if the intrinsic logic of the model tends to format the specific logic of the organization into something that is irrelevant or remote to its performance management. Irrelevant information is then provided, incomplete for decision making, unable to allow for a full understanding of the organization's specific performance logic (*e.g.* causal links not taken into account by the model) (Bititci *et al.*, 2000; Bourne *et al.*, 2002; Kueng *et al.*, 2001; Miller and Israel, 2002; Neely *et al.*, 1995; Neely, 1999; Townley and Cooper, 2003).

1.4.3 Performance measurement in SMEs

Empirical research on performance measurement in SMEs is still rather rare and research needs on this subject have been identified on a recurring basis (Garengo *et al.*, 2005; Hudson *et al.*, 2001; Marchand and Raymond, 2008). In this regard, an initial study done by Barnes *et al*, (1998) showed that strategic planning is rarely formalized in small firms, that performance measurement is rather unstructured, reactive and spontaneous, and that regular measurement of performance aspects other than financial is rarely practiced. Now, an essentially financial measurement of performance implies a management that prioritizes profit maximization and the pursuit of growth (Walker and Brown, 2004) and financial returns (LeCornu *et al.*, 1996), which is incompatible with the owner-manager's decision-making behavior. This behavior is in fact much more one of satisfaction rather than maximization (*e.g.* Gray, 2002; Greenbank, 2001). Yet, pursuing strategic objectives that are diverse by nature, many SMEs require a multidimensional, efficient and effective measurement of their performance (St-Pierre and Raymond, 2004).

Small businesses present a particular problem with regard to performance measurement, that is, with regard to the process of developing performance measurement systems, the characteristics of the performance indicators and the dimensions of performance to be measured (Hudson *et al.*, 2001). The prescribed approaches, developed for large enterprises, are not adapted in practice to the specificities of small businesses, especially of their resource constraints, their strategic flexibility and their need for results in the short term (Kueng, 2000; Sousa *et al.*, 2003). Further knowledge is thus needed on performance measurement models that would be appropriate for SMEs, and on the factors that influence the development of performance measurement systems for these enterprises (Garengo *et al.*, 2005).

In light of the empirical studies cited above, one may surmise that the performance of a small business may be conceived differently depending upon the entrepreneurial profile and personal characteristics of its owner-manager. The performance of a small business would thus be intrinsically linked to its capacity to provide its owner-manager with autonomy, independence, financial security, and a style or quality of life to which he or she aspires (Gray, 2002; Greenbank, 2001; Reijonen and Komppula, 2007; Walker and Brown, 2004). It could also be linked to more traditional considerations previously noted such as the firm's growth and liquidity, the satisfaction of customers, and the quality of products and services offered (Getz and Petersen, 2005; Gundry and Welsch, 2001; Morris *et al.*, 2008).

1.4.4 EO-performance relationship

In investigating the EO-performance relationship, it is essential to recognize the multidimensional nature of the performance construct (Cameron, 1978; Chakravarthy, 1986).

Research that only considers a single dimension or a narrow range of the performance construct (*e.g.*, multiple indicators of profitability) may result in misleading descriptive and normative theory building. Research testing the propositions such as those suggested in this thesis should include multiple performance measures. Such measures could include traditional accounting measures such as sales growth, market share, and profitability. In addition, indicators of *overall performance* would be useful in incorporating the firm's goals, objectives, and aspiration levels (Kirchhoff, 1978) as well as other elements of broader stakeholder satisfaction.

Alternative measures of performance may compete, depending on the size and type of firm and its ownership. For example, new firms often are initiated because key players prefer to work for themselves rather than take direction from an organizational superior. This is consistent with a lifestyle approach (Birley, 1987), whereby effectiveness may be judged by the most basic type of financial criteria, such as monthly cash flow or mere survival. Thus, a small, privately owned firm may regard its continued existence as a satisfactory indicator of high performance, even though it cannot claim to have a strong return on assets or growth in market share. It also may make a conscious decision not to grow beyond a certain size, in order to maintain control of the business. Thus, factors such as overall satisfaction and nonfinancial goals of the owners may need to be weighted more heavily in evaluating performance, especially among privately held firms. Other nonfinancial considerations may be important. Factors such as reputation, public image and goodwill, and the commitment and satisfaction of employees may be important to new entrants. Similarly, Zahra (1993) has suggested that the importance of alternate financial and non-financial performance measures change at different points in the life of an organization or new venture. This last point is consistent with Quinn and Cameron's (1978) finding that the criteria of effectiveness shift as an organization evolves. Thus, those who investigate the effectiveness and efficiency of an entrepreneurial orientation need to be sensitive to these performance criteria.

Performance is a multidimensional concept and the relationship between EO and performance may depend upon the indicators used to assess performance (Lumpkin and Dess, 1996). The empirical literature reports a high diversity of performance indicators

(Combs *et al.*, 2005; Venkataraman and Ramanujam, 1986); a common distinction is between financial and non-financial measures.

Non-financial measures include goals such as satisfaction and global success ratings made by owners or business managers; financial measures include assessments of factors such as sales growth and ROI[5] (Smith, 1976).

Regarding financial performance, there is often a low convergence between different indicators (Murphy *et al.,* 1996). On a conceptual level, one can distinguish between growth measures and measures of profitability. While these concepts are empirically and theoretically related, there are also important differences between them (Combs *et al.*, 2005). For example, businesses may invest heavily in long term growth, thereby sacrificing short-term profits.

The conceptual argument of the EO-performance relationship focuses mainly on financial aspects of performance. Businesses with high EO can target premium market segments, charge high prices and *skim* the market ahead of competitors, which should provide them with larger profits and allow them to expand faster (Zahra and Covin, 1995). The relationship between the EO construct and non-financial goals, such as increasing the satisfaction of the owner of the firm, is less straightforward.

1.4.5 Performance parameters

In the course of investigating EO and firm performance relationship, existing research reflects a clear focus on financial performance. Sales growth clearly stands out as the most common and widespread indicator of firm performance, much widely employed than profit growth. This occurs for a number of reasons. Since EO often involves costly venturing into dynamic markets, it might increase company sales, even though profits may suffer (Zahra and Garvis, 2000). Moreover, EO often involves R&D long-term investment and innovation effecting negatively short-term profitability. Furthermore, sales growth is very likely to be driven by increased demand for the firm's products or services (Wiklund, 1999).

An insightful meta-analysis conducted by Rauch *et al.* (2009) revealed the correlation between EO and growth at a level of 0,245 and the correlation between EO and profitability at 0,259. It is a common practice among researchers to examine growth and profitability jointly (*e.g.* Antoncic, 2006; Kreiser and Davis, 2010), as well as introducing other financial performance measures.

[5] ROI: return of investiments.

As noted in the 90ies, entrepreneurial activity may at times lead to different outcomes in various performance dimensions (Lumpkin and Dess, 1996) and since single financial indicators of performance portray a very narrow area of performance, most of the papers rely on three or more financial indicators. Authors attempted to capture not only the growth, but the development of the firm as well. Return On Assets (ROA) is most commonly employed measure of development driven investment. Authors argued that ROA reflects the redeployment of firm's assets in innovative ways (Zahra and Garvis, 2000). Another way of tackling the problem of fragmented financial performance measurement is suggested by Vozikis *et al.* (1999), who argued a model of evaluating EO impact on firm performance through additional value creation: greater than expected dividend growth rate. These authors merged efficient market theory and financial theory with EO to suggest that corporate entrepreneurial activities are more accurately evaluated by the market stock value. They argued that "market valuation takes into consideration all EO actions such as risk- taking, innovativeness and how EO activities are actually managed" (Vozikis *et al.*, 1999), as opposed to single dimension investigations that accounting measures provide.

This logic was followed by Antoncic and Hisrich (2004) in including wealth creation as a complementary measure of firm performance to growth and profitability. Since EO has been traditionally associated with new entry and competitive advantage, market performance is another indicator that remains a center issue for a number of authors. Zahra and Covin (1993) found that firms adopting EO were faster to the market due to shorter product and business model life cycles, which is consistent with early findings of Miles and Snow (1978), who found that entrepreneurial firms follow the sequence of evaluate-act-plan, suggesting that their time of stepping into action is critical for future success.

The commonly used indicators of market performance are market share growth (Obłój *et al.*, 2010) and competitive advantage (Covin and Miles, 1999). These are however applied as complimentary measures of performance; no research relies solely on market measures for evaluating performance. Many researchers have used subjective comparisons with competitors' performance within the same industry. This information, whenever accessible, provide background information on market trends (Madsen, 2007). EO engaged firms are expected to show growth patterns that differ substantially from their industry standards. Above average industry growth suggests superior performance and validates other financial performance measures.

Interestingly, only one of the reviewed studies incorporated relative employment change as one of performance parameters (Madsen, 2007). Employment, as an important aspect to capture, is problematic in EO context, since there is to some extent an inverse relationship between capital investment and employment growth, suggesting employment growth of assets should be measured at the same time. Concluding, the existing body of research suggests that EO leads to higher performance. However the strength of this relationship varies among studies, with a moderate level on average.

In table 2 an overview of the most important articles of research devoted to EO-firm performance relationship is presented.

Table 2. Overview of articles of research to EO firm performance relationship

Authors	Topics	Typology	Findings
Zahra (1986)	EO impact on firm financial performance	59 US companies from Fortune 500 list, five industries ROI and net income to sales ratio as financial performance indicators	Reveals multidimensional nature of the EO performance relationship
Covin (1991)	Identification of strategy patterns and performance levels of conservative and entrepreneurial firms	111 small US manufacturing firms Subjective self-reported financial performance indicators	Evidence for higher financial performance among entrepreneurial firms
Zahra (1993)	Environmental influence	102 US manufacturing companies	Suggests environmental hostility moderates EO performance relationship
Zahra and Covin (1995)	Contextual influences on the relationship, longitudinal study (7 year period)	69 US manufacturing companies, 50 chemical companies, 59 Fortune 500 corporations Annual secondary data: ROS, ROA	EO and environmental hostility interact to determine firm financial performance and this relationship holds over time

Lumpkin and Dess (1996)	Contingency variables related to EO performance relationship	Review of literature	Proposition of alternative models for testing the OE performance relationship; multiple contingency variables: structure, strategy, strategy making processes, resources, culture, top management team characteristics, environment and industry
Dess, *et al.*, (1997)	Testing the predictive power of two approaches of exploring EO–firm performance relationship	32 US firms, various industries Subjective self-reported data as performance indicators: sales growth, profit growth and ROI over last five years	Configurational approaches that align OE, strategy and environment have greater predictive power than contingency approaches
Birkinshaw (1997)	Results of EO subsidiary initiatives	39 initiatives from six subsidiaries of multinational organizations	Importance of qualitative measures of EO initiatives: local responsiveness, worldwide learning and global integration
Covin and Miles (1999)	EO typology	Review of literature, conceptual paper	EO often produces superior firm performance due to various forms of EO can serve as a base for competitive advantage, problem of fit between EO forms and competitive context
Vozikis *et al.* (1999)	Linking EO to financial theory, moving beyond accounting measures	Conceptual article	Model of evaluating EO impact on firm performance through additional value creation: greater than expected dividend growth rate
Wiklund (1999)	Sustainability of EO and firm performance relationship	Sample of 132 small Swedish firms, data collected over 3 consecutive years Seven item scale of performance; three financial and four growth measures (compared to competitors).	Findings support positive EO performance relationship with access to capital having largest positive influence on this relationship

Barrett *et al.* (2001)	Moderating effect of marketing mix factors on EO firm performance relationship	142 US firms Performance measured by two judgmental questions.	Marketing mix factors moderate EO performance relationship for large industrial firms. EO more important to business performance as firms increase in size.
Zahra and Garvis (2000)	Global expansion, international corporate entrepreneurship	98 U.S. companies	Identification of rewards and risks of international corporate entrepreneurship. Superior performance is moderated by hostility of international business environment.
Kuratko, *et al.* (2001)	Building a successful corporate entrepreneurship strategy	Single case study	Factors enhancing performance in entrepreneurial drive: venture teams, involvement, adequate compensation systems
Goosen *et al.* (2002)	Testing the relationship in South African context	90 Johannesburg Stock Exchange listed companies Four accounting measures of performance.	Positive performance outcomes associated with management practices
Sadler Smith *et al.*, (2003)	Testing relationships between managerial behaviors, EO and sales growth	550 UK SMEs	Managerial focus on performance negatively related to EO
Antoncic and Hisrich (2004)	Contingency testing	477 Slovenian firms	Confirmation of prior research findings
Wiklund and Shepherd (2005)	EO impact on performance	465 Swedish SMEs Performance measured by profit growth in three consecutive years	Small business performance depends on EO and access to financial capital
Jantunen *et al.* (2005)	Aligning EO, dynamic capabilities and international performance	217 Finnish manufacturing and service firms	Stressing the role of capabilities reconfiguration
Antoncic (2006)	Diversification in EO strategy making linked with performance – normative model	449 Slovenian firms	Western theory and predictive models may not be as powerful in all contexts (transition economies)
Tang *et al.* (2007)	Impact of ownership type on the relationship	166 Chinese firms	Confirms prior research, stronger relationship among state owned firms

Madsen (2007)	Hypothesis developed to test changes in EO over time (three years)	168 Norwegian SMEs Performance compared to competitors and employment growth	Long term performance affected by inimitable resources
Lim *et al.* (2008)	EO impact on performance	374 Spanish firms, transport sector	Systematic short term practices as a moderating factor of EO performance relationship
Andersen (2010)	Critical analysis of past research	Literature review	EO firm performance complicated and general correlation challenged by author
Kuratko *et al.* (2009)	Correlates of corporate venture performance	72 US firms, 145 internal corporate ventures	Qualitative data on factors influencing corporate venture performance
Van Doorn and Volbeda (2009)	Role of senior management	346 firms in the Netherlands	Senior management team as important moderator
Rauch *et al.* (2009)	Meta-analysis	53 samples form 51 studies	EO related with performance at r = 0,242
Obloj *et al.* (2010)	Dominant logic	97 Polish firms Subjective measures of performance	External orientation, proactiveness and simplicity of routines positively influence the EO performance relationship
Kreiser and Davis (2010)	Model of sub dimensions of EO and firm performance	Conceptual paper	Organizational structure will moderate the relationship between EO sub dimensions and firm performance
Frank *et al.* (2010)	Testing both contingency and configuration model – replication study	85 Austrian SMEs Sales growth and cash flow growth compared to competitors (subjective measures of performance)	EO not a universal tool, relationship influenced negatively by a mix of hostile environment and low access to capital
Engelen *et al.* (2012)	Moderating role of leadership behaviors	790 SMEs from six countries	Regardless of national setting, four leadership behaviors positively affect EO firm performance relationship
Wales *et al.* (2013)	Moderating role of capabilities	258 Swedish SMEs	Communication technology and network capability determine the returns of EO to firm performance

Source: own study.

Theoretical approaches to organizational performance and effectiveness include concepts such as the *goal approach* and the *system resource approach*. The goal approach measures progress toward attainment of organizational goals. The system resource approach assesses the ability of the organization to obtain resources to maintain the organizational system (Yuchtman and Seashore, 1967). Both focus solely on a single dimension: attainment of goals or resources.

Among the suggested approaches, the goal approach is most widely used because the output goals can be readily measured. The current study focuses on the goal approach, which reflects the owner–manager point of view (Pfeffer and Salancik, 1978) and is most relevant to small ventures because of the dominant role of the entrepreneur in determining the performance of the venture. Furthermore the goal approach seems to better fit small entrepreneurial ventures with a significant representation of self-employed entrepreneurs or lifestyle family-owned businesses like the ones of the wine sector.

2 Cluster

2.1 Agglomeration

Clusters are defined as *geographic concentrations of interrelated companies and institutions in a particular sector that foster entrepreneurship and innovation* (Porter, 1998), particularly in knowledge industries (Asheim and Cooke, 1999; Cooke and Morgan, 1998; Longhi, 1999; Niosi, 1999). Spatial concentrations of businesses are usually presented as contexts that bolster social proximity, collaboration and innovation (Alecke *et al.*, 2006).

It is generally acknowledged that firms that belong to regional clusters achieve superior innovation and economic performance (Alfred and Marshall, 1920; Allen, 1983; Piore and Sabel, 1984; Aydalot and Keeble, 1988; Pyke *et al.*, 1990; Becattini, 1991; Krugman, 1991; Audretsch and Feldman, 1996; Storper, 1997; Scott, 1998; Lawson and Lorenz, 1999; Baptista, 2000; Cooke, 2001; Capello and Faggian, 2005). However, within this well established and large literature, there is a lack of consensus about what makes regional clusters special.

A central tenet of contemporary studies on regional clusters is that geography per se does not guarantee firm success (see *e.g.* Boschma, 2005; Tallman and Phene, 2007) and that it is the social networks that are generated across cluster organizations that explain at least part of their innovativeness (Owen-Smith and Powell, 2004; Smith-Doerr and Powell, 2005; Singh, 2005; Whittington *et al.*, 2009).

Firms in regional clusters use diverse types of networks to access knowledge from local and distant actors. Distant ties are important to increase the variety of knowledge sources in the local context and to avoid the cluster formation becoming a technology trap. Local ties, which are one of the foci of this thesis, bring other benefits.

First, local ties are typically high value in terms of the quality of the knowledge they channel, which is often rich, fine-grained and tacit – *i.e.* "capable of transmitting subtle cues" (Bell and Zaheer, 2007). Its richness derives from the geographical proximity of managers and workers who are able to meet face to face to discuss problems. Ambiguous and uncertain problems are more easily resolved through direct observation and confrontation.

Second, workers operating in similar environments are likely to encounter context-specific problems and are more able to develop the expertise required to resolve them. The recombination of local skills and knowledge through social networking enables unique solutions, which, in many cases, are at the basis of firms' product differentiation and innovation strategies. Thus, the embeddedness of firms in local social networks is considered crucial for their upgrading and innovativeness (McDermott *et al.*, 2009; Perez-Aleman, 2011).

Mainstream literature on clusters and networks considers geographic proximity to be a driver of innovation. Indeed, geographical proximity promotes and makes cooperation easier between local players and therefore enhances individual and regional capacity to innovate, which explains the widespread development of clusters.

Multidimensional proximity explains how networks and clusters emerge, collaborate and innovate, with a traditional and strong focus on the role of geographic proximity. Even in virtual and delocalized networks, where cognitive, organizational and social proximities are the main drivers of collaboration and innovation, geographic proximity plays a positive role (Hausmann, 1996; Howells, 2002). For example, the Silicon Valley cluster succeeds in generating angels and serial entrepreneurs and a regenerative collaborative venture capital market, particularly in the ICT[6] industry (Eisenhardt and Forbes, 1984; Silva da Rosa *et al.*, 2012).

Much of the recent work on clusters, networks and ecosystems has emphasized how spatial proximity enhances collaboration and innovation (Lagendijk and Oinas, 2005). Porter and his associates (Furman *et al.*, 2002; Porter and Stern, 2001) argued that the choice of a geographic location for the establishment of R&D facilities remains important despite the dissemination of and global access to knowledge through the Internet. Highly innovative regions such as Silicon Valley are dynamic because of the quality of the industrial clusters located in the area and the presence of basic and applied research institutions. Furthermore, the wealth of local communications in terms of both knowledge and ideas is a very important comparative advantage. Hence, leading firms agree to invest in these clusters because they anticipate success in terms of innovation.

Location also matters in more traditional networks. Italian industrial regions (Harrison, 1994) based on networked and specialized organizations promote collaboration. These regional industrial networks are harbingers of clusters (Ebers and

[6] ICT: Information and Communication Technology.

Jarillo, 1998). Privileged access to government regional economic policies and measures, access to natural resources, local market and to other firms' complementary skills as well as a competent labor supply are among proximity advantages. Other advantages include a shared local business culture that favors cooperation behavior (Storper, 1999). Indeed, geographic proximity of firms fosters social interaction, trust building and hence knowledge spillover and innovation (Boschma, 2005).

Traditional literature explains how too much closeness impedes creativity (Boschma, 2005), but never suggests that closeness would obstruct communication and collaboration. Studies need to address these questions as they present new theoretical assumptions on:

a) the specific role of different proximities;
b) how the different proximities relate to each other;
c) clusters' conditions of success and failure.

These questions also aim to shed further light on the relevance of differentiating between spontaneous and institutionalized clusters of innovation and on the need to better understand the role of social, geographic, institutional, organizational and cognitive proximities in fostering collaboration and innovation.

The literature suggests a multidimensional approach to the notion of proximity. Boschma (2005) defines five types of proximity:

a) cognitive,
b) organizational,
c) social,
d) institutional,
e) geographic.

Cognitive proximity tends to consider the similarities in the way actors perceive, interpret and evaluate the world (Nooteboom, 2000) and it facilitates effective communication as people share the same knowledge base and expertise (Boschma, 2005). However, a high cognitive proximity may lead to a status quo as people share the same paradigms and are less able to explore or exploit new knowledge. At the same time, too much cognitive distance leads to problems of communication (Nooteboom, 2000).

Organizational proximity is defined as the nature of relations between the actors, ranging from weak ties (autonomy) to a joint venture or a well-coordinated and

interdependent ecosystem of innovation (control and interdependence) (Torré and Gilly, 2000; Moore, 2006). Organizational proximity fosters cooperation and knowledge spill over, as firms are highly connected to each other. While too much bureaucracy and hierarchy could lead to a lack of intra- and inter-organizational learning (Saxenian, 1994), low control and coordination could impede collaboration and innovation (Boschma, 2005). Organizational proximity is often leveraged with social ties, or social proximity.

Social proximity has its roots in the social embeddedness literature (Granovetter, 1985). This component refers to the individuals' levels of relationships and includes trust based on friendship, kinship and experience (Boschma, 2005). Social proximity facilitates communication, knowledge transfer and collaboration as individuals develop social relationships based on trust and mutual commitment. While distance is an obstacle to collaboration, too much social proximity could lead to a locked or closed community of people and could be the source of deception. Sharing of key information presents opportunistic risks. However, opportunism depends also on the macro or institutional context.

Institutional proximity refers to the social and cultural norms that regulate the business and non-business relationships in a specific context. Social and organizational forms of proximity are thus linked to institutional proximity (Boschma, 2005). Indeed, institutional proximity creates effective communication and collaboration and enhances the social and organizational proximities. However, too much institutional proximity does not stimulate innovation.

Geographic proximity finally represents the physical distance between the players (Howells, 2002).While short distances favor interaction, networking, collaboration and innovation, long distances require more complementary proximities to achieve closeness (Boschma, 2005). Recent works on ecosystems of innovation (Iyer and Davenport, 2008; Moore, 1996; Siegel and Renko, 2012) highlight the role of interdependence rather than geographic proximity to explain collaboration and innovation. However, the geographic proximity still plays a positive role and location still matters.

All these proximities are interrelated. For instance, geographic proximity positively affects cognitive proximity (Parra-Requena *et al.,* 2010). A high social and cognitive proximity can reduce knowledge distance between business partners (Boschma, 2005), broadening their common knowledge base and expertise. Some authors introduce relational proximity, which refers to both social and cognitive inter-organizational proximity (Nooteboom *et al.*, 2006). Therefore, relational proximity facilitates knowledge

acquisition, particularly of the tacit type, since involved agents act in a very similar way (Storper, 1999). The knowledge industries and ICT in particular gather in collaboration advantages when customers, partners, competitors and all stakeholders cooperate to co-innovate (Chesbrough and Appleyard, 2007). Both knowledge management (Ashworth, 2012; Messeni *et al.,* 2007) and economic geography (Boschma, 2005) present cognitive proximity and geographic proximity as facilitators of learning, knowledge creation and collaboration (Hautala, 2011).

Studies reveal that in competitive contexts entrepreneurs could reject the *local clustering* and prefer *global and foreign networking* for the same category of service providers. Thus, geographic proximity needs to be complemented with social proximity to generate innovation. On the other hand, the findings suggest that public– private clusters are less prone to collaboration and to innovation. In fact, they rely more on exogenous proximities (geographic, organizational, cognitive and institutional) and less on the endogenous social proximity, while private spontaneous networks require social proximity from the beginning

As Kauffeld-Monz (2009) suggests, an innovation network follows an inverted-U shaped relation between proximity and information and knowledge acquisition over time. Organizations are more likely to interact when they belong to the same spatial area (Balland, 2012).

The literature starts to recognize the need to identify the conditions under which clusters collaborate. Too little closeness would harm collaboration, and too much closeness would facilitate collaboration but at the same time would reduce the potential of newness and innovation (Boschma, 2005). Thus, geographic proximity combined with product differentiation among local players (Nachum and Wymbs, 2005) nurtures the other proximities and explains why some clusters flourish. Recently, some authors shed light on collaborative entrepreneurship, which requires the development of social relationships in both local and the global contexts (Ribeiro-Soriano and Urbano, 2009; Tuan, 2012) and could determine the success or failure of clusters (Castells and Hall, 1994). Thus the social proximity (Boschma and Frenken, 2010) based on local and global collaboration is more important than cognitive and geographic proximity.

Social, organizational, cognitive, institutional and geographical proximities facilitate interaction, collaboration and knowledge spill over. First, geographic proximity does not matter for some ICT clusters, whose networks appear to be more global than local and whose workers do not engage nor believe in local clustering (Huber, 2012).

Second, social proximity overcomes geographic distance and creates collaboration and innovation in a context of global networks.

An extensive body of research has highlighted that interactions within a regional cluster provide an effective platform for learning and innovation (Feldman, 1993; Gilbert, *et al.,* 2008; McCann and Folta, 2011). Firms within a cluster are usually a close-knit group that may include competitors, producers, suppliers, and distributors. Given their geographic proximity, these firms exhibit a high degree of interconnectedness between themselves and with local institutions such as government agencies, research institutes and universities (Porter, 2000). They benefit from the economies of agglomeration and joint action, giving them collective efficiency and therefore a competitive advantage over firms that are not co-located within a cluster (Schmitz, 1995).

Scholars have increasingly emphasized that being part of a geographically concentrated cluster enables a firm easy access to new ideas partly due to the localized nature of knowledge spillovers (McCann and Folta, 2011). This follows the Schumpeterian view in which knowledge creation is conceptualized as a process of knowledge sharing within an actor's network. This view that knowledge is tacit and embodied in individuals has inspired research into knowledge sharing through face-to-face interactions in regional clusters (Nonaka and Takeuchi, 1995; Polanyi, 1966).

A cluster is a particularly relevant platform for knowledge sharing in that it ensures trust and cooperation, contributing to collective learning, synergies and smooth exchange of knowledge. It therefore creates an informal network of organizations as proximity increases visibility and firms may easily get referrals from their existing partners to help form new partnerships (Gilsing *et al.,* 2008). The degree of trust these informal ties provide is so high that it is common for firms in a cluster to visit their competitors' factories in order to gain know-how and new insights (Nadvi, 1999). These benefits are not so easily accessed by firms that are located further away from the cluster. Clusters are therefore a significant locus of local economic development (Giuliani, 2002).

Empirical research has shown that firms that are part of a regional cluster are more successful, in terms of both innovation and profit, compared to similar firms that are not part of a cluster (Caniels and Romijn, 2005; Oerlemans, *et al.,* 2001; Schoales, 2006; Simmie, 2004). Caniels and Romijn (2005) show that ICTs expedite the flow of knowledge between the participating firms, enhancing their innovative capabilities. Creative clusters are shown to contribute to local economic development by enhancing firm productivity, thereby supporting high local wages (Schoales, 2006). Almeida and

Kogut (1999) found that the development of clusters in the U.S. computer industry in the 1980s led to increased innovation and industry rejuvenation. Gemser and Wijnberg (1996) found that the competitive strategy of the Italian furniture industry involved continuous improvement and product differentiation. This was made possible by the presence of industrial districts consisting of a network of SMEs and loosely organized families. Studies in the context of emerging economies are far fewer, but they too suggest that clusters enhance the competitive advantage of SMEs (Caniels and Romijn, 2003; Schmitz and Nadvi, 1999).

2.2 Evolution of the concept of cluster

Clusters existed long before the industrial revolution – silk in China and trade services in the cities of the Hanse are some examples. "During and after the industrial revolution clusters magnified and multiplied: steel and shipbuilding in Glasgow, cars in Detroit, watches in Switzerland, machinery in Southern Germany, to name but a few" (Steiner, 1998). Nowadays, clusters are found in both developed and developing countries, including all industry types and typical placeless ones such as telemarketing in Omaha, call centers in Sydney, and software in Bangalore (Enright, 2001).

This variety of clusters poses a problem of definition[7]. For example, clusters have been defined (either implicitly or explicitly) by some authors as a *geographically proximate group of firms producing basically the same product or service* (Marshall, 1966; Arthur, 1990; Sorenson and Audia, 2000); by others, as a *group of interrelated industries* (Porter, 1990) *located in close geographic proximity* (Porter, 1998); by others as *networks of firms, specially SMEs* (Becattini, 1989), and *related institutions within geographical boundaries* (Saxenian, 1994); by still others *as groups of firms using the same core technology and linked to other groups of firms on the basis of technology* (Tushman and Rosenkopf, 1992; Wade, 1995).

[7] For a review of different current definitions of clusters and related concepts see Bergman and Feser (1999), OECD (1999), and Martin and Sunley, 2002. Given the vagueness of the cluster concept, many authors have proposed typologies of clusters outlining different criteria to classify different forms that clusters may take. These typologies can be found in Roelandt and Hertog (1999), who use different levels of analysis; Gordon and McCann (2000), who use different theoretical perspectives; Markusen (1996), who uses different cluster's configuration; Asheim (1997), who uses different degrees of innovative capabilities; Cullen (1998) who defines different elements in organisational learning within SME clusters; and Rosenfeld (1997), Porter (1998), and Enright (2001), who employ different stages of cluster development. Finally, although typologies can be seen as a form of theory (Doty and Glick, 1994), some of the previous types of cluster overlap and are difficult to measure empirically. For this reason, many authors argue that clusters should be characterised along relevant dimensions if they are to be distinguished. This latter approach is found in Jacobs and de Man (1996); Maillat (1996) and Enright (2001).

However, it is necessary to have a framework to link these different dimensions of clusters. To that end, this section addresses the historical evolution of the cluster concept and reviews the main schools of thought that both gave shape to current conceptualizations of clusters and provided different answers to the question about clusters and development. The following sections group different schools of thought around the most important stages in the evolution of the cluster concept.

2.3 Genesis – Industrial districts and external economies (1890–1920)

The work of Marshall (1966) on localization economies is recognized as the point of departure of the current literature on clusters. Marshall's rationale for what he called *industrial districts* is associated with the role of the localization of industry – *i.e.* "concentration of small businesses of a similar character in particular localities" (Marshall, 1966) – in generating external economies of scale. These economies are external to the firm but internal to the geographic area, and increase the efficiency of each individual firm.

Four main forms of external economies[8] can be found in Marshall's work:

a) economies of specialization arising from inter-firm division of labor in complementary activities;
b) economies of labor supply arising from the local pool of specialized labor;
c) economies of information and communication arising from the joint production of no-standardized commodities and the presence of local subsidiary trades;

[8] Economists, geographers, and planners distinguish *localization economies* – *i.e.* those that result from proximity among firms belonging to the same industry or close related industries – from *urbanization economies* – *i.e.* those that result from general urban advantages (Hoover, 1937). Within the former, there is a distinction between agglomeration or *location theory* and *external economies perspective*. Location theory calls the benefits of co-location *agglomeration economies* and argues that they are the result of either the size of the industry (Hoover, 1937; Isard, 1956) or the structure of the industry (Chinitz, 1961). External economies perspective is rooted in Marshall's work on industrial district (Feser, 1998). While agglomeration economies are a kind of external economies that emerge from large concentrations of economic activity, external economies not necessary emerge from agglomerations. Researchers who define clusters as concentration of firms within single or close related industries (Sorenson and Audia, 2000; Lomi, 2000) follow an agglomeration approach. By contrast, researchers who define clusters emphasizing their regional, social and inter-industrial dimensions (Camagni, 1991; Saxenian, 1994) use components of both the agglomeration and external economies approaches as well as sociological constructs such as embeddedness of economic activity. For a review of the literature on different explanations of the clustering of economic activity see Harrison (1992), Feser (1998), and Glasmeier (2000); for a review on the debate between specialization vs. urbanization effects see Glaeser *et al.* (1992), Audretsch (1998), Glasmeier (2000), Feldman (2000), and Rodriguez Pose (2001). Important elements of clusters are not only spatial proximity but also inter-organisational relations and the knowledge and social base underlying clusters dynamics. In this sense, every cluster is an agglomeration, but not every agglomeration – such as cities or a single concentration of firms – is a cluster (DTI, 2001).

d) acquisition of specialized skills and the promotion of innovation and innovation diffusions – in modern terminology technological spillovers – arising from both the mutual knowledge and trust and the industrial atmosphere created within the district through frequent interchange between local actors (Marshall, 1966; Zeitlin, 1992; Martin and Sunley, 2002; Malmberg and Maskell, 1997; Asheim, 2000)[9].

Marshall's industrial district perspective has five main features.

First, the historical reference of comparison is the internal economies of scale of large firms that spawned after the second industrial revolution. This explains why only interdependent small firms, which through an extensive division of labor in complementary activities generate economies of specialization, integrate Marshallian districts.

Second, these economies of specialization increase the efficiency of the SMEs. Although Marshall links his macro-analysis of growth to his microanalysis of increasing returns to firms and industries (Rostow, 1990), the focus is on the individual small firm's efficiency as a result of the external economies created within the district.

Third, proximity is a precondition for the emergence of small firms' interlinked activities that generate economies of specialization, which, in turn, increase SMEs' efficiency.

Fourth, spillovers, mutual knowledge and trust that emerge from interdependences among specialized actors in close proximity are the socio-cultural factors of the district. Amazingly, the founder of neo-classical economics has set the basis to analyze the non-economic dimension of clusters that has received much attention since the resurgence of the concept of cluster in the 1970s.

Fifth and finally, there is neither indication of how the process of industrial localization starts, nor mention of why it starts in certain places and not in others (Martin and Sunley, 2002).

2.4 Impasse – The prevalence of mass production (1920s–1970s)

Marshall's seminal work on industrial districts is the starting point of almost all of the subsequent theoretical proposals on clusters. However, there was an impasse of more

[9] These external economies are often referred to as the supply side of the benefits of clustering (Baptista and Swann, 1998). However, Marshall also mentions some demand side benefits of clustering as a function of the type of products. In effect, "shops which deal in expensive and choice objects tend to congregate together; and those which supply ordinary domestic needs do not" (Marshall, 1966).

than half a century between Marshall's work and the renewed interest in clusters in the early 1970s. This lack of interest can be explained by the preponderance, between 1920s and 1960s, of the vertically integrated corporation drawing on internally generated scale economies to produce standardized goods for a predictable market (Amin, 2000). As Scott and Storper (1982) point out, "many leadings industrial sectors were converted to mass production methods" and "various institutions and practices were constructed to regulate the social and economic effects of mass production".

Although important in their respective areas, only few studies were tangentially related to the cluster phenomenon. One of them is Perroux's work on development and growth poles, considered as one of the antecedent of the *filière - value chain - approach* in the 1970s in France (Steiner, 1998); another one is related to agglomerative and spatial complexes (Czamanski and Czamanski, 1977; Czamanski and de Ablas, 1979).

The first stream focuses on the economic dimension of clusters – *i.e.* economic linkages among firms – and is intrinsically non-spatial. For Perroux there is no reason to link the spatial space and the economic space (Feser, 1998). However, Perroux's idea of propulsive industries for growth is an antecedent of Porter's focus on successful industries in international markets to define the most competitive clusters (Porter, 1990).

The second stream – *i.e.* spatial complexes – focuses on the concept of industry complex – *i.e.* group of industries connected by important flows of goods and services – and shows that industrial agglomerations emerge as a result of not only a common attraction to urban centers but also interaction among several industries (Steiner, 1998).

Both streams differ from the Marshallian one in that the latter is characterized by independent small firms, while both growth poles and industrial complexes encompass large companies. In particular, large firms are the motors of growth poles due to their supposed greater innovative capacity than that of small firms, generating a pole output larger than in the rest of the economy (Asheim, 2000).

2.5 New Industrial Districts – The crisis of mass production (1970s–1980s)

In the late 1970s and early 1980s there was a renewed interest in industrial districts. The main reason for this interest was the impact of the drastic changes in the economic, technological, institutional, and political contexts since the mid-1970s on the

prevalent industrial organization model at that time – *i.e.* mass production or independent large firm-based industrial system.

The suspension of free convertibility of dollar into gold in 1971, the oil crisis in 1973, the IT[10] revolution initiated with the invention of the microprocessor in 1971, the declining power of organized labor, and the liberalization process initiated by neo-liberal governments in U.S. and U.K. during the 1980s, are only some of the key facts that impassed pressure on the Keynesian model of growth and its related industrial organization system based on large firms and mass production – *i.e. Fordism*. The intrinsic rigidity of this system was incompatible with the fast pace of change in the environment, resulting in an increase of unemployment.

At the same time, several industrial regions such as the Central and Northeast Italian regions and Southern California and the Bay Area in U.S., based on vertical disintegration, inter-industrial networks, and local labor markets arouse outside the heartlands of mass production (Storper and Scott, 1989). Therefore, a shift of emphasis from mass to flexible production and from independent firm-based to regional network based systems – *i.e.* clusters – took place.

All these changes, together with their social, economic, institutional, and geographical consequences are well documented in the literature (Piore and Sabel, 1984; Scott, 1988; Storper and Scott, 1992; Saxenian, 1994; Nohria, 1996; Castells, 2000), and were analyzed through several theoretical perspectives or schools of thought. Each of them has shaped the cluster concept and its relationship to development in different ways. The most important schools are the *Italian School*, the *Institutional* or *Flexible Specialization School* and the *Californian School*.

The *Italian School* (Becattini, 1979, 1989; Brusco, 1992; for a review, see Pyke *et al.*, 1990; Pyke and Sengenberger, 1992; Cosentino *et al.*, 1996) applied Marshall's framework to interpret the small-firm development in the Central and Northeast Italian regions. However, this school extended and modified Marshall's original ideas, specially the historical and territorial specific socio-cultural factors driving external economies. Becattini (1990) contend that the unit of analysis should change from firms and sectors to industrial districts – cluster of interconnected firms located in a small area. In other work he emphasis the socio-economic dimension of industrial districts, in which "community and firms tend to emerge". From this perspective, the industrial district is a "socio-

[10] IT: Information technology.

territorial entity which is characterized by the active presence of both a community of people and a population of firms in one naturally and historically bounded area" (Becattini, 1990). Both the change of the unit of analysis from firms and industries to industrial districts and the focus on socio-economic factors underlying their emergence have led to emphasize the impact of industrial districts not only on firm efficiency but also on local economic development. Given that industrial districts are composed mainly by SMEs, firm efficiency is increased due to the benefits of external economies of scale and scope. Regarding local development, it is fostered by both SMEs' shared vision and organization according to several principles. Among these principles are local networks, entrepreneurship, flexibility, collective efficiency, and the existence of trust (Sengenberger and Pyke, 1992). This endogenous development view differs from the neo-classical one, in which financial resources and imported technology is seen as the key sources of development. The socio-economic notion of the district was extended by sociologists such as Bagnasco and Trigilia who highlighted the impact of historical family and political inheritances (Zeiltin, 1992).

In short, the *Italian School* emphasized two dimensions: first, the focus on both the success of the community of firms and the individual small firms efficiency; second, the success of the districts not only on economic factors but also and mainly on historical and territorial specific socio-cultural ones.

However, the *Italian School* faces two main weaknesses. First, its generalizations are based on Italian examples that have long historical roots difficult to replicate (Amin and Robins, 1990; Zeiltin, 1992). Second, the diversity of industrial districts both inside and outside Italy challenge the idea of a canonical model based on successful localized Italian SMEs (Zeiltin, 1992; Rabellotti, 1995; Rabellotti and Schmitz, 1999).

A second school of thought analyzed the resurgence of industrial districts from an *institutional perspective* (Piore and Sabel, 1984; Sabel and Zeitlin, 1985). Its central claim that "we are living through the second industrial divide. (...) [We] see two potential contradictory strategies for relaunching growth in the advanced countries. The first strategy builds on the dominant principles of mass-production technology (...). The second strategy veers sharply from established technological principles and leads back to those craft methods of production that lost out at the first industrial divide" (Piore and Sabel, 1984). This second strategy called flexible specialization (Piore and Sabel, 1984). Generalizing from the industrial districts of Italy to other cases, especially West Germany, the authors argue that small innovative and sectorally focused firms an

alternative to the mass production model and its resulting dependence on big firms, and therefore a solution to foster growth and employment. Although Piore and Sabel acknowledge the convergence between big and small firms, they associate their flexible specialization model to the vertically disintegrated, small firm industrial system, as in the case of Marshall and the *Italian School*.

The main contribution of the *Flexible Specialization School* to the evolution of the cluster concept is the argument that the industrial district is an important spatial manifestation of the flexible specialization model. The need for inter-firm collaboration and trust gives rise to the tendency for spatial agglomeration. Therefore, it acknowledges that dynamics forces for economic growth such as technological learning are localized and territorially specific, with specific institutions playing an important role (Storper, 1997). This latter line of reasoning was developed some years later by Amin and Thrift (1994), who developed the concept of institutional thickness to refer to the existence of relations between development institutions, firms and organizations, and politicians.

A third school of thought that emerged in the 1980s was the *Californian School* (Scott, 1988; Storper and Scott, 1989). Focusing on the peculiarities of the industrial geography of Southern California and the Bay Area in U.S., this school proposed a transaction cost view of clustering. The argument is that uncertainty is met via externalization of activities leading to vertical disintegration of production chains either to minimize risks or to maximize the benefits of specialization. However, this vertical disintegration increases transactions among firms leading to an increase in transactions costs. To overcome this issue, firms cluster geographically materializing flexible production complexes. Therefore, agglomeration of firms is the result of the minimization of inter-firm transaction costs (Scott, 1988; Storper, 1997).

This model extends the original flexible specialization model and contributes to the evolution of the cluster concept in two dimensions. First, it includes not only SMEs but also large firms. Second, it allows any mix of sectors rather than only manufacturing (Storper, 1997). However, one of the main shortcomings of the transaction cost explanation of the clustering process is its focus on traded interdependences. These input-output relations between firms are not enough to explain clustering in some capital-intensive and high technology sectors. For example, Liebeskind *et al.* study of the biotechnology sector in California shows that the sourcing of the most critical input in this industry – *i.e.* knowledge – is based on social networks rather than on market transactions (Liebeskind *et al.*, 1996). Some years later, Storper argued that there another

and more important reason than traded interdependencies for the agglomeration of firms: the existence of untraded interdependencies, "which take the form of conventions, informal rules, and habits that coordinate economic actors under conditions of uncertainty" (Storper, 1977) and constitute region-specific assets in production. Thus, the original transaction cost economics framework that focused on localized input-output transactions is complemented with a sociological approach to analyze localized untraded relations. This is another application of the sociological factors – and trust – mentioned by Marshall.

2.6 Territories, globalization and technological change (1990s onward)

In the late 1990s two contextual features extended the importance of the cluster phenomenon: the heightening of the globalization process (Held *et al.*, 1999) and radical technological change (Longhi and Keeble, 2000). Both processes have made the geographical and network-innovation dimensions of clusters more prominent. This increasing interest in clusters amid globalization and technological change is, at a first glance, counter intuitive. How are clusters explained in a context of increasing globalization? Why should geographic location matter when drastic technological changes have reduced transportation and communication costs and barriers?

The traditional explanation for the co-existence of globalization and clustering of economic activity hinges its roots in the title of the third chapter of *Book* I of the *Wealth of Nations*: "the division of labor is limited by the extent of the market" (Smith, 1999 (1776)). This means that regional specialization depends on globalization (Steiner, 1998). Therefore, "globalization will be accompanied by more, rather than less, specialization; and hence, by implication, will lead to further spatial concentration of such activity" (Dunning, 1998).

Although important, the principle of specialization does not explain the kind of activities that will be concentrated in clusters. To get a more specific explanation, it is useful to distinguish between traditional and modern theories of trade. *Traditional trade theory – i.e.* Heckscher-Ohlin model – is based on Ricardian comparative advantage, and argues that nations will specialize in those industries in which they have comparative factor advantages. The relative factor endowments of different countries are thus the main reason for international trade and specialization. Therefore, the principle of comparative advantage states that countries with dissimilar resource endowments will exchange

dissimilar goods. This theory, which is based on conditions of perfect competition and relative immobility of factors of production, helps to explain only part of world trade – inter-industry trade between developed and developing countries.

However, much of the world trade is between countries with similar factor endowments; besides, they exchange very similar products (Storper and Chen, 2000), which are based on knowledge-intensive activities (Dunning, 1998). This intra-industry trade is essentially a result of both consumer desires for diversity in the choice of products and internal economies of scale (Armstrong and Taylor, 2000). This means that competition is based on innovation, quality and dynamic efficiencies – *i.e.* those depending of the rate of learning and the capacity for innovation – rather than on low cost.

Given that knowledge spillovers, a key element of the innovative activity, tend to be spatially restricted (Audretsch and Feldman, 1996), especially when they are based on informal or social ties (Audretsch and Stephan, 1996), it turns out that globalization triggers the clustering of economic activity via the concentration of innovation, making local regions a key source of advantage (Audretsch, 2000). In sum, globalization triggers regional specialization and concentration of innovative activity. These, in turn, have a positive impact on trade. This process relies on competitive advantage, external economies, increasing returns to scale, and non-economic factors rather than on comparative advantage, low costs, and perfect competition.

Within this context, the cluster literature has divided into two streams in the 1990s: the *economic* one, which highlights the economic externalities mentioned by Marshall; and the *socio-economic* and *innovation* one, which highlights the territorial, social, institutional, and cultural factors underpinning cluster dynamics. This latter approach is called the *network paradigm* (Powell, 1990; Conti *et al.*, 1995) and is characterized by both the opening of the black box of territorial specificities and the measuring of innovation externalities that occur within clusters.

Porter's *theory of competitiveness* (Porter, 1990, 1998, 2001) and Krugman's *new economic geography* (Krugman, 1991) fall into the economic stream.

The second stream encompasses the *innovative milieu school* (Aydalot, 1986; Camagni, 1991; Maillat, 1996), the *Nordic School of innovation and learning* (Lundvall and Johnson, 1994; Malmberg and Maskell, 1997; Lundvall and Maskell, 2000), the *geography of innovation approach* (Jaffe, 1989; Feldman, 1994; Audretsch and Feldman, 1996; Audretsch and Stephan, 1996; Zucker *et al.*, 1998), and the *cultural-institutional*

approach (Di Maggio and Powell, 1983; Powell, 1990; Saxenian, 1994; Ingram and Roberts, 2000)[11]. Each of these schools of thought are analyzed below.

2.6.1 Economic stream

Porter's *theory of competitiveness* (Porter, 1990), which some authors consider as the starting point of the current renewed interest in clusters (Rosenfeld, 1997; Steiner, 1998; Martin and Sunley, 2002), has been adopted by several regional and national governments and international organisms to foster competitiveness. Porter (1998)defines clusters as "a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities". He proposes a framework to analyze firm productivity and regional/national competitiveness where location is a main source of competitive advantage within a context of a global economy. In effect, "the roots of productivity lie in the national and regional environment for competition"; "(the) presence of clusters suggests that much of competitive advantage lies outside a given company or even outside its industry, residing instead in the *locations* of its business units" (Porter, 1998).

How location affects firm's productivity and regional/national competitiveness? The author argues that these outcomes are strongly influenced by the *quality of the business environment* (Porter, 1998). This business environment is created through the interactions between four factors – *i.e. Porter's diamond* (1990, 1998): context for firm strategy and rivalry; factor (input) conditions; demand conditions; and related and supporting industries.

These factors are enhanced when the concerned firms are geographically localized (Porter, 1990). The development of and the interaction between the factors of the competitive diamond enhance competitiveness in three ways: improving productivity,

[11] It is hard to differentiate these four schools of thought given that they share several assumptions regarding territorial specificities and the role of socio-economic factors in the working of clusters. For example both the *innovative milieu* and the *Nordic schools* argue that innovation, which is key to foster competitiveness, is an interactive learning process in which cooperation and mutual trust is enhanced by proximity. This interaction between innovation and territorial proximity generates learning regions where knowledge spillovers, the central focus of the *geography of innovation approach*, play an important role. The tacit nature of knowledge makes the social and cultural features of the local environment an important factor to explain innovation and entrepreneurial dynamics' differentials across regions, which is explained by the *cultural-institutional approach* to clusters. However, in an effort to differentiate the different schools, it could be said that while the *innovation approach* to cluster analyses geographical proximity in terms of its impact on innovative activity, the *cultural institutional* approach stresses the embeddedness of economic activity in particular social and institutional settings to explain the ability of firms to adapt to increasing globalization and technological change.

fostering innovation, and facilitating the commercialization of innovation by easing the creation of new firms (Porter, 1998; 2001).

It is important to distinguish Porter's view of clusters in 1990 from his conceptualization of clusters in the late 1990s. In his 1990's book the author defines clusters in sectorial terms – *i.e.* industries related by vertical and horizontal links. The literature calls this conceptualization *sectorial cluster* (OECD[12], 1999; DTI[13], 2001; Sternberg, 1991). Although Porter acknowledges the importance of regions, clusters are defined mainly as an *industrial* rather than a *territorial phenomenon*[14].

In contrast, Porter's definition in 1998 is more comprehensive and includes three main dimensions: the *sectorial*, the *geographical*, and the *network* ones. Porter's reference to economic geography (Porter, 1998) and to socio economics stresses the importance of these latter two new dimensions. Despite the inclusion of the regional and network dimensions in his conceptualization of clusters, the methodology to define clusters is still similar to that of 1990: the first step is the creation of an industrial cluster template based on industrial interdependences and the second one is the application of this cluster template to different regional levels (Porter *et al.*, 2001). Therefore, although territorial as well as socio cultural specificities are acknowledged in Porter's conceptualization, these important factors are exogenous in his model. In other words, the specific causal mechanisms that link territorial and socio-cultural factors to both the process of clustering and the generation of competitive advantage are not included in the model.

The second school of thought that belongs to the *economic stream* of clusters is the *new economic geography* of Krugman (Krugman, 1991). Stressing that the "most striking feature of the geography of economic activity" is *concentration*, Krugman argues that increasing returns to scale have a "pervasive influence on the economy, and [they] give a decisive role to history in determining the geography of real economies" (Krugman, 1991). Increasing returns affect economic geography at local scale – via the location of particular industries –, urban scale – via the emergence of cities –, and national scale – producing the uneven development of whole regions (the *core-periphery argument*). The existence of increasing returns to scale at the plant level means that

[12] OECD: Organization for Economic Co/operation and Development.
[13] DTI: Department of Trade and Industry UK.
[14] See especially his methodology to define clusters in Porter, 1990 Appendix A, where there is no reference to geographical boundaries. One reason is that with the exception of part of Chapter IV, his analysis is done at the country level.

individual producers are motivated to concentrate geographically their production in order to benefit from the resulting internal economies.

The author explains the reasons for localization of industries in terms of Marshall's sources of external economies – *i.e.* local pool of specialized labor, local subsidiary industries, and technological spillovers (Krugman, 1991). These factors lead to the clustering of economic activity at the local level. At a higher level of analysis, assuming that upstream and downstream producers are subject to increasing returns, as barriers to trade are reduced, "backward and forward linkages tend to concentrate the upstream and downstream producers in a single location" (Krugman, 2000). This market-size effect leads to center-periphery patterns within nations, which produce regional divergence due to a process of cumulative causation. Also, increasing returns at the level of industry or external economies can lead similar countries in terms of factor endowments to specialize in the production of different goods. Therefore, Krugman explains regional specialization and trade in terms of increasing returns and imperfect competition rather than in terms of comparative advantages and perfect competition. However, clustering forces are not the only ones at work. In a latter work, Krugman explains the countervailing dispersion or centrifugal forces: immobile factors of production, land rents, and pure external diseconomies (Krugman, 1998). Therefore, the combination of clustering or centripetal forces and dispersion or centrifugal forces will determine either the concentration or the dispersion of industries.

A clear contribution of Krugman to the cluster literature is the formalization of the causes for agglomeration, trade, and regional growth. However, this same emphasis on formal economic models has led him to set aside important clustering factors such as technological spillovers or flows, which "are invisible; they leave no paper trail by which they may be measured and tracked (...)" (Krugman, 1991). In fact, of all the above mentioned centripetal and centrifugal forces, formal models only include the market-size effects and immobile factors (Armstrong and Taylor, 1999). So far, these models show that geography matters "when it comes to trade, despite the decline over time of transport costs and barriers to trade" (Armstrong and Taylor, 2000). However, as in the case of Porter, there is no indication of the territorial and socio-cultural specificities that are conductive to the clustering process.

2.6.2 Network stream

The focus on innovation and the role of territorial and socio-cultural specificities together with the network dimension highlighted by the *Italian School* is further developed by the network approach to clusters, which includes sociological constructs such as embeddedness (Polanyi, 1944; Granovetter, 1985), social networks (Powell, 1990; Nohria and Eccles, 1992), and untraded interdependencies (Storper, 1997). A first approach within this network stream is the *geography of innovation* one. Its main thrust is to measure knowledge spillovers, which were not analyzed by Krugman. This literature links knowledge spillovers to the geography of innovative activity and demonstrates both theoretically and empirically that knowledge spillovers are important to innovation and tend to be spatially restricted (Jaffe, 1989; Patel and Pavitt, 1991; Feldman, 1994; Audretsch and Feldman, 1996), especially when they are based on informal ties (Audretsch and Stephan, 1996). The spatial link between knowledge spillovers and innovation based on the microeconomic linkages across actors such as scientists and firms is the main contribution of this literature to the cluster approach. However, it says little about how economic activity is organized within a given geographic space (Audretsch, 1998).

Innovative milieu: the second school of thought within the network approach is the introduced by the GREMI group[15]. An *innovative milieu* is a territorially based system of relationships between different economic and social actors that leads to innovation (Aydalot, 1986; Camagni, 1991). This approach emphasizes the importance of inter-firm relationships, territorial socio-economic embeddedness, and dynamic local collective learning process to firm innovative activity (Keeble and Wilkinson, 2000). The *innovative milieu* approach contributes to the evolution of the cluster concept stressing the territorial dimension of networks of multiple actors (firms, governmental agencies and not for profit organizations such as universities) to foster innovation. However, as Storper points out, it does not identify the economic logic by which territorial specificity makes technological and organizational dynamics better (Storper, 1997).

Close related to the *innovative milieu* approach is the *Nordic School of innovation and learning* (Lundvall and Johnson, 1994; Malmberg and Maskell, 1997; Lundvall and Maskell, 2000). This school stresses the concepts of learning economies (Lundvall and Johnson, 1994; Lundvall and Borras, 1998) and regions (Asheim, 1997; Maskell and

[15] GREMI group: *Groupement de Recherche Européen sur les Milieux Innovateurs*, the European Research Group into *Innovative Milieus.*

Malmberg, 1999), which overlap with the concept of national innovation systems (Freeman, 1987; Lundvall, 1992; Lundvall and Maskell, 2000). In fact, it is proposed to see clusters as reduced-scale national (OECD, 1999) and regional (OECD, 2001) innovation systems.

These streams of the literature stress the role of knowledge as a strategic resource and learning as a key process of economic development. The argument is that knowledge has an informal and tacit (Polanyi, 1967) dimension. This type of knowledge is embedded in the social and territorial context and therefore is difficult to codify and transfer through formal mechanisms. This means that informal personal contact is necessary in order to transfer knowledge, which leads to the geographical concentration of innovators. Therefore, non-market factors such as sociocultural, institutional, and political ones appear as paramount for cluster dynamics (Saxenian, 1994; Malmberg and Maskell, 1997). Sociological constructs such as embeddedness of economic activity (Polanyi, 1944; Granovetter, 1985) and social capital (Coleman, 1988) appears to be the major driving forces underlying innovation.

These sociological factors are the foci of the *cultural-institutional approach* to clusters (Di Maggio and Powell, 1983; Powell, 1990; Saxenian, 1994; Ingram and Roberts, 2000). Clusters or local industrial systems are conceptualized as networks of firms and related institutions within geographical boundaries (Saxenian, 1994). This school of thought argues that the social, institutional, and cultural factors underlying the interdependence of economic actors are more important than the economic and technical – *i.e.* external economies – ones to firm performance and local economic development (Saxenian, 1994). Therefore, a systemic and relational view replaces the atomistic view of interdependences among firms. These interdependences do not occur in a non-spatial dimension, but they are embedded in the social and institutional setting of the cluster.

In analyzing the impact of clusters on firm performance and economic development, this stream emphasizes a typical trade-off between the advantage of being embedded in the local economic structure and the disadvantage of being located near competitors (Baum and Haveman, 1997; Sorenson and Audia, 2000; Ingram and Roberts, 2000). There is no conclusive evidence, but given the importance of the social structure for the clustering process, balancing cooperation and competition seems to be the way of getting the most of the above-mentioned trade-off. In particular, it is argued that ties embedded in social relationships enhance collaboration, mitigate competition, and foster information exchange, which in turn improve the performance of organizations (Ingram

and Roberts, 2000). Additionally, in clusters with a strong division of labor, the differentiation among clustered firms leads to functional complementarities that create mutualistic effects and therefore neutralize the negative effect of sourcing from the same resource pool.

A main critic to the *network approach* to cluster is its emphasis on the socio-territorial embeddedness of knowledge and innovation. The individual or human capital dimension is also important and therefore it is not necessary to be locally embedded to transfer knowledge. Zucker *et al.* (1998) demonstrated this in the biotechnology industry analyzing star scientists. Audretsch and Stephan (1996) found that 70% of knowledge is transferred via formal arrangements that do not need a territorial dimension. Finally, Rallet and Torre (1998) found that organizational proximity contributes to technology transfer and innovation diffusion more than geographical proximity. Despite the importance of these studies, their conclusions do not mean that arm's length and no territorial social networks are the only factors that matter to innovation diffusion. A more balanced approach, answering under what conditions territorial embeddedness matters is required. It seems that proximity matters when knowledge spillovers are informal. On the other hand, when knowledge is transmitted through formal mechanisms such as participation in boards or joint ventures, proximity appears to be less important (Audretsch and Stephan, 1996).

2.7 Clusters and development

The previous section showed that the different schools of thought share the idea that economic activity tends to be sectorally concentrated and geographically clustered. However, each school of thought has contributed its own vocabulary and set of assumptions, stressed different cluster dimensions and components, and identified different causal chains to associate clusters to firm efficiency and local development. To complicate the picture, different researchers have elaborated different definitions and typologies of clusters.

This conceptual variety introduces a source of noise in studies on clusters and development because different units of analysis are dealt as they were only one – *i.e.* clusters. An additional obstacle to reach conclusions about the relation between clusters and development is the variety of research designs in empirical studies. There is an increasing number of case-based studies that have used different conceptual and

operational definitions under the same label. The same problem appears in more quantitative designs. In effect researchers have studied the effects of clusters at different levels of analysis, adopted multiples measures of this concept, and chosen different performance criteria. Particularly problematic is the mixing of different units and levels of analysis, given that several studies take the positive impact of clusters on firm performance as evidence of the contribution of clusters to development, assuming that firm-level outcomes translate directly to regional and national levels. This is not only a methodological flaw but also an oversimplification, as both economic history and theory demonstrates (Aghion and Williamson, 1998).

This section aims to clarify this second source of variation – *i.e.* the impact of clusters at different levels – in the answer to the question about clusters and development. The review of the impact of clusters at the firm, regional, and national levels will help to avoid fruitless debates that either justify or critic cluster initiatives mixing arguments at different levels of analysis.

2.8 Clusters and firm performance

The surveyed schools of thought argue that, at the firm level of analysis, firms within clusters are better off than firms not within them. Both external economies (Marshall, 1966; Krugman, 1991; Porter, 1998) and the special competitive (Porter, 1998) and socio cultural (Becattini, 1989; Saxenian, 1994) environments within clusters foster firm efficiency, innovation, and performance. Quantitative studies at the firm level, although employing different conceptual definitions and measurements of clusters, support the hypothesis that clusters foster firm performance (Ingram and Roberts, 2000; Fabiani *et al.*, 2000; Visser, 1999) and innovation (Baptista and Swann, 1998).

However, different answers to the question about clusters and firm performance might result according to the stage of the life cycle (Pouder and St John, 1996; Porter, 1998; Enright, 2001) as well as the degree of development (Arthur, 1990; Baptista and Swann, 1998; Enright, 2001; Porter *et al.*, 2001) of a cluster. Regarding the former, the same forces promoting firm productivity and innovation in an initial stage can offset clusters' positive impact in a later stage due to congestion and competition effects. For example, physical infrastructure within clusters contributes to firms productivity lowering transaction costs and increasing the quality of services. However, this argument seems to be true either for clusters in their initial stage of development or for non-high growth

clusters. As clusters grow, saturation within the cluster may generate diseconomies of scale, reflected in higher cost of living, real estate prices, and salaries of technical personnel (Pouder and St. John, 1996).

The dynamic reasoning used for physical infrastructure could be applied to other causal mechanisms such as the existence of entrepreneurial profits (Schumpeter, 1934), institutional forces (Di Maggio and Powel, 1983), the quality of the environment (Raco, 2000), and managers' mental models (Prahalad and Bettis, 1986). Besides cluster stage of life cycle, a second important variable that could yield different answers to the question about clusters and firm performance is the degree of development of the cluster, given that firm performance is expected to be higher in strong clusters compared to weak clusters (Baptista and Swann, 1998; Porter, 1998, 2001; Enright, 2001).

2.9 Clusters and local development

The majority of the revised schools of thought relates the presence of clusters to local development. However, with the exception of Krugman, none of them are theories of regional growth (Feser, 1998). Therefore, what follows is an explanation of the impact of clusters on local development placing the arguments of the revised perspectives within the framework of mainstream theories.

Marshall provides the basis to understand how micro-level business relationship could influence regional development; however, he focuses mainly on firm efficiency, without an explicit explanation of how clusters contribute to local economic development. This explanation is found in Hirshman who, coining the concept of growth centres, proposes a regional extension of Perroux's non-spatial growth poles (Feser, 1998). According to Hirshman, regional growth is promoted via public directed capital in few key propulsive sectors in underdeveloped areas. This *growthcentre strategy* was applied in the 1960s and 1970s and it was a failure given the little attention paid to the economic and social prerequisites necessary for growth centres to work (Feser, 1998). The *growth-center strategy* is one of the variants of traditional regional policy (Armstrong and Taylor, 2000) or what is known as *exogenous development* or *development from above* perspective in the regional development literature. This regional policy approach aims to achieve functional integration wherein leading regions expand into lagging regions and resources of lagging regions are made more accessible to leading regions. Therefore, the source of development relies on factors external to the local system, emphasizing the

mobility of capital and labor. In this approach the key is the pursuit of growth through central government policies and urban and large-scale enterprises based on standardization and capital intensiveness.

The 1980s witnessed a shift of emphasis from this exogenous development approach to the opposite strategy – *i.e. endogenous* or *indigenous development* or *development-from-below* (Garofoli, 1992; Nelson, 1993; Armstrong and Taylor, 1999). This *endogenous development strategy* aims to create regional autonomy through integration of all aspects of life within a territory defined by its culture, resources, landscape and institutions. The source of development relies on the local economic and social system where entrepreneurship, SMEs, and innovation play a key role for competitive advantage. Clearly, the schools of thought that stressed both the territorial specificities and SMEs composition of clusters – *i.e.* the *Marshallian, Italian, Flexible specialization, Innovative Milieu, and Cultural-institutional schools* – fit within this indigenous development strategy. Quantitative studies within either of the above-mentioned schools support this strategy (Keeble and Wilkinson, 2000; Debru and Saget, 1999).

Another mainstream theory that sheds light on the potential contribution of clusters to local development is the *endogenous growth theory*[16]. While the *endogenous development* perspective stresses that the key factors promoting local development are found within the region, *endogenous growth theory* stresses that technological change or productivity increase, considered an exogenous factor by neoclassical economics, is determined within the growth model. In other words, what was previously taken as given – *i.e.* technological change – is now explained (Todaro, 2000; Fine, 2000). Therefore, the level of growth is a function of not only the stock of capital but also the rate of technological change, assumed as given in old growth models.

New growth theory extends the old one in two ways. First, it determines not only the level of growth but also and mainly the rate of growth of an economy because technology is variable. Second, investments in human capital and R&D are the two main strategies to affect the rate of technological change or productivity improvements, which offset diminishing returns to capital investment. This is the main point of departure from

[16] The building blocks of this recent theory are the works of Romer (1986) and Lucas (1988). For a comprehensive treatment of this theory refer to Barro and Sala-i-Martin (1995). For a critical assessment see Fine (2000). The application of *new growth theory* concepts to development can be found in Morris (1998) and Todaro (2000). The application of *new growth theory* concepts to competitiveness can be found in Porter *et al.* (2000).

old theories of growth, which assume diminishing returns. The acceptance of increasing returns to scale implies that non-pecuniary externalities and therefore market imperfections are acknowledged. Here it lays the most important link between new growth theory and clusters. If physical proximity and networks, two main components of clusters, foster externalities – and therefore knowledge spillovers as a special kind of externalities –, and these externalities foster growth – as the new growth theory argues –, therefore clusters foster growth.

Clearly, all the schools of thought analyzed in this study without any exception are consistent with this endogenous growth theory explanation and therefore offer an interesting theoretical argument to support the relationship between clusters and regional growth. In particular, the works of Jaffe (1989), Feldman (1994), and Audretsch and Feldman (1996) have found that knowledge spillovers are important to innovation and tend to be spatially restricted.

Finally, the last mainstream theory that helps to explain the link between clusters and local development is Krugman's *New Economic Geography*. As it was seen in the analysis of this school, Krugman argues that increasing returns affect economic geography at several levels. At the regional level increasing returns lead to the clustering of economic activity and the concentration of development in specific areas where the process started due to chance or historical accident (Krugman, 1991). Then, a process of cumulative causation and inflexibility starts: "once an outcome (...) begins to emerge it becomes progressively more "locked in'" (Arthur, 1989).

Cumulative causation and lock in effects are not always positive in terms of local development. At least four potential negative cases can be identified:

a) a region with few clusters;
b) clusters specialized in only one industry;
c) congestion effects;
d) disparities within the region.

The first case of potential negative impact of clusters is that in which a region has only one or two clusters as drivers for growth. In this case, the region has a higher risk of regional depression before economic or competitive shocks than a more diversified region. The decline of the coal, iron, and steel complex of the Ruhr (Grabher, 1993) and of the Swiss watch industry (Glasmeier, 1994) are only two examples. While it is true that the largest places will develop multiple clusters (Porter, 1998), the majority of regions

have little prospect of developing more than one or two viable clusters (Bergman and Feser, 1999). Yet, this argument does not take into account the ability of clusters to overcome economic crisis. Some authors argue that the failure cases could be attributed either to specific cluster features or other causal processes rather than to the intrinsic nature of clusters. For example, the issue of regional depression due to cluster failure has several counter-examples, such as the cases of Silicon Valley and the Ruhr Valley in Germany (Rosenfeld, 1997). In the former case the industry shifted into the personal computer and equipment industry, while in the latter case the industry took advantage of the local expertise to build a new cluster around environmental technologies. These examples show that clusters, like industries, are able to respond to competitive shocks and new demands. Yet, the specific capabilities and processes that lead to the revitalization of clusters remain unknown.

A close related negative case appears when clusters include only one industry, showing a highly specialized pattern. This makes a cluster more vulnerable to industry shocks. Also, as Glaeser *et al.* (1992) have shown, regional diversity is more important than regional specialization to industry growth. This can explain the mixed results of some specific quantitative cluster studies. For example, the existence of deep clusters – *i.e.* those with the most industrial and institutional linkages – is associated with better regional employment growth in U.K. (DTI, 2001). Also, better regional performance in Europe is related to the intersection between clusters and metropolitan spaces, which comprise several industries (Rodriguez-Pose, 2001). This latter case shows that although clusters entail a richer industrial dimension than single industries and cities (Porter, 1996), it is difficult to distinguish between urban, industry, and cluster specific externalities.

A third negative effect appears in high-technology clusters. Although they help to increase the wealth of the region, they also create social divides within it (Keeble and Wilkinson, 2000), as in the case of Telecom City, Bangalore (OECD, 2002), and Silicon Valley (Harrison, 1994).

Finally, the cumulative process of clustering can harm the environment, given that in many growth regions economic and social concentration has created environmental problems, which may undercut future competitiveness (Raco, 2000). Arguments and empirical evidence to support the positive association between clusters and local development, this association seems to be contingent to some cluster features, such as the intensity of inter-organizational networks within the cluster and its industry span. Also, it

is important to analyze the association between clusters and local development within the appropriate time horizon. For example, Tuscany and Emilia Romagna's productivity growth and employment were higher than the national average during the 1980s. However, the same regions showed an average annual income growth rate below the average Italian rate during the 1990s (Capello, 1996; Rodriguez Pose, 2001).

2.10 Measuring clusters

Both the different cluster's conceptualization and the different levels of analysis described in the previous sections explain the varying arguments regarding the methodology to identify clusters. This third source of potential variation in findings in clusters studies is the focus of this section. The approaches so far include both quantitative and qualitative techniques. To overcome the pitfalls of each methodology, there is a general consensus in the literature that in order to truly identify clusters it is necessary to conduct both qualitative and quantitative analyses (Rosenfeld, 1997; DTI, 2001). For instance, "although inter-industry transactions (...) can sometimes be detected in input-output tables, neither the character of relationships among firms nor the benefits of clustering can be discerned in this way" (Doeringer and Terkla, 1999). Traditional quantitative measures are inadequate to discover important features present in some clusters such as social infrastructure, entrepreneurial energy, shared vision, and level of collaboration, and therefore are unable to "distinguish a simple industry concentration from working clusters" (Rosenfeld, 1997). Yet, combining quantitative and qualitative approaches faces a number of methodological bottlenecks and complexities that complicate the comparability of cluster studies.

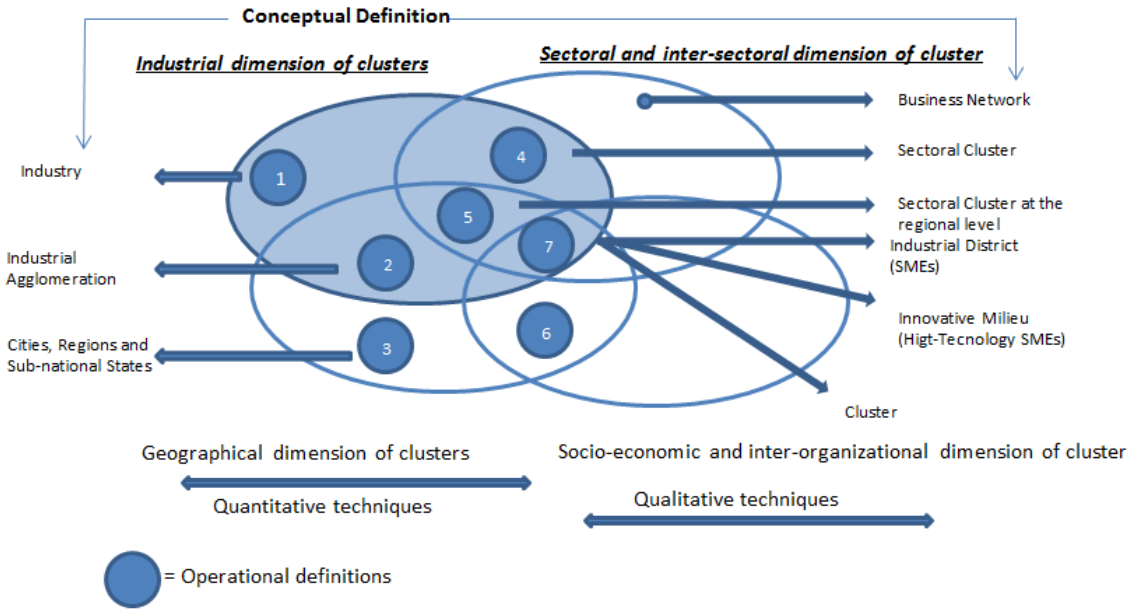
From a qualitative standpoint, the rich reality comprised in the concept of cluster makes it difficult to agree on descriptors of the cluster concept.

From a quantitative standpoint, existing official national and international data sources for cluster analyses are limited by conventions on official classification systems of economic activities and industries. These sources were not designed to cover interindustry and inter-firm linkages. Besides, cluster analysis needs input-output data at very low levels of aggregation (three or four-digit industry code level), and only a few countries such as the USA, Canada and Denmark have detailed input/output tables (Roelandt and Hertog, 1999).

An additional source of complexity is the lack of correspondence between conceptual and operational definitions of clusters. In effect, independently of the label they use, some authors are studying agglomerations, based either on firms (Baum and Mezias, 1992; Lomi, 2000; Sorenson and Audia, 2000) or on employment (Baptista and Swann, 1998; Glassman and Voelzkow, 2001) within a single industry; others focus on interrelated industries without considering regional boundaries – *i.e.* sectorial or value chain clusters – (Porter, 1990; Roelandt *et al.*, 1999); yet others study single or interrelated industries within specific geographical boundaries, including concentrations of either SMEs – *i.e.* industrial districts – or firms of different sizes – *i.e.* clusters. Clearly, the methods used in these studies do not converge to capture similar attributes of the cluster concept, indicating a much needed dialogue on the definition and dimensions of clusters.

In this regard, Figure 1 attempts to link different concepts used in the cluster literature and their associated techniques to identify and measure them.

Figure 1. Different concepts used in the cluster literature



Source: Rocha 2002

It is argued that future studies will not add to the current confusion if they clearly specify the type of cluster under study and use the appropriate technique associated with that type of cluster. This is one of the major methodological challenges cluster studies face in order to have a stronger empirical foundation to support both theoretical arguments and policy designs.

2.11 The impact of clusters on entrepreneurship

The existence of national (Audretsch and Thurik, 2000; Reynolds *et al.*, 2001) and regional (Reynolds *et al.* 1994) variations in entrepreneurship means that territorial specificities matter to firm creation. Given that clusters comprise more than this geographical dimension, several authors argue that regions where strong clusters operate benefit from higher start-up rates. This section analyses different arguments and associated empirical evidence of the impact of clusters on entrepreneurship. It is argued that clusters foster entrepreneurship

a) providing established relationships and better information about opportunities;
b) lowering entry and exit barriers;
c) opening up niches of specialization due to the low degree of vertical integration;
d) fostering a competitive climate and strong rivalry among firms that impose pressure to innovate due to the presence of close competitors;
e) providing role models and the presence of other local firms that have "made it";
f) capturing important linkages, complementarities and spillovers from technology, skills, information, marketing and customer needs that cut across firms and industries, which is key to the direction and pace of new business formation and innovation;
g) providing access to physical, financial, and commercial infrastructure;
h) easing the spin offs of new companies from existing ones;
i) reducing risk and uncertainty for aspiring entrepreneurs;
j) providing a cultural environment where establishing one's own business is normal and failure is not a social stigma (see for example Pyke and Sengenberger, 199; Saxenian, 1994; Rosenfeld, 1997; OECD, 1998; Porter, 1990, 1998).

Despite the plausibility of these arguments and some empirical evidence supporting them (Saxenian, 1995; Baptista and Swann, 1999; Oakey, 1995), they present two main weaknesses. First, the main[17] focus is on the absolute creation of firms rather

[17] Porter recognizes that intense competition within a cluster plus lower exit barriers promote not only births but also deaths. This process is argued to be positive for surviving firms, which will be better positioned compared to rivals in other locations (Porter, 1998; 2000). This reasoning does not explain why the net effect is positive. Most importantly, the net start-up rate is not the central part of Porter's explanation, which is focused on how clusters promote new business formation.

than the net start-up rate – *i.e.* births minus deaths or churning rate. Second, cluster advantages to entrepreneurship are assumed as permanent, with independence of the cluster stage.

Taking a more dynamic view, some authors argue that the start-up rate increases during the initial stage of a cluster and then decreases in a more mature stage. The reasons behind this process are different, though. Schumpeter (1934) argues that successful pioneer entrepreneurs remove the obstacles faced by entrepreneurial activity in its early stages. This produces the "clustering of the followers" up to the point of eliminating entrepreneurial profit. Pouder and St. John (1996), referring to high growth clusters in their origination phase of evolution, argue that clusters may be viewed as an incubator for start-ups and spin-offs. At a later stage, congestion effects, mimetic behavior and homogeneity in managers' mental models stabilize entry.

Finally, organizational ecology theory argues that at low levels of organizational density legitimation processes dominate and, therefore, the net founding rate is positive. However, at high levels of density, competition processes dominate and therefore the net founding rate decreases (Hannan and Carroll, 1992). Despite the strong initial empirical support for this argument, results differ according to the level of analysis at which the model is specified (Carroll and Wade, 1991; Lomi, 2000).

The dynamic view analyses the net start-up rate and provides different answers to the question about the impact of clusters on entrepreneurship based on the stage of the cluster. However, it faces two limitations.

First, from the cluster point of view, it is based on only one industry and one dimension of clusters – *i.e.* agglomeration of economic activity. The inter-industrial, interorganisational, and network dimensions of clusters could produce different patterns of start-up evolution.

Second, from the entrepreneurship point of view, the analyzed dynamic perspectives focus only on the context of entrepreneurship, without considering firm specificities. In particular, population ecology studies take as unit of analysis the population and thus treat founding's as identical additions to homogeneous organizational populations, without considering the characteristics of new organizations (Baum and Haveman, 1997). This misses two key attributes of entrepreneurship: the role of human volition and organizational learning, and the generation of different outputs at the firm level (Bygrave and Hofer, 1991).

In sum, the previous analysis suggests that linking process and context at different levels of analysis, considering both organizational and relational density (Baum and Oliver, 1996; Aldrich and Martinez, 2001), are two main criteria to consider in future studies on the impact of clusters on entrepreneurship[18].

[18] Some studies have applied one or two of these criteria, but the focus has been either on populations of firms belonging to the same industry or on metropolitan vs. rural areas rather than on clusters. For theoretical studies, see Aldrich (1999), who links processes and context at different levels of analysis from an evolutionary perspective; and Kleppler (1995) who takes a more technical approach and link process and context based on the product life cycle. For empirical studies see Stearns *et al.* (1995) who propose a model to examine the interaction effects between location, industry, and strategy; and Baum and Oliver (1996), who consider both organisational and relational density at different levels of analysis.

3 Economy of the wine industry and agglomeration

3.1 Entrepreneurial marketing within the Italian wine industry

The Italian wine industry comprises a number of regional clusters, *i.e.* groups of firms from the same or related industries located in geographical proximity (Bell, 2005). Networks can be established as a form of entrepreneurial marketing cooperation in an attempt to acquire social capital within industry clusters (Casson and Guista, 2007; Felzensztein and Gimmon, 2009). The benefits of networks promote innovation through improved exploitation of knowledge as it is transferred more easily through proximity where local firms are embedded (Bell, 2005; Shaw, 2006; Suire and Vicente, 2008).

However, more recently, it has been suggested that entrepreneurial marketing cooperation might transcend regional clusters to tap industry-specific knowledge at the international level (Felzensztein and Gimmon, 2009; Morrison and Rabellotti, 2009). Given the current context within the Italian wine industry, the challenge for small wineries is therefore twofold: to defend current positioning's through brand differentiation and the exploitation of product-market development opportunities through engaging in cooperative business relationships and networks.

3.2 Global Situation in the wine sector

3.2.1 World wine surface and production

In 2012, the total world area planted was 7528 mha[19] (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 3 and figure 2. 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.

[19] Thousands of hectares.

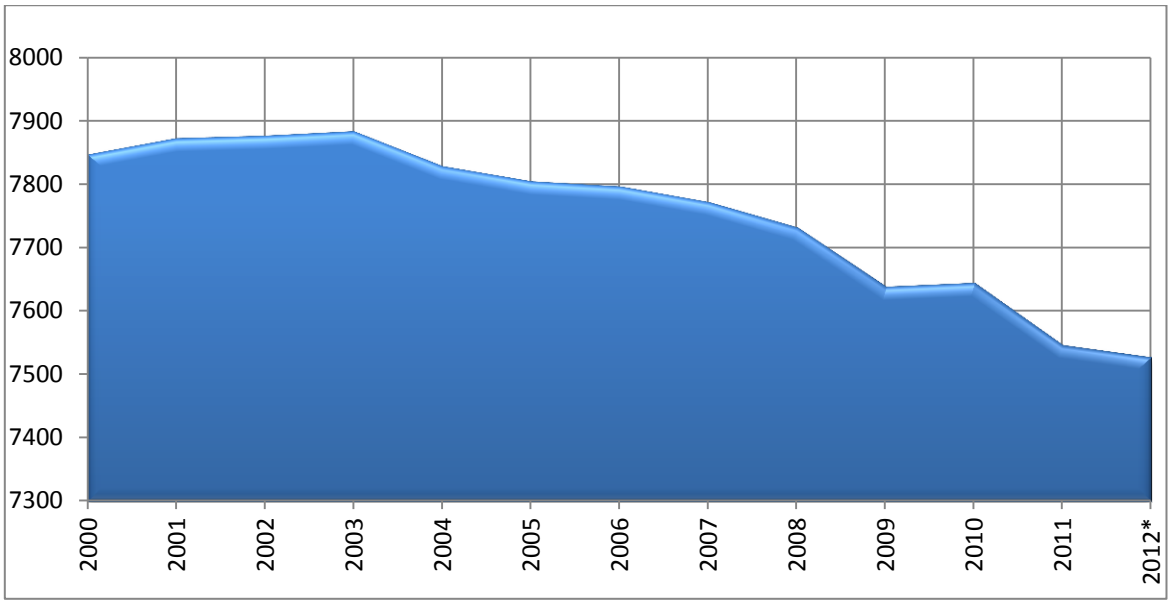
Table 3. World vineyards

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	

Source: OIV[20], *Forecast

The world wine production in 2012 (excluding juice and musts) stood at 252 Mhl[21] (figure 3 and table 4). 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 4).

Figure 2. Trends world vineyards 2000-2012



Source: OIV

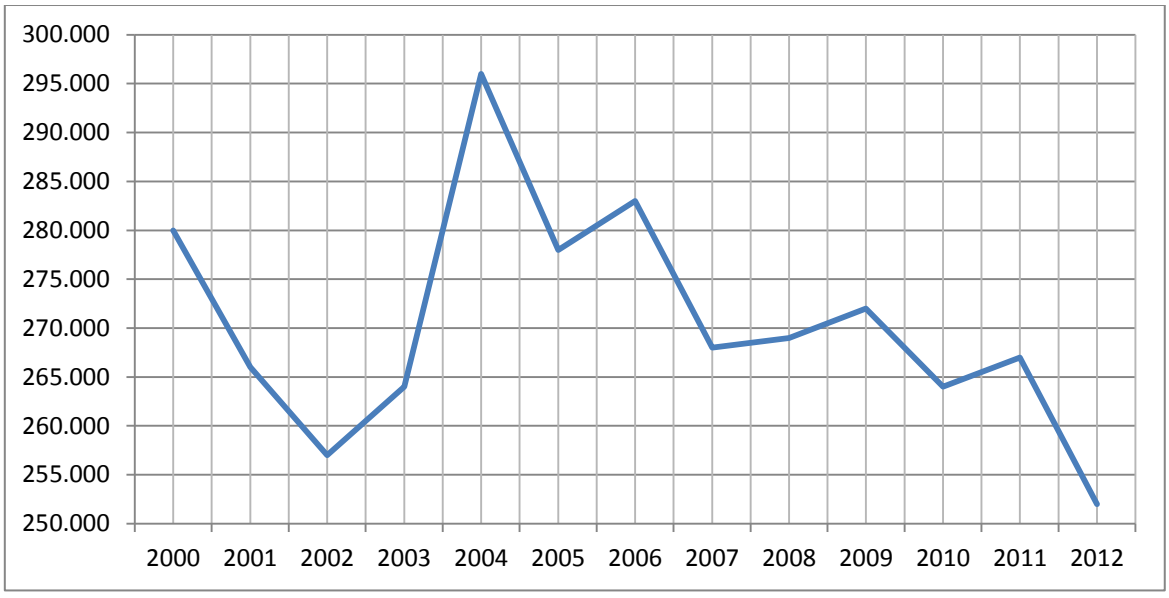
[20] OIV: Organisation Internationale de la Vigne et du Vin; International Organization of Vine and Wine.
[21] Millions of hectoliters.

Table 4. Major wine producer (mhl)

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%
South 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%

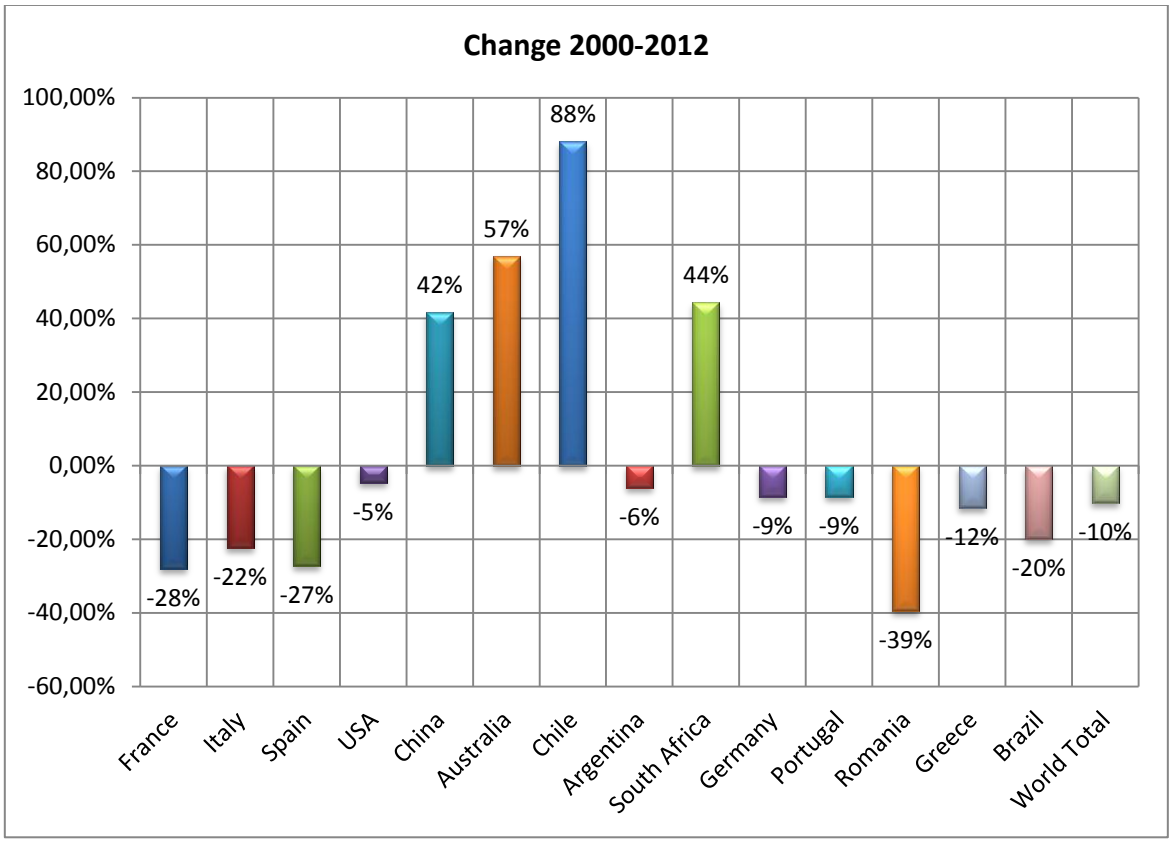
Source: OIV

Figure 3. Total world wine production (mhl)



Source: OIV

Figure 4. Percentage change of the wine production 2000-2012



Source: our elaboration

3.2.2 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 5 and figure 5). 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).

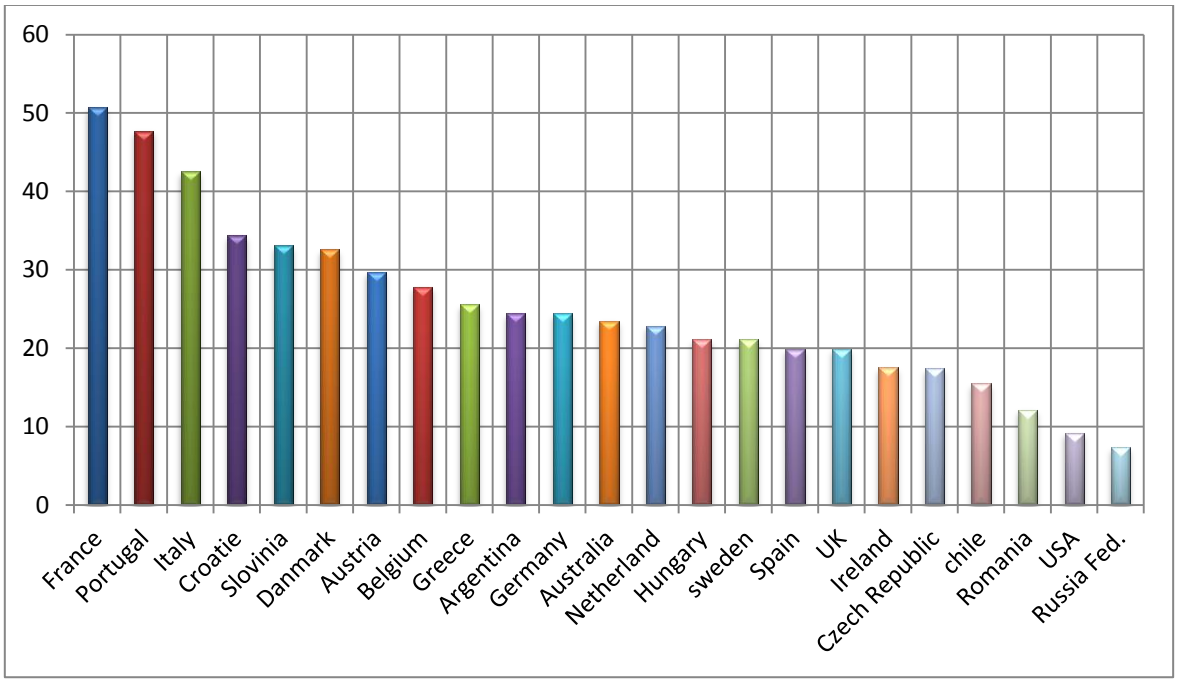
The consumption of wine in Italy continues to fall. The latest data compiled by Assoenologi says that, Italy is at 42,5 liters per person, compared to 45,3 in 2006 (*i.e.*, one third compared to the consumption of fifty years ago). However, this situation is not only the Italian one, but also that of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

Table 5. 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 Republic	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	163,6%
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	128,1%

*Base total world population Source: OIV

Figure 5. Major wine consumers 2012 (l per capita per year)



Source: our elaboration on OIV

3.2.3 Scenario of wine in Italy

With 44,4 million hectoliters produced in 2014- of which over 60% came from the 521 wines with denomination of origin[22] (DOC[23] 330, 73 DOCG[24] and 118 IGT[25])- Italy is one of the most important producer of wine in the world.

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

a) increases in the production of quality wines DOC/DOCG and decrease the production of table wines,
b) increase in the production of white wine,
c) 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.

Today in Italy the domestic consumption has fallen below the threshold of 40 liters per capita per year, so it is the export to hold high the turnover of the Italian

[22] March 2013.
[23] DOC: Denominazione d'Origine Controllata. Denomination of Controlled Origin.
[24] DOCG: Denominazione d'Origine Controllata e Garantita. Denomination of Controlled and Guaranteed Origin.
[25] IGT: Identificazione Geografica Tipica.

vineyard. In fact, according to ISTAT[26] 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%.

3.2.4 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[27] 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.

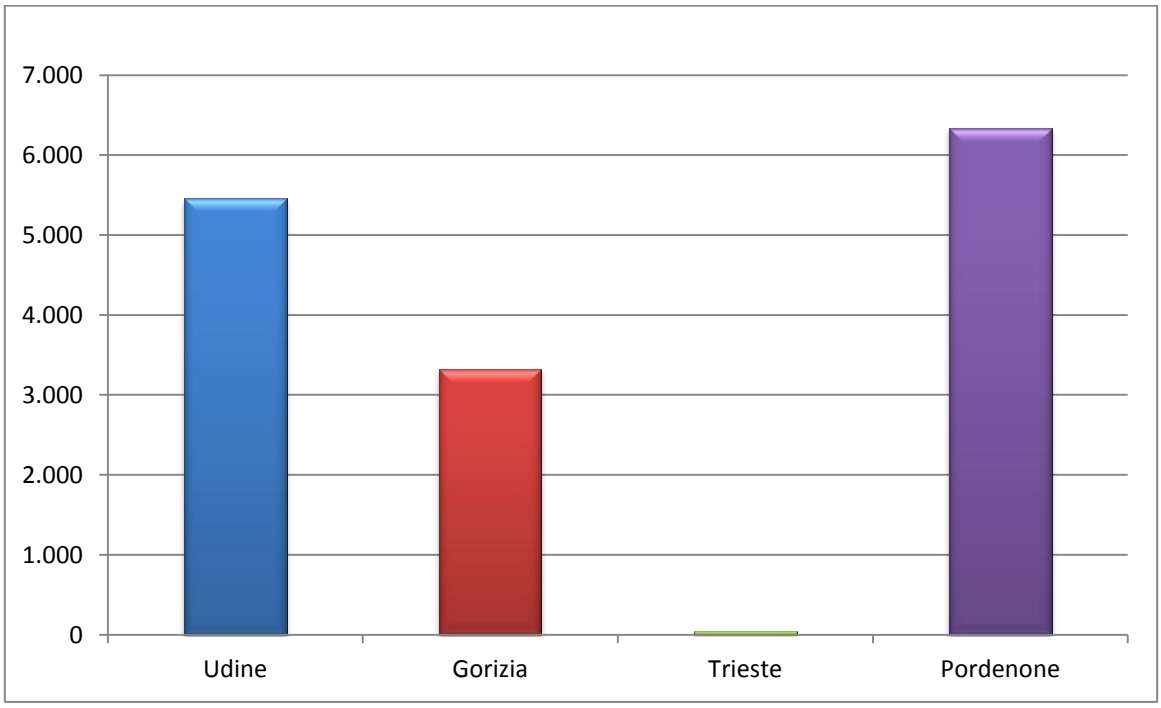
[26] ISTAT: Istituto Nazionale Di Statistica of Italy.
[27] SAU: Superficie Agricola Utile, useful agricultural surface.

Table 6. Friuli Venezia Giulia Vineyard area (hectares) (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 6. 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 analyzes the companies that have a website, and even more so when one counts those that make use of e-commerce with their products.

3.3 Wine cluster

The international market of wine has been characterized by growing competition, especially in recent years (OIV, 2013). Wine is one of the main agro-alimentary products for Italian export.

As far as exports are concerned, Friuli Venezia Giulia is the is the tenth wine exporting region in Italy. In this region the local system of wine is historically recognized as a *wine cluster*, characterized by many micro and small firms, most of them being grape growers. In general, local firms cultivate autochthonous vines and produce local varieties of wine; therefore, the local *terroir* is one of their key competitive assets.

During the last two decades, notwithstanding its old tradition, there was a reduction in the area dedicated to vines. The average size of the wineries in the region is

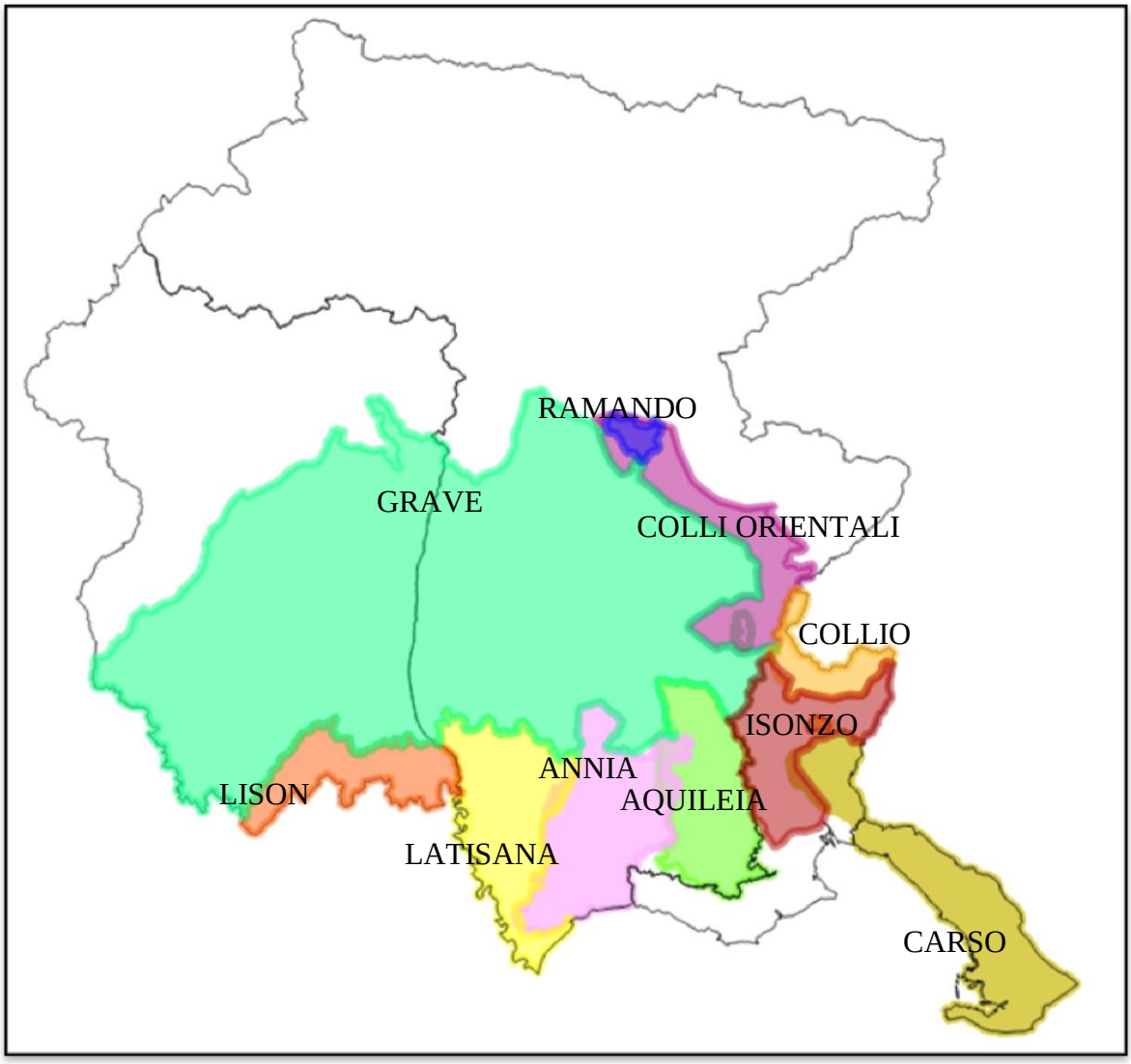
very small, even smaller than the national average. Despite the very small average size of the firms, many local firms are not falling behind; on the contrary, they seem to have taken measures designed to increase efficiency, improve the quality of wines, adopt new technologies and introduce innovations.

The regional consortia play a leading role in encouraging modernization. The consortium is a local association, which provides technical assistance to producers in viticulture and related fields. As discussed in Morrison and Rabellotti (2007), the consortia are key players in the *Friuli Venezia Giulia Wine Regional Research System*, connecting small and marginal producers to several sources of knowledge, such as the University of Udine and other regional and national research institutions. These boards contribute to diffusing information on the newest technological advancements and best practice which would otherwise not be accessible to small producers, through demonstrations to farmers or through a direct consultancy activity. In a global market characterized by a shift in demand from bulk to quality wines, and by an increasing number of competitors from the "new world", access to knowledge is a key competitive asset. From this follows the relevance to investigate how knowledge circulates among firms, through intra-cluster linkages with respect to linkages with actors external to the clusters in a wine local system, such as Friuli Venezia Giulia region under analysis in this work.

3.4 Consortia for the protection of the wines

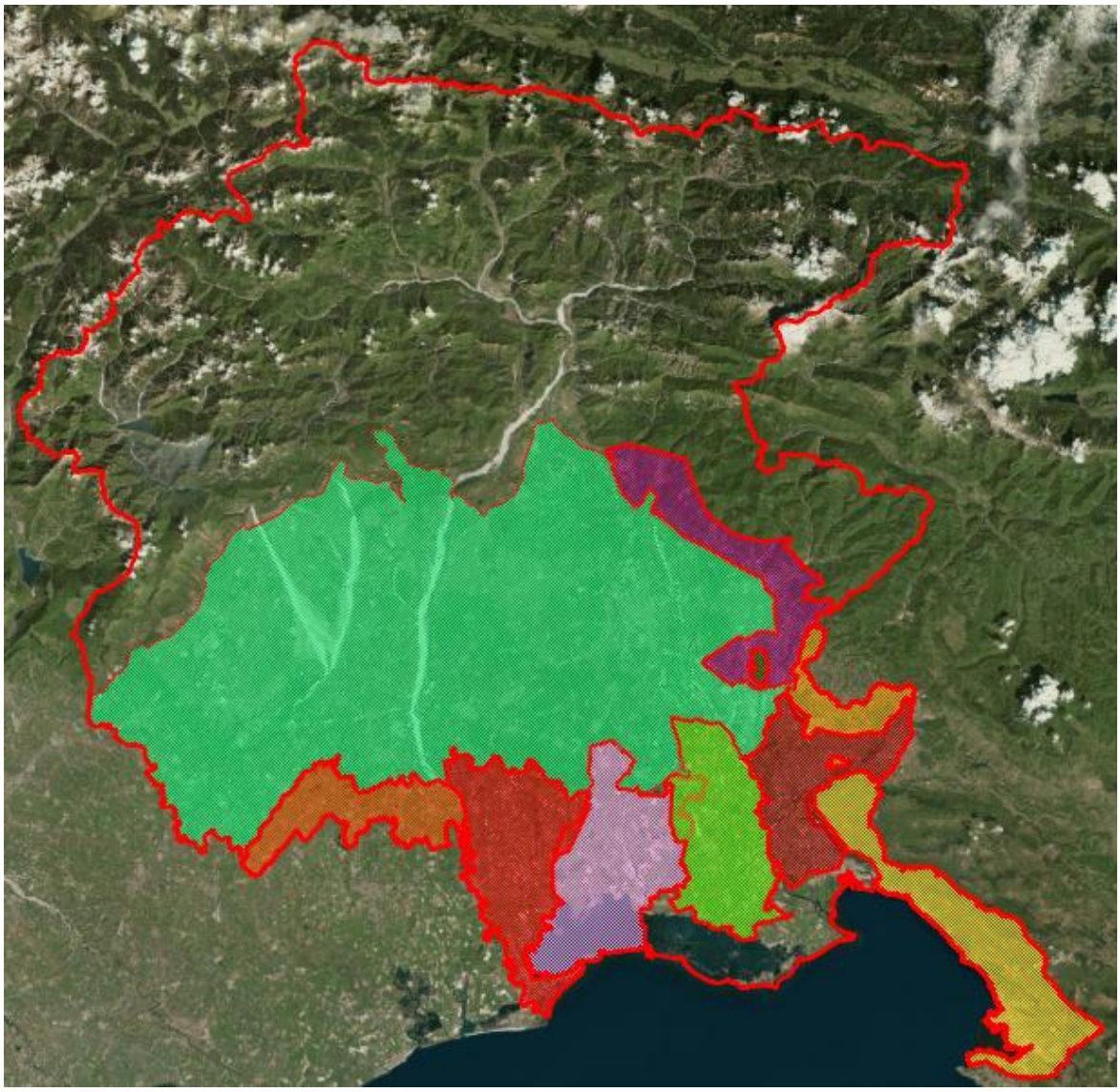
In Friuli Venezia Giulia there are currently nine protection consortia that aim to regulate, promote and support the regional wine tradition in Italy and abroad. The nine active protection consortia in Friuli Venezia Giulia are Friuli Annia, Friuli Aquileia, Carso, Collio, Colli Orientali del Friuli, 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 7 and 8). These consortia represent over 2500 wine producers, accounting for over 75% of DOC wine production in the region.

Figure 7. Map of the wine consortia in Friuli Venezia Giulia



Source : our Elaboration with QGIS

Figure 8.Physical map of the wine consortia in Friuli Venezia Giulia



	DOCG Rosazzo		DOC Lison-Pramaggiore		DOCG Ramandolo
	DOC Friuli Grave		DOC 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

3.4.1 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.

3.4.2 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.

3.4.3 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.

3.4.4 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.

3.4.4.1 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.

3.4.4.2 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.

3.4.5 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.

3.4.6 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)

3.4.7 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.

3.4.8 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 favors 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.

3.4.9 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.

3.5 Agglomeration and network: the case of the wine sector

Over the past few years, there has been increasing interest in theoretical and empirical research on entrepreneurial orientation (Covin *et al.*, 2006), thus the analysis of the relationship between EO and performance has become a central issue in this research field. An interesting meta-analysis on the link between EO and performance reveals a considerable variation in the magnitude of its correlation(Rauch *et al.*, 2009). This study indicates that other variables moderate the strength of the EO-performance relationship and specifically that "national culture is a powerful moderator". Researchers (*i.e.* Lumpkin and Dess, 1996) acknowledge that the relationship between entrepreneurship and performance is context specific. There are some studies investigating moderating effects of environmental variables on the entrepreneurship–performance association (Covin and Slevin, 1989; Lumpkin and Dess, 2001; Naman and Slevin, 1993). Moreover, the meta analysis conducted by Rauch *et al.* (2009) revels that the dimensions of EO vary substantially according to national culture. The more recent literature, both theoretical and empirical, confirms such considerations (*i.e.* Knight, 1997; Wiklund and Shepherd, 2005; Frank *et al.*, 2010). Therefore, one implication of these studies is that the effect of EO on performance may vary among different types of environments.

This thesis argues that the current geographic distribution of production places important constrains on the link between EO and performance. The large and growing literature on agglomeration effect suggests that firms seek locations that provide localization economies (benefits from having common buyers and suppliers, a specialized or skilled labor pool, and informal knowledge transfers). Many agglomeration scholars have accepted the notion that the agglomeration benefits derived from cluster occupancy lead to superior firm performance (Harrison, 1992; Krugman, 1991; Marshall, 1920).

Together with these articles, which empirically prove positive effects, other studies could not confirm any influence and some authors even found a negative relationship, as they seriously question the existence of positive agglomeration effects (*e.g.*, Buenstorf and Guenther, 2011; Shaver and Flyer, 2000). Only recently researchers started to identify the contributing factors to performance differences between agglomerated and non-agglomerated companies. The results, thus far, appear fragmented and inconsistent (Klumbies and Bausch, 2011). Nevertheless, it is clear that some fundamental issues remain unresolved. One of this concerns the link between entrepreneurial orientation and performance comparing agglomerated and non-agglomerated firms. In this study the first group refers to companies which are located in areas of high agglomeration of wine farms.

Additionally, whilst network arrangements are often seen on a broad scale as a foundation for economic growth, this can also be seen specifically at the level of the regional economy (see Brusco 1982; Brusco and Righi 1989) where promotion of geographically based entrepreneurial networks and clusters often occurs (Kinsella 1989), suggesting a particular importance for proximity in these processes.

The wine industry can be considered as an almost ideal context in which to study agglomeration effects because these clusters are present all over the word, and their characteristics can be also compared (*e.g.* Cusmano *et al.*, 2010; Bell and Giuliani, 2007).

This study therefore examines the interrelationships between small firm growth and the impact upon these of collaborative relationships between SMEs and institutional stakeholders (*i.e. wine consortia*) at local level, to begin to explore the importance of these relationships in the complex processes of growth.

The purpose of this analysis is to offer a multi-dimensional view of the wine firms which are embedded in a context of supply or value added chains relating them to wine farms' agglomeration. The methodological approach for measuring agglomeration refers to the often-used *local Moran's statistic-LMi* (Anselin, 1995) and the subsequent improvement of the analysis by adding a clustering of the wine firms. The case of the wine sector represents a linkage between secondary manufacturing industry (wine firms) and a downstream primary sector (wine farms) which are connected by supply-chain relationships based on wine.

The focus is to analyze whether entrepreneurial orientation develops in a better way its potential contribution to firm performance both inside agglomerations rather than

outside them and in the presence of local linkages between SMEs and consortia than in their absence. The research question can be formulated as

Does entrepreneurial orientation contribute to business performance more in agglomerated and networked firms rather than in non-agglomerated and non-networked ones?

In this thesis we define entrepreneurial orientation as the "(…) the inclination of top management to take calculated risks, to be innovative, and to demonstrate proactiveness" (Morris and Paul, 1987) and a cluster/agglomeration as a "geographically proximate group of firms and associated institutions in related industries, linked by economic and social interdependences" (Rocha, 2002). EO captures an organizational decision making posture favoring entrepreneurial activities, strategic decisions, and managerial philosophies (Covin and Slevin, 1989; Simsek, *et al.*, 2010).

Consistent with recent literature, we focus on the mechanisms embedded in entrepreneurship process that represent an additional explanation to analyze firm agglomeration, network and performance (Acs and Armington, 2004; Acs and Varga, 2005; Aghion *et al.*, 2009; Fritsch and Mueller, 2008; Acs *et al.*, 2010; Bosma *et al.*, 2011). This study looks beyond the entrepreneurial orientation - performance link and focuses on a particular class of agglomerations (*i.e.* the spatial concentrations of related firms) and network (*i.e.* local linkages with consortia).

The area under investigation are located in Friuli Venezia Giulia a region of the Northeast that is a fundamental pole of *Made in Italy*, with a large presence of small innovative firms which are often organized in industrial districts and that are specialized in the traditional strengths of the Italian industrial model (*i.e.* agro-food, textiles and clothing, machinery and mechanical equipment) (Corò and Grandinetti, 1999).

The main reasons that lead us to the choice of the Italian wine sector case study is that, as in other countries, this sector can be seen as a good example for the occurrence of agglomeration economies (Rosenthal and Strange, 2004) that enforce existing natural advantages (Glaeser, 2008).

Moreover, focusing on a single sector limits potential confounding effects due to heterogeneous industry factors on EO.

The regional context is chosen because the uneven distribution of entrepreneurial activities leads to the conclusion that some regional factors must exist that influence these activities and thus cause special regional entrepreneurial behavior (Fornahl, 2003).

Five dimensions of EO in different clusters of wine firms: agglomerated firms and non-agglomerated ones; networked firms and non-networked ones and firm performances construct operationalized in the study.

The chapter is structured as follows. First we introduce a synopsis of both relevant theories on agglomeration, network, entrepreneurial orientation and business performance. Then we proceed to empirical measurement of firm agglomeration in a specific sector *i.e.* the wine one (i.c. Friuli Venezia Giulia). Subsequently, we examine the relationship that exist between EO and firm performance using on a sample of regional wine firms moderate regression analysis with two moderators:

a) agglomeration,
b) network.

After that the results are presented and discussed. Finally, the paper provides concluding remarks, some policy implications, limitations and hints for further research.

3.5.1 Clusters and performance in the wine sector

Agglomeration Industrial Clustering is a key feature of economic geography. Firms located within geographic clusters have been found to exhibit higher innovation performance, rates of growth and survival than do firms not located within geographic clusters (Gilbert *et al*, 2008). The benefits of industry clustering were identified early on by Alfred Marshall (1920) and Krugman's (1991; 1996) work in economic geography.

Porter's (1990; 1996) study in business economics have drawn the interest of economists to the idea of "increasing returns" to proximity in the form of clusters (Fujita *et al*, 1999). Meanwhile, a tradition of studying the locational aspects of economic activity exists in several academic disciplines (Greenhut and Greenhut, 1975; Hotelling, 1929; Isard, 1956; Losch, 1956; Weber, 1929; Walker, 2000).

Nowadays the literature on industrial clustering and its causes (localization and/or urbanization economies, proximity to other firms and/or consumers) and effects (economic growth, unbalanced development, regional inequality, and global industrial restructuring) continues to proliferate. Economic geographers, economists, sociologists, researchers in business and management, and policy makers have witnessed an increased interest in the study of clusters during the 1990s.

One of the main reasons for this increased interest in clusters is the presumed impact of clusters on firm performance. Research generally suggests that, at the firm level

of analysis, firms within clusters are better off than firms not within them. Both external economies (Marshall, 1966; Krugman, 1991; Porter, 1998) and the special competitive (Porter, 1998) and socio-cultural (Becattini, 1989; Saxenian, 1994) environments within clusters foster firm efficiency, innovation, and performance. The value of this suggestion is highlighted by a meta-analysis conducted by Rocha (2004) on quantitative cluster studies at the firm level. In his research the author although points out that all the papers employing different conceptual definitions and measurements of clusters, support the hypothesis that clusters foster firm performance (Ingram and Roberts, 2000; Fabiani *et al.*, 2000; Visser, 1999) and innovation (Baptista and Swann, 1998). Geographic regions with industry clustering have been found to affect the performance of established firms operating within them. This finding has held constant across several measures of performance including new product innovation (Deeds *et al.*, 1997), revenue growth (Canina *et al.*, 2005), and survival (Folta *et al.*, 2006; Sorenson and Audia, 2000; Stuart and Sorenson, 2003).

According to Porter (1998), a concentration of industry activity in a geographic region affects firm performance because the local competition within the cluster requires firms to innovate in order to remain competitive. Chung and Kanins (2001) argue that the presence of similar firms in a geographic region creates demand externalities that lead to increased rents for local firms. Shaver and Flyer (2000) found that the presence of industry clustering within the firm's location negatively influenced the survival of firms when the industry was highly geographically concentrated, however, they also noted that "weaker" firms were able to gain more from operating from cluster locations than was true of "stronger" firms.

Canina *et al.* (2005) found that clustering benefits depend on the type of firm. Established firms that operated from locations with clustering that competed with a differentiation strategy had higher performance than firms operating from similar locations that competed with low cost strategies. Baum and Haveman (1997) similarly found that entrepreneurs that successfully differentiated their firms from others in the cluster location had higher survival rates than was true of firms that were not well differentiated. Works by Appold (1995), Folta *et al.* (2006) and Lechner and Dowling (2003) corroborate the importance of clusters for gaining access to customers as well as prospective partners.

Despite many agglomeration scholars have accepted the notion that the agglomeration benefits derived from cluster occupancy lead to superior firm performance

(Harrison, 1992; Krugman, 1991; Marshall, 1920) studies concerning firms' geographical concentration and performance have theoretical arguments and empirical evidence that are quite contradictory. While many researchers confirm a positive relationship based on local externalities (McCann and Folta, 2011; Rosenthal and Strange, 2003), others found a negative link due to congestion problems (Baun and Mezias, 1992; Folta *et al.*, 2006; Staber, 1998; Stuart and Sorenson, 2003), and some even found no significant relationship (Kukalis, 2010). Moreover, other research subordinates this relationship to the internal characteristics of co-located firms and only considers proximity to larger firms (Baun and Mezias, 1992; Chung and Kalnins, 2001; Shaver and Flyer, 2000).

In comparison to the vast amount of theoretical literature about agglomeration effects, only to a limited extend researchers have begun to analyze empirically the influence of cluster affiliation on firm performance in greater detail (Maine *et al.*, 2010). Research on the impact of clusters or firm agglomeration on entrepreneurship at the regional level is both theoretically and empirically scarce due to conceptual, theoretical, and methodological limitations (Rocha and Sternberg, 2005).

Taking into account this lack of previous consensus, we examine in the following sections the role of a firm's agglomeration on the magnitude of the link between EO and business performance in the agglomerated and non-agglomerated firms located in the Northern Italian wine sector.

3.5.2 Networks and performance

Notwithstanding the widespread consensus on the importance of local networks for promoting innovation in regional clusters, few scholars have analyzed their dynamics. Interest in understanding *how* and *why* networks in regional clusters change over time is relatively recent and is in line with a new strand of research that investigates cluster evolution processes more generally (Martin and Sunley, 2006; Glückler, 2007; Giuliani and Bell, 2008; Boschma and Frenken, 2010; Martin, 2010; Menzel and Fornhal, 2010; Boschma and Fornahl, 2011; Martin and Sunley, 2011; Staber, 2011; Ter Wal and Boschma, 2011; Balland, 2012; Balland *et al.*, 2012; Li *et al.*, 2012).

Work on network dynamics is motivated by an interest in their influence on the development trajectory of clusters. The drivers and directions of network change are likely to condition the modes of sharing knowledge (or other valuable assets) among cluster firms, which, at least in part, might be a predictor of the cluster's future success or

failure. To explain how networks evolve over time, cluster scholars have borrowed from established organizational sociology and network theory concepts and ideas.

For instance, Glückler (2007) suggests that cluster evolution is likely to be path-dependent, mainly as a result of retention mechanisms in tie formation "that cause new ties to reproduce and reinforce an existing network structure". Among these retention mechanisms the author includes "preferential attachment", which reflects the tendency of central actors to become more central over time (Barabasi and Albert, 1999), and "embeddedness", which refers to the tendency towards network closure and clique-like network structures (Granovetter, 1985).

Boschma and Frenken (2010) contribute by suggesting that in addition to geographical proximity, different forms of inter-organizational proximity likely influence how firms become connected in clusters. In other words, in order to connect, firms need to be closely related in one or more dimensions. The authors posit further that if the retention and proximity mechanisms of new tie formation are in place, the "density of network relations in geographical clusters is likely to increase over time", which would be undesirable because it could prevent cluster renewal and might feed lock-in processes.

Ter Wal and Boschma (2011) offer another insight into network dynamics in clusters, conjecturing that the characteristics of networks changes along the *cluster lifecycle* (CLC). They suggest also that, during the growth stage of the CLC, local networks will tend towards formation of a stable core–periphery structure, in which centrally located firms are likely to become even more central through the processes of preferential attachment, and exit of firms positioned in the periphery of the local network. Only as the CLC matures does the network become denser and may drive the cluster into lock-in.

Notwithstanding these attempts to develop a theory of network and cluster growth, scholars agree that research in this area still "needs further development and refinement from a theoretical perspective", and that "there is a need for empirical validation of the ideas suggested" (Ter Wal and Boschma, 2011). The theoretical micro foundations of cluster network dynamics are unclear, it is, know little about the firm-level factors that drive the formation, persistence and dissolution of new ties and how they contribute to the overall structural properties of local networks Giuliani (2013).

In nutshell a growing body of literature in regional economic geography has demonstrated the positive impact of networks within a regional cluster on innovation.

Intra-Cluster Networks (ICTs[28]) encourage cooperation, trust, collective learning, and smooth exchange of knowledge. Clusters play a particularly important role in compensating for the resource constraints SMEs face and spur innovation and growth in these firms. However, knowledge and information trapped in a regional cluster can decay and become obsolete (Giuliani and Bell, 2005). Therefore, although being part of a geographically localized cluster is advantageous, in order to access new knowledge a firm needs to establish linkages beyond its local cluster (Mesquita and Lazzarini, 2008). Research has shown that ties that extend beyond a firm's cluster, or Extra-Cluster Ties (ECTs), are important gateways of critical knowledge and information (Giuliani and Bell, 2005).

From a Resource Based View (RBV) the network encompassing ICTs and ECTs of a firm can be seen as its resource pool, contributing to the firm's technical know-how, trade contacts, and capital (Wernerfelt, 1984). In addition, network ties provide legitimacy, increasing a firm's odds of forming partnerships with highly valuable potential partners (Eisenhardt and Schoonhoven, 1996). The large bundle of resources that networks generate can increase the ability of the firm to create new combinations of knowledge, thereby enhancing its competitive advantage (Wernerfelt, 1984). Such a so called recombinatorial ability is particularly relevant when firms confront a high degree of competition, as SMEs in emerging economies do. Next to network ties, entrepreneurial orientation is another significant resource for achieving competitive advantage in general (Covin and Miles, 1999; Covin and Slevin, 1991; Lumpkin and Dess, 1996; Wiklund and Shepherd, 2005), and doing so in particular through innovation (2007; Boso *et al*., 2012; Pérez-Luño *et al.*, 2011). EO represents a unique resource to a firm because it cannot be purchased in the market, and it is difficult to copy because firms invest considerable time to nurture their EO cultures (Lee *et al.*, 2001). Like a firm's network, EO too is particularly salient for market success in the highly competitive and turbulent environments in emerging economies (Covin and Slevin 1989).

In line with RBV, EO, along with network ties, is a resource that adds to the competitive advantage of a firm. Surprisingly, only a few studies have examined the concurrent impact of entrepreneurial orientation and networks (Lee, *et al.*, 2001; Stam and Elfring, 2008). In their study, Lee *et al.* (2001) investigated the relationship of EO and external networks such as government and university on sales growth, and Stam and

[28] ICT: Intra Cluster Tie.

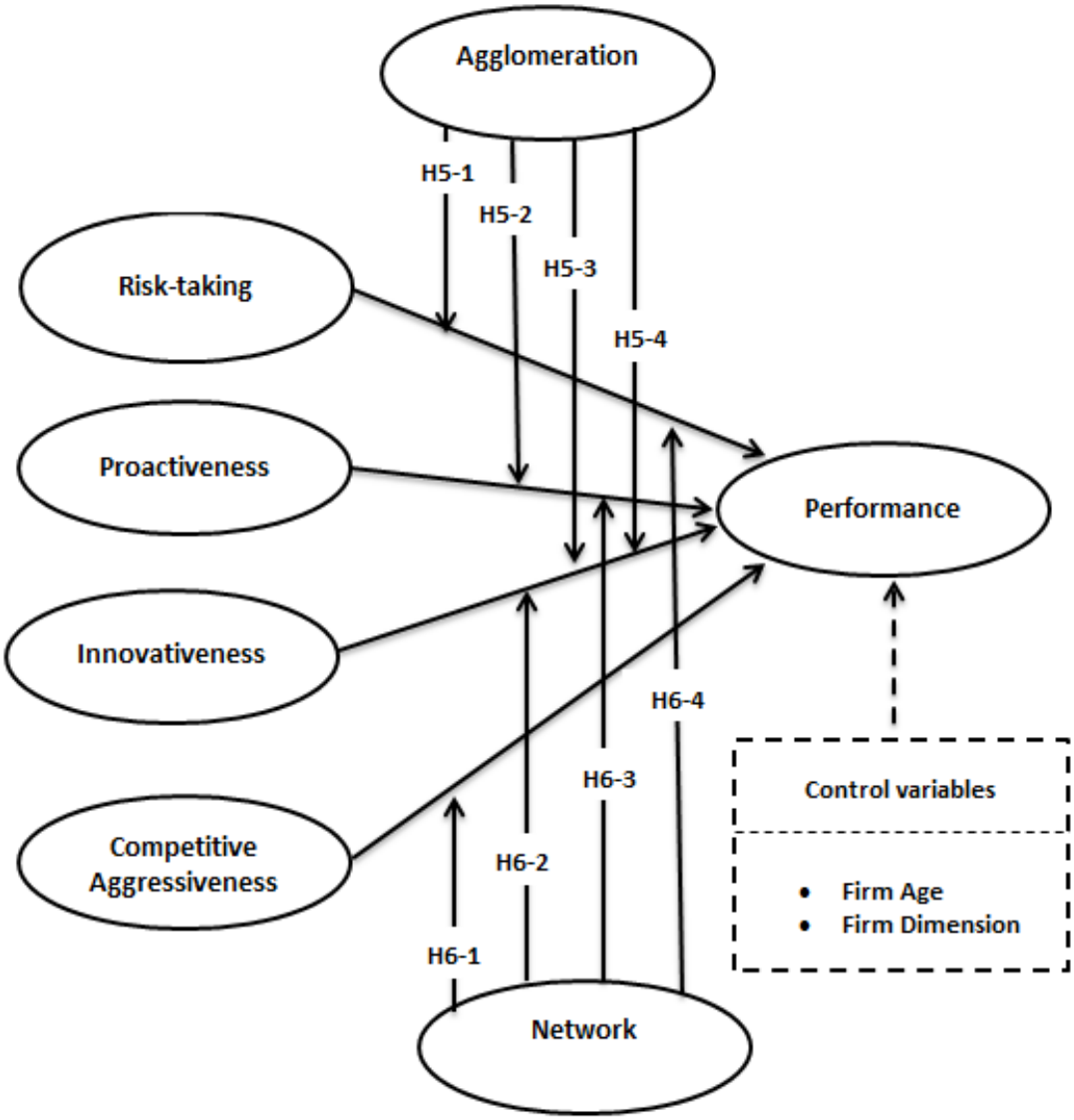
Elring (2008) worked on the impact of EO and bridging ties on sales growth. We take a different approach, *i.e.* we study the interplay of EO and network between wine firms. In our study, we emphasis the role of consortia because we believe they have a unique role in leveraging innovation. Furthermore, we focus on local network because SMEs in agricultural sector can benefit from this kind of ties in different ways. In line with Ireland *et al.,* (2003) who found that entrepreneurial orientation leads to desirable outcomes only when the resources that foster both opportunity- and advantage-seeking behaviors are strategically acquired, developed and leveraged we argue that a firm with a high EO is therefore able to actively pursue knowledge and information available through its existing network ties.

Therefore, when investigating the effect of entrepreneurial orientation on business performance, the interacting effects between entrepreneurial orientation, agglomeration and social networks represent an important research agenda, which should not be neglected.

This study therefore aims to extend this line of work by examining the effects of entrepreneurial orientation and agglomeration and social networks on business performance.

The research framework is shown in figure 9.

Figure 9. Proposed model



3.5.3 Social network analysis

A *social network* is a representation of the social interactions within a group of individuals. It is most commonly viewed as a *graph* with individuals as *nodes* and relationships or contacts as the *edges*. There are many kinds of relations that can form the *network* between nodes, such as shared ideas, social contacts, kinship, financial exchanges, joint membership in organizations and group participation in events, etc.

The *social network analysis* is a method to analyze the relationships among individuals, groups, organizations and other social units. This kind of 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 Moreno (1934)

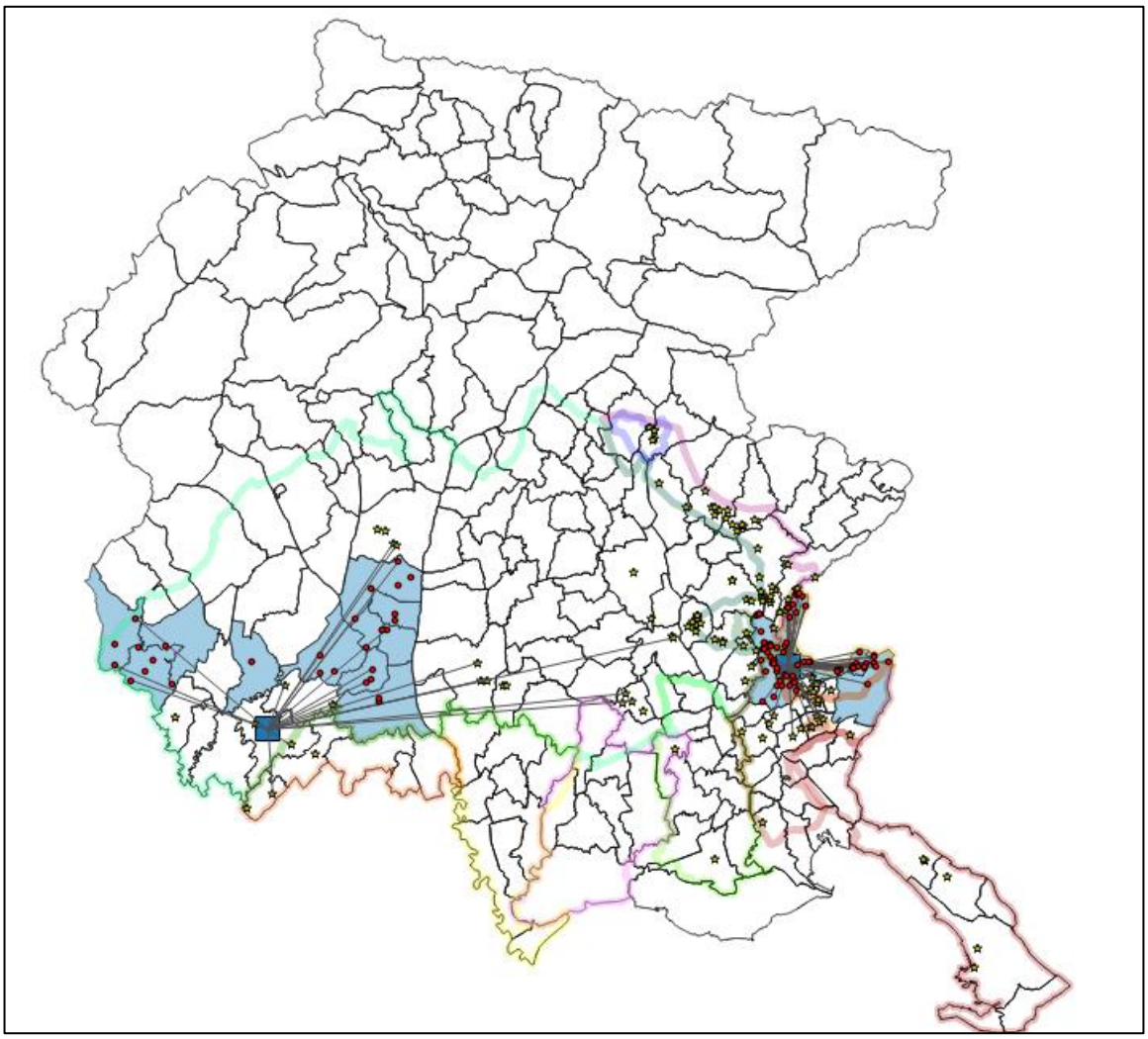
that explored how a person's relations influenced his actions. The author introduced *sociograms* to represent the relations of a group and used this representation to identify *key persons* in the groups. The sociogram represented persons as nodes and relations as edges between the nodes. Through his research Moreno founded the field of *sociometry*, *i.e.* the measurement of interpersonal relations in small groups, which is a precursor to social network analysis. Lewin (1947) also studied group behavior and argued that the structure of a group could be analyzed using set theory and topology. Cartwright and Harary (1956) used the mathematical models of Lewin and the sociogram of Moreno as a basis for introducing *graph theory* to group behavior. 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 we used UCINET (version 6.260) for analyzing and visualization of the social network. UCINET is a social network analysis program developed by Borgatti *et al.* (1996) and 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 and to determine their identities and individual profiles (cf. different network dimensions in the social network questionnaire).

Figure 10 Network analysis



Source: our elaboration with arc gis 9.0

3.5.4 Modeling and measuring a social network

Networks may be modeled 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.

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 center 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 analyzed 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 analyzed 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 *et al.*, 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 analyzed 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.

FIRST PART

4 First Analysis - Influence of cluster on wine sector

4.1 Sample and data collection

This study deals with wineries in Friuli-Venezia Giulia (north-eastern Italy). The firms forming the object of our study were located in the nine sub-regional areas with a strong vocation for winemaking, both classified as DOC zones and DOCG zones called *Friuli Annia, Friuli Aquleia, Colli Orientali del Friuli, Collio, Friuli Grave, Friuli Isonzo, Friuli Latisana, Lison-Parmaggiore* and *Ramandolo.* The wines produced in these areas are of high quality, well known and appreciated in Italy and abroad. These areas enjoy a particularly favorable set of climatic and production conditions, and they present a marked concentration of wine-makers and other firms and institutions active in the wine sector, giving rise to a cluster *à la* Porter (1998), that has been amply studied for the wine industry in various parts of the world (Harfield, 1999; Aylward, 2004; Zanni, 2004; Giuliani and Bell, 2005; Dana and Winstone, 2008; Morrison and Rabellotti, 2009).

A preliminary version of our questionnaire[29] was prepared drawing information from the literature. Then it was reviewed by experts and, with minor changes, it was tested on a group of four firms randomly extracted from our finally sample of 234 firms. In this pilot study phase, interviews were conducted with these firms' CEOs and export managers to see if there were any problems with the questionnaire. Based on their feedback, a few statements were reworded and explanations were given where necessary to clarify the questions. These companies were not considered in the final sample.

Data were collected between November 2012 and November 2013 by means of this structured questionnaire and in-depth personal interviews with the CEOs of the firms in our sample. It is generally accepted that the entrepreneurial orientation of an enterprise is typically operationalized from the perspective of its CEO (Covin and Slevin, 1989). In many cases, the CEO was also the owner of the firm, and he always had a key strategic role in the firm's establishment and/or development. All respondents were assured of the confidentiality of the information they provided. The CEO of 550 wine firms were contacted and asked to complete research questionnaires for this study. Three weeks after the initial mailing telephone calls were made to all no responding firms in an attempt to

[29] The questionary is shown in appendix 1.

improve the response rate. Of the 550 firms 234 completed and returned the research questionnaire for a response rate of 42.50%.

4.2 Measurement of local clustering

In this section we identify the locations and other characteristics of the clusters. Clustering is best understood in the context of *spatial autocorrelation*, a term that describes conditions where the attribute values being studied are correlated according to the geographic ordering of the objects. When the location of firms is spatially auto correlated, it implies that the geographic distribution of economic activity is not random and it is likely to be determined by some underlying political, economic, or physical factors attributable to each geographical unit. Hence, strong positive spatial autocorrelations mean that the attribute values of adjacent geographical units are more than closely related.

One of the most important measure of spatial autocorrelation is Moran's Index. Particularly in this paper the Local Moran's (LMi) algorithm was elaborate by ArcGIS 9.3 to compute a Local Moran value for the region under investigation. This spatial statistical technique in a geographic information system was used to quantify significant spatial patterns, such as concentrated wine production rates and spatial outliers. Inverse distance weighting with row standardization of the spatial weights, in which each weight is divided by its row sum, was selected; this type of weighting permits comparability among areas with different numbers of neighbors (Waller and Gotway, 2004). The resulting Local Moran indices were transformed to z scores to indicate whether the similarity or dissimilarity in values between each area and those of its neighbors exceeded the value that would be expected, due to chance. Following Moran (1948) and Waller and Gotway (2004), the *Univariate Global Moran's Index* (Mi) is defined as follows:

$$Mi = \frac{n \cdot \sum_{i=1}^{n} \sum_{j=1}^{n} w_{ij}(x_i - \bar{x})(x_j - \bar{x}).}{\sum_{i=1}^{n} \sum_{j=1}^{n} w_{ij} \cdot \sum_{i=1}^{n} (x_i - \bar{x}).^2}$$

where:

a) *n* is the number of the wineries;
b) x_i is the wine production in terms of vineyards areas (hectares) of the *i*th farm;

c) $\bar{x}=\frac{1}{n}\sum_{i=1}^{n} x_i$ is the average vineyards areas (hectares) of the *n* wineries;

d) w_{ij} = (1/ d_{ij}) is the *spatial proximity index* that is the inverse of the distance (kilometers) $d_{ij,}$ in which d_{ij} represents the *Cartesian distances* between *i*th winery and *j*th winery.

A spatial weight matrix can be defined either by contiguity (whether polygons share common boundaries or vertices) or by distance (whether polygon geometric centroids are within certain distance thresholds). If distance is used, the spatial weight matrix can be calculated using either a distance banding algorithm, such as inverse distance or inverse distance squared, or a fixed distance band[30].

To localize the presence and magnitude of spatial autocorrelation, a measure such as Anselin's Local Indicator Of Spatial Association (LISA) is necessary (Anselin, 1995). LISAs are simply local derivations or disaggregation's of global measures of spatial autocorrelation. For this study, the Local Moran index used is defined for each *i*th location as it follows:

$$LMi=\frac{n\cdot(x_i-\bar{x}).}{\sum_{i=1}^{n}(x_i-\bar{x})^2}\sum_{j=1}^{n} w_{ij}(x_j-\bar{x}).$$

Each municipality was then assigned a categorical value depending on its LMi z score, so that each municipality was or:

a) part of a concentration of municipalities in which similar levels of production in terms of vineyards areas clustered;

[30] A spatial weights matrix is a representation of the spatial structure of your data. It is a quantification of the spatial relationships that exist among the features in your data set (or, at least, a quantification of the way you conceptualize those relationships). Because the spatial weights matrix imposes a structure on your data, you should select a conceptualization that best reflects how features actually interact with each other (giving thought, of course, to what it is you are trying to measure). If you are measuring clustering of a particular species of seed-propagating tree in a forest, for example, some form of inverse distance is probably most appropriate. However, if you are assessing the geographic distribution of a region's commuters, travel time or travel cost might be a better choice. While physically implemented in a variety of ways, conceptually the spatial weights matrix is an *NxN* table (*N* is the number of features in the data set). There is one row for every feature and one column for every feature. The cell value for any given row/column combination is the weight that quantifies the spatial relationship between those row and column features.
At the most basic level, there are two strategies for creating weights to quantify the relationships among data features: binary or variable weighting. For binary strategies (fixed distance, K nearest neighbors, or contiguity) a feature is either a neighbor (1) or it is not (0). For weighted strategies (inverse distance or zone of indifference) neighboring features have a varying amount of impact (or influence) and weights are computed to reflect that variation. The Generate Spatial Weights Matrix tool creates a binary file defining the relationships among features in your dataset, based on your parameter specifications. It is constructed in a way that minimizes required computations and computer memory. These relationships are utilized in the mathematics of the spatial statistics tools.

b) a spatial outlier (*i.e.*, the production in terms of vineyards areas was much different from the one of nearby or surrounding municipalities).

These categorical assignments were combined with a categories ranking of wine production in terms of vineyards areas, based on a comparison between winery and mean wine production in the region under investigation (Tables 7, 8), and these bivariate categorical values were mapped (Figures 11,12,13,14).

Thus we classified the 234 wine firms into *agglomerated firms* and *non-agglomerated firms* which were clustered based on their location in one of the two groups described above. Specifically the first group (*agglomerated firms)* includes 114 wineries located in areas with high or strong value of the *Local Moran's Index - LMi z score* (group 1 with LMi >2 and COType HH); the second group (*non-agglomerated firms*) includes 120 wineries located in areas where the value of the *Local Moran's index z score* is not significant or weak (group 2 with LMi ≤ 2 and COType NULL).

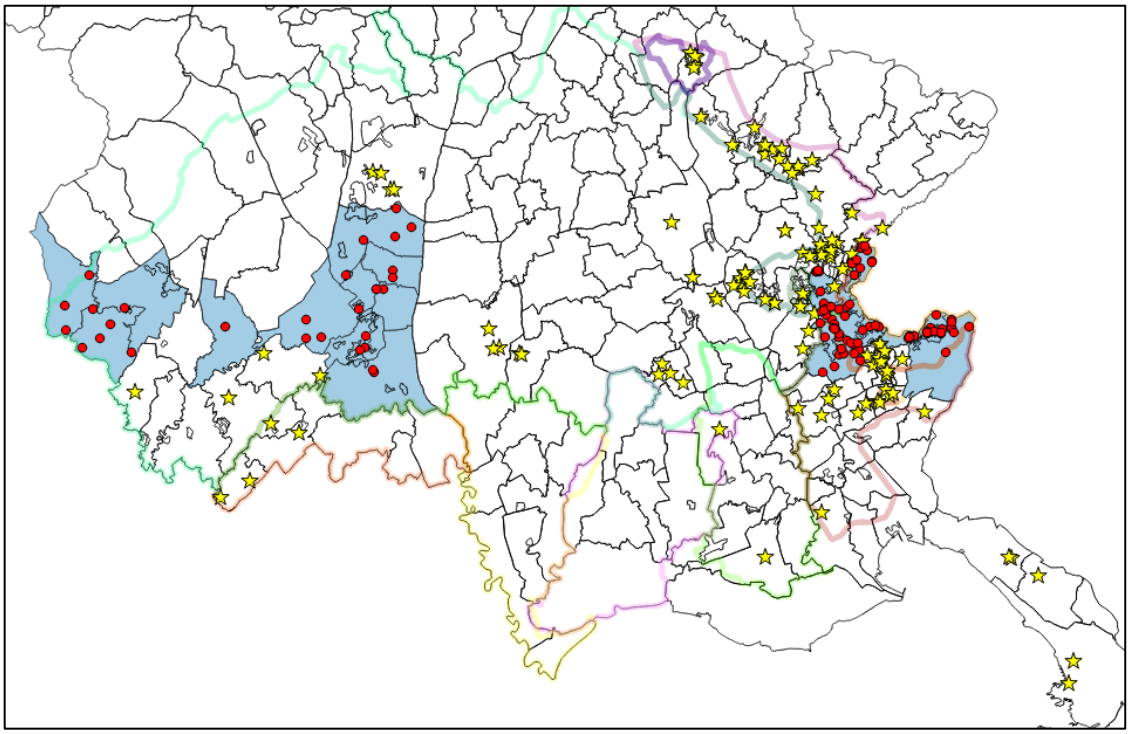
4.2.1 Modeling and Measuring a Social Network

Networks may be modeled 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 center 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 analyzed 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 analyzed 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

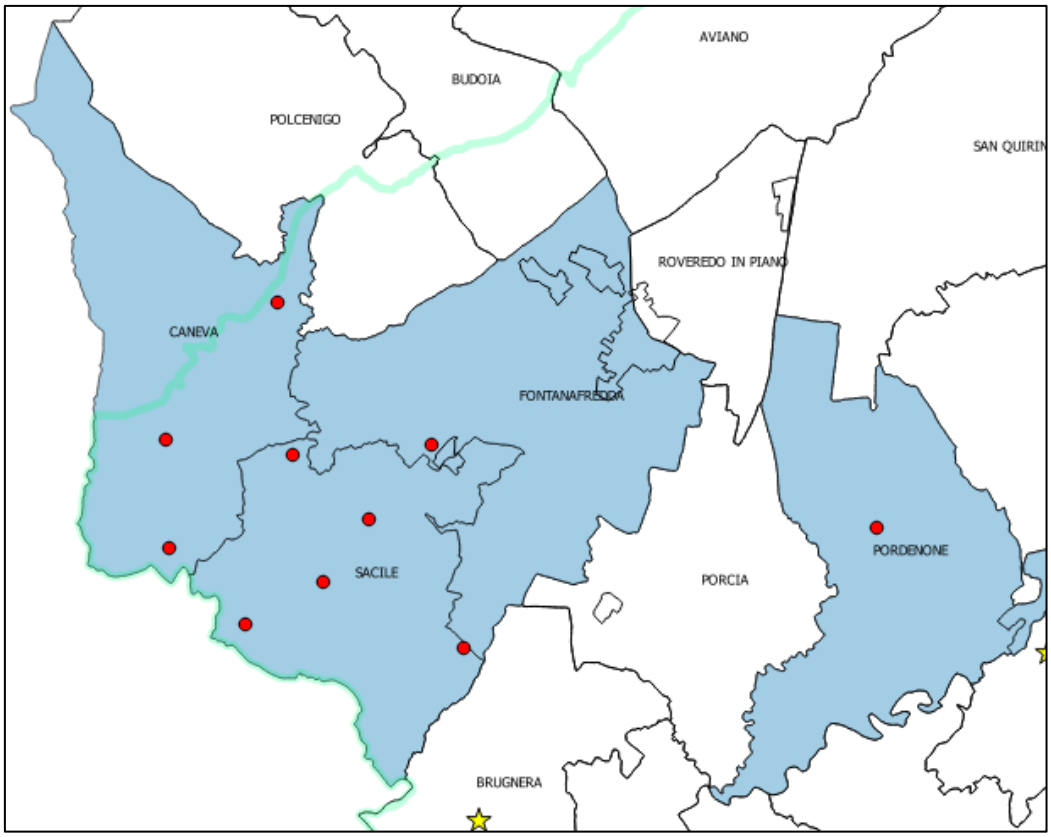
exists between the actors or "0" if no tie exists. Ties may also be "valued". Values indicate a characteristic of the relationship that the research has quantified (for example, measurements of the intensity of interaction). Ties may also be "directed". For example, the relationship "lends money to" 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 analyzed 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.

Figure 11. Municipalities by wine production and spatial situation (Friuli Grave and Collio).

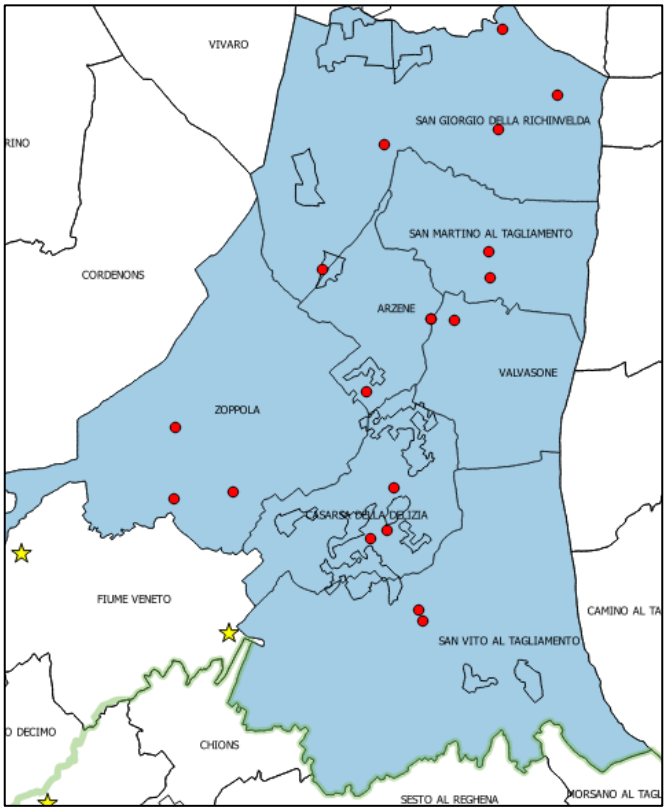


Source: our elaboration with Arc Gis 9.0 and Q-Gis 2.0

Figure 12 Municipalities by wine production and spatial situation (Friuli Grave).

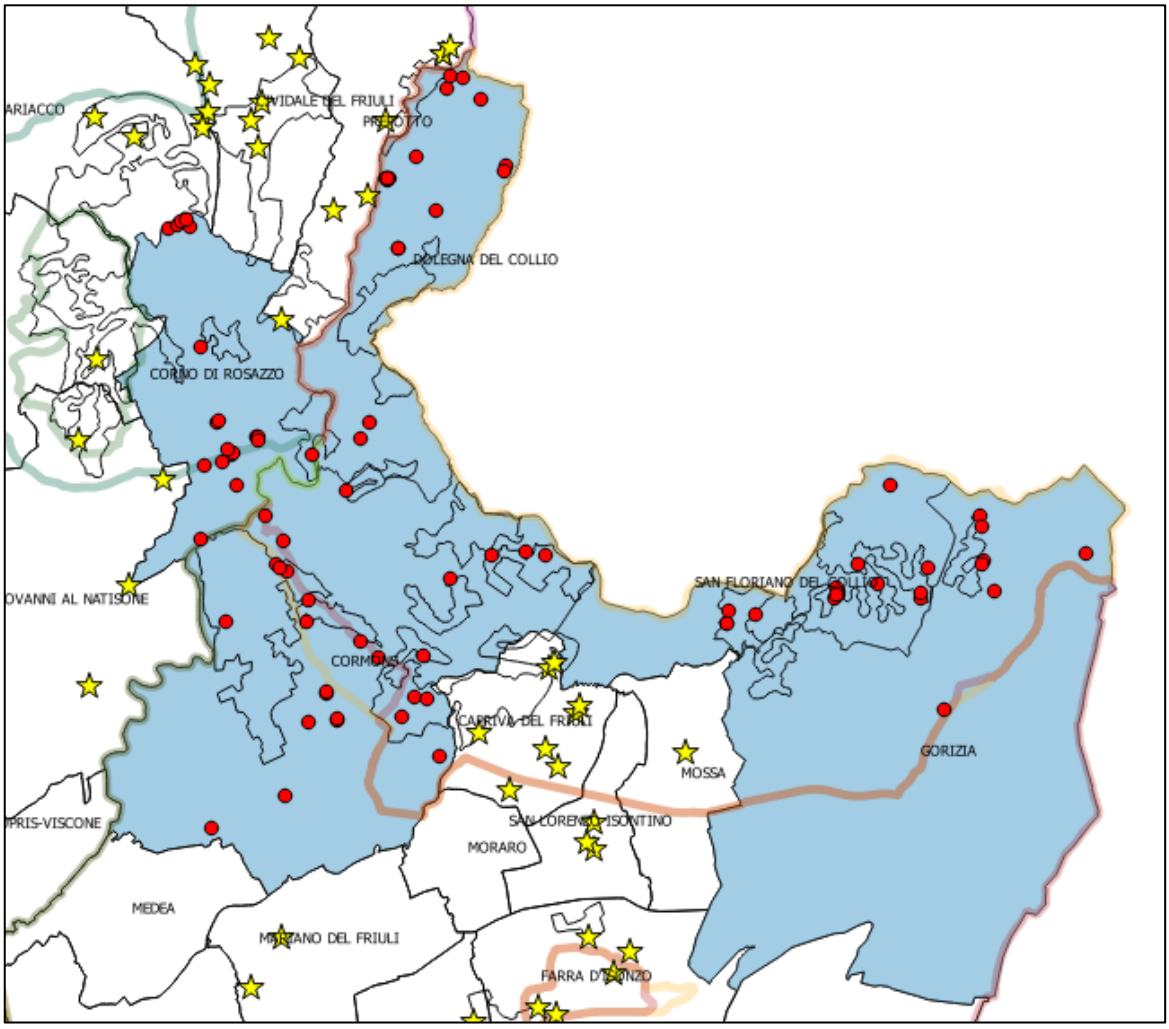


Source: our elaboration with Arc Gis 9.0 and Q-Gis 2.0



Source: our elaboration with Arc Gis 9.0 and Q-Gis 2.0

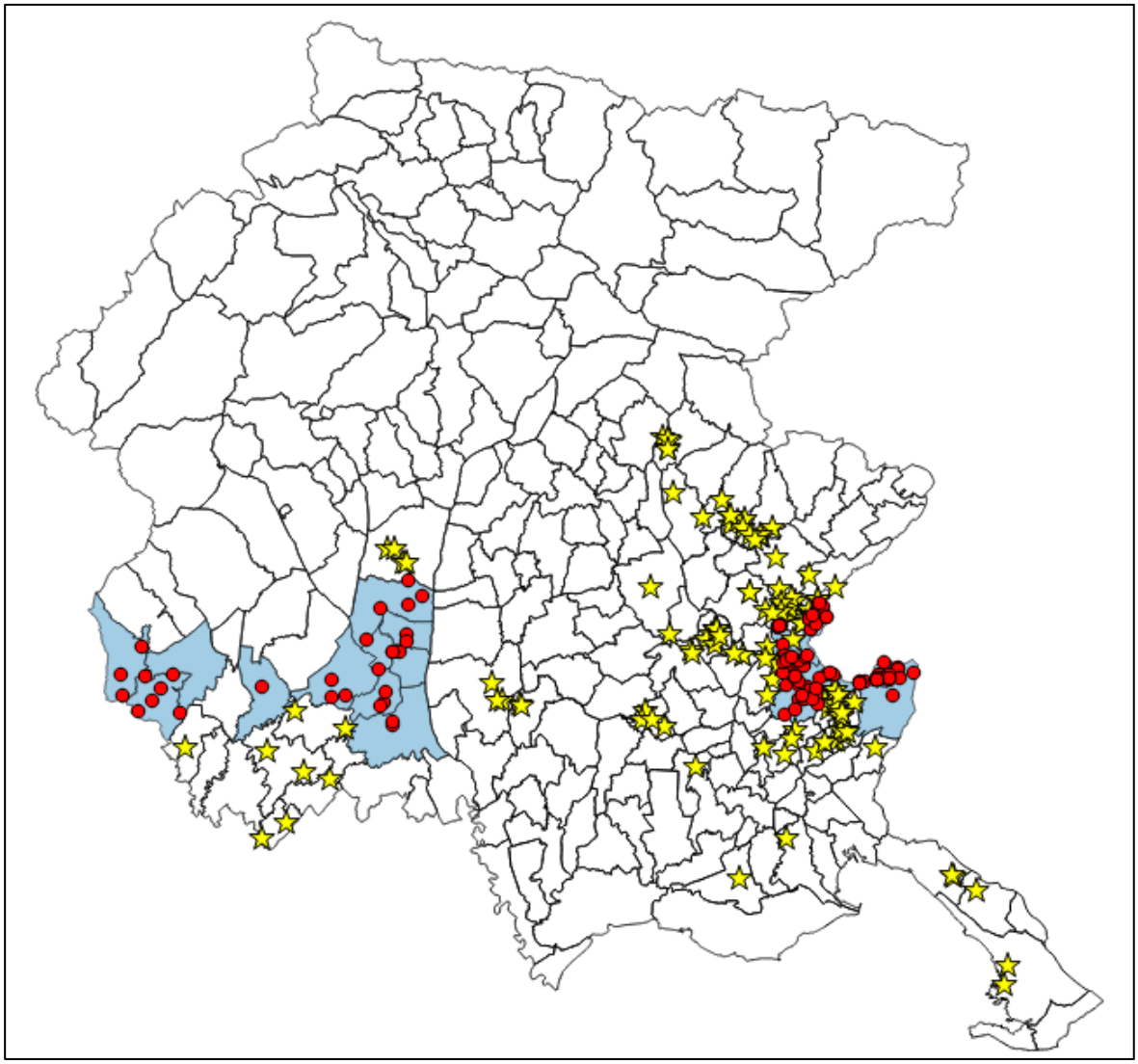
Figure 13. Municipalities by wine production and spatial situation (Collio).



	Category
	Agglomerated firms
	No agglomerated firms
	Agglomeration zone
	No agglomeration zone

Source: our elaboration with Arc Gis 9.0 and Q-Gis 2.0

Figure 14. Municipalities by wine production and spatial situation



	Category	Number of firms
	Agglomerated firms	114
	No agglomerated firms	120
	Agglomeration zone	
	No agglomeration zone	
	Total firms	234

Source: our elaboration with Arc Gis 9.0 and Q-Gis 2.0

Table 7. Assignment of categorical values to dimensions of wine production and spatial concentration

Production	Category	LMi's z score	Agglomeration	Number of firms Friuli Venezia Giulia
Extremely high production	HH	z >2	yes	114
Low production	NULL	z≤2	no	120
No production	NULL			
TOTAL				234

Source: Our elaboration in ARC Gis 9.0

Table 8. Firms classified according to Moran Index

Moran Index	Number
Firms Out	114
Firms Inside	120
Total	234

Source: our elaboration

4.3 Measure of the constructs

The items used to measure constructs, except the leverage one, were all assessed on "*Strongly disagree*" (1) to "*Strongly agree*" (7) *seven point Likert-type scales*, following prominent studies and with modifications made following pre-tests. We developed scales for EO dimensions based on Lumpkin and Dess (1996). Major sources for *Risk*-taking (RISK 3 items) measures were studies by Hornsby *et al.*, (2002), and Morgan and Strong (2003); we draw some items from Acedo and Jones (2007) as well. We than relied on Calantone *et al.* (2002) for *Innovativeness* (INNOV 4 items) measures. After that, we built on the works by Acedo and Jones (2007), Hult and Ketchen (2001),

and Morgan and Strong (2003) for *Proactiveness* (PROAC 7 items). Lumpkin and Dess (2001) was the base for *Competitive aggressiveness* (AGRESS 3items) measures.

In examining the dependent variable *firm performance* (FIRPERF), given the complexity of evaluating this variable we use multiple measures of performance as suggested in literature (Westhead *et al.,* 2001; Kalleberg and Leicht 1991; Birley and Westhead 1990). In fact, it has been widely recognized that use of only a single measure, such as profit, does not necessarily reflect organizational reality, but rather its situation in the short run. Furthermore, this same measure does not necessarily reflect its ability to survive and prosper in the long run (Barney 1997).

Theoretical approaches to organizational performance and effectiveness include concepts such as the goal approach and the system resource approach. The *goal approach* measures progress toward attainment of organizational goals. The *system resource approach* assesses the ability of the organization to obtain resources to maintain the organizational system (Yuchtman and Seashore, 1967). Both focus solely on a single dimension: attainment of goals or resources.

Among the suggested approaches, the goal approach is most widely used because the output goals can be readily measured. The current study focuses on the goal approach, which reflects the owner–manager point of view (Pfeffer and Salancik, 1978) and is most relevant to small ventures because of the dominant role of the entrepreneur in determining the performance of the venture. Furthermore the goal approach seems to better fit small entrepreneurial ventures with a significant representation of self-employed entrepreneurs or lifestyle family-owned businesses like the one of the wine sector. Accordingly, in the present study we used subjective measures - including indicators such as perceived profitability relative to competitors; perceived change in cash flow; perceived growth in market share; perceived customer satisfaction and perceived success in generating profit in times of geopolitical crisis.

We used two independent moderator variables:

a) agglomeration: this independent moderating variable was measured dichotomously, based on whether (1) or not (0) the firm are located in an agglomerate or non-agglomerate area;
b) network: this independent moderating variable was measured dichotomously, based on whether (1) or not (0) the firm are networked together in a firm-consortium cooperation (*i.e.* a mutual cooperation within a wine consortium) to

improve/maintain the quality and achieve more successful marketing with an aim to enter into the foreign markets.

Regarding control variables we have chosen firm's age and size as the two independent control variables considered to minimize any spurious results. The firm's age was the number of years elapsing since its establishment. The firm's size was obtained from the natural logarithm of the total number of its employees (Casillas *et al.*, 2010; Covin *et al.*, 2006).

Table 9. In table descriptive data of the variables is presented

	Variables	Mean	Standard Deviation
1	**Performance (Perf.)**	17,79	3,48
2	**Firm's age (F. Age)**	1953,53	79,47
3	**Firm's dimension (F. dim.)**	1,76	0,56
4	**Proactiveness (P.)**	28,27	3,96
5	**Competitive Aggressiveness (A.)**	15,01	2,33
6	**Innovativeness (I.)**	14,17	4,35
7	**Risk-taking (R.)**	11,18	2,83
8	**Agglomeration (Agg.)**	0,51	0,50
9	**Network (Net.)**	0,66	0,47

Source: our elaboration with SPSS 20 program

In order to represent these interaction terms, the variables were first mean-centered to reduce multicollinearity and then multiplied together. A reliability coefficient (Cronbach's alpha) was computed for each factor to estimate the reliability of each scale. It is generally accepted that a Cronbach Alpha above 0.6 is satisfactory for a data set (Malhotra and Peterson, 2006) (Tables 10-14).

The reliability (Crombach's alpha) coefficients of each of the above mentioned coefficients of each factors were reported to be satisfactory (tables 10-14)

Factor analysis with varimax rotation yielded factors in agreement with EO literature and a fifth factor reflecting firm performances. The factors were risk taking, proactiveness, innovativeness, competitive aggressiveness and performances.

Table 10. Factor labels and statement (risk taking)

Factor labels and statement	Factor loading	Eigenvalues	% Of variance	Alpha coefficient	Test KMO
Risk taking		1,89	62,84	0,69	0,63
the uncertainty surrounding my firm prevents me from doing my best	0,82				
I often get irritated when unexpected events ruin my plans	0,85				
I enjoy working in uncertain situations	0,70				

Source: our elaboration with SPSS 20 program

Table 11. Factor labels and statement (proactiveness)

Factor labels and statement	Factor loading	Eigenvalues	% of variance	Alpha coefficient	Test KMO
Proactiveness		3,44	43,01	0,80	0,69
I am always at the lookout for things that will improve my life	0,60				
Nothing is more exiting than seeing my ideas turn into reality	0,67				
If I see something I don't like, I fix it	0,61				
No matter the odds, if I believe in something I will make it happen	0,74				
I am very good at identifying opportunities	0,71				
I always look for better ways of doing things	0,62				
If I believe in an idea, no obstacle will prevent me from implementing it	0,60				
I can see opportunities way before others do	0,67				

Source: our elaboration with SPSS 20 program

Table 12. Factor labels and statement (innovativeness)

Factor labels and statement	Factor loading	Eigenvalues	% of variance	Alpha coefficient	Test KMO
Innovativeness		2,50	62,55	0,79	0,72
I'm always looking for innovative ideas	0,78				
Always accept innovative ideas	0,86				
People are penalized for new ideas that do not work	0,74				
They are always the first to adopt innovations	0,78				

Source: our elaboration with SPSS 20 program

Table 13. Factor labels and statement (competitive aggressiveness)

Factor labels and statement	Factor loading	Eigenvalues	% of variance	Alpha coefficient	Test KMO
Competitive Aggressiveness		2,03	50,70	0,64	0,53
My firm makes no special effort to take business from the competition	0,87				
Typically seeks to avoid competitive clashes, preferring a "live and-let-live" posture	0,75				
Typically adopts a very competitive "undo-the-competitors" posture	0,63				
My firm is very aggressive and intensely competitive take business from the competition	0,56				

Source: our elaboration with SPSS 20 program

Table 14. Factor labels and statement (firm performance)

Factor labels and statement	Factor loading	Eigenvalues	% of variance	Alpha coefficient	Test KMO
Firm Performance		2,65	53,04	0,76	0,66
A firm that is more profitable than its main competitors.	0,64				
A firm that has more cash flow	0,76				
A firm that satisfies its customers' needs	0,83				
A firm that achieves a balance between its financial health, its social involvement and its respect for the environment	0,76				
A firm that survives through economic crises.	0,63				

Source: our elaboration with SPSS 20 program

After inspection of the data correlation analysis was conducted table 15 shows the correlation matrix of all the scales.

Table 15. Correlation matrix of the variables

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	**Perf.**	1,00																
2	**F. age**	0,03	1,00															
3	**F. dim.**	-0,03	-0,24	1,00														
4	**Pro.**	0,52	0,05	-0,10	1,00													
5	**Agg.**	0,50	0,12	-0,09	0,45	1,00												
6	**Inn.**	0,32	0,03	0,01	0,41	0,21	1,00											
7	**Risk**	0,25	0,14	-0,01	0,30	0,31	0,19	1,00										
8	**Agg.**	0,02	0,03	-0,12	0,22	-0,17	0,52	0,30	1,00									
9	**Net.**	0,06	-0,07	-0,05	-0,04	0,00	0,00	-0,05	-0,11	1,00								
10	**Rx(Agg.)**	0,37	-0,11	-0,02	0,51	-0,01	0,32	0,08	0,22	0,00	1,00							
11	**Px(Agg.)**	0,23	0,04	-0,01	-0,01	0,61	0,12	0,12	-0,14	0,02	0,02	1,00						
12	**Ix(Agg.)**	0,29	0,01	0,07	0,29	0,13	0,68	0,33	0,51	-0,01	0,48	0,29	1,00					
13	**Ax(Agg.)**	0,23	0,15	-0,02	0,06	0,11	0,28	0,69	0,21	-0,05	0,08	0,21	0,40	1,00				
14	**Rx(Net.)**	0,39	0,05	-0,12	0,82	0,38	0,34	0,25	0,20	-0,02	0,38	0,00	0,22	0,05	1,00			
15	**Px(Net.)**	0,43	0,16	-0,11	0,38	0,83	0,21	0,30	-0,12	0,00	0,00	0,47	0,12	0,09	0,46	1,00		
16	**Ix(Net.)**	0,23	0,05	0,04	0,35	0,22	0,79	0,11	0,41	0,00	0,24	0,12	0,47	0,17	0,43	0,26	1,00	
17	**Ax(Net.)**	0,20	0,14	0,01	0,25	0,31	0,11	0,80	0,25	-0,02	0,06	0,10	0,22	0,47	0,31	0,37	0,14	1,00
$^{**}p < 0,01$ $^{*}p < 0,05$ $^{\dagger}p < 0,10$ (two-tailed)																		
1	**Perf.**	.																
2	**F. age**		.															
3	**F. dim.**		**	.														
4	**Pro.**	**		†	.													
5	**Agg.**	**		†	**	.												
6	**Inn.**	**			**	**	.											
7	**Risk**	**	*		**	**	**	.										
8	**Agg.**			*	**	**	**	**	.									
9	**Net.**								*	.								
10	**Rx(Agg.)**	**	*		**		**	†	**		.							
11	**Px(Agg.)**	**				**	*	*	*			.						
12	**Ix(Agg.)**	**			**	*	**	**	**		**	**	.					
13	**Ax(Agg.)**	**	*			*	**	**	**			**	**	.				
14	**Rx(Net.)**	**		*	**	**	**	**	**		**		**		.			
15	**Px(Net.)**	**	*	*	**	**	**	**	*			**	*	†	**	.		
16	**Ix(Net.)**	**			**	**	**	*	**		**	*	**	*	**	**	.	
17	**Ax(Net.)**	**	*		**	**	*	**	**			*	**	**	**	*	*	.

Source: our elaboration with SPSS 20 program

4.4 Hypothesis development

Despite previous studies accounts for a negative relationship between risk-taking and performance, it is in the nature of entrepreneurship to engage in risk-taking activities in return for expected rewards (Gebreegziabher and Tadesse, 2014; Jalali *et al.*, 2014; Segal, Borgia, and Schoenfeld, 2005). It is also understood that entrepreneurs are more eager to take risks than non-entrepreneurs (Mc Clelland, 1961). Risk-taking orientation has also been regarded as having a direct relation with the likelihood of seizing beneficial deals and, in general, is positively related to success (Frese, Brantjes, and Hoorn, 2002). We propose following hypothesis:

H1. The greater the entrepreneur's orientation the greater the performances of SMEs.

Proactiveness is another relevant dimension of entrepreneurship. Indeed, it is a fundamental attitude for firms achieving competitive advantage and innovating (2001; Jalali *et al.*, 2014). It has been argued that proactive firms are far ahead of their competitors in finding profitable opportunities and taking initiatives that enhance advantage, which would allow to charge higher prices than their rivals (Craig *et al.*, 2014; Zahra and Covin, 1995). Wiklund and Shepherd (2005) posite that proactive firms better govern the market by capturing the dispensation channel and establishing brand recognition. We propose following hypothesis:

H2. The greater the entrepreneur's proactiveness, the greater the performances of SMEs.

Several studies pointed out a positive relationship between innovativeness and firms' performance (*e.g.* Soininen *et al.*, 2012). On the basis of such results the following hypothesis was proposed:

H3. The greater the entrepreneur's innovativeness, the greater the performances of SMEs.

The relationship between competitive aggressiveness and firms' performance seems to be quite controversial. Some author proved a positive link between these two dimensions (Madhoushi *et al.*, 2011) while some other have found a null relationship (Casillas and Moreno, 2010) between competitive aggressiveness and firms performance. We propose following hypothesis:

H4. The greater the entrepreneur's aggressiveness, the greater performance of SMEs.

According to the current literature there is a positive relation between EO's dimensions and performance. Moreover to the extent that agglomeration and network positive affect performances it is expected to strengthen the positive link between EO's dimensions and performance due to their positive impact on firms' performance.

Therefore we propose that agglomeration and network play positive roles in the relationship between EO's dimensions and firms' performance. Thus, the following hypotheses are formulated:

H5. Agglomeration has a moderating role between the entrepreneur's risk-taking (or proactiveness, or innovativeness, or competitive aggressiveness) and the firm's performance.

H6. Network has a moderating role between the entrepreneur's risk-taking (or proactiveness, or innovativeness, or competitive aggressiveness) and the firm's performance.

4.5 Data Analysis and Results

Following the procedures suggested by Cohen and Cohen (1983), a Hierarchical Moderated Regression Analyses (HMRA) was performed to test the hypothesized relationships. The hierarchical approach is appropriate when analyzing multiplicative terms in regression analysis or, more generally, when analyzing highly correlated independent variables (Bagozzi, 1984; Cohen, 1978; Cohen and Cohen, 1983). To conduct the HRMA, perceived usefulness and perceived ease of use were utilized as

independent variables, and mobile experience and technical support were used as two moderator variables. Interaction terms were then included in the model.

The validity of the procedure has been shown mathematically (Arnold, 1982; Cohen and Cohen, 1983) as well as in computer simulations (Stone and Hollenbeck, 1984). In each step of the hierarchical analysis, the next higher order of interaction is added (two-way interactions), and incremental R^2 and F tests of statistical significance are evaluated (table 16). An interaction effect exists if, and only if, the interaction term gives a significant contribution over and above the direct effects of the independent variables (Cohen and Cohen, 1983). As shown in table 16, to test the hypotheses, we first added the control variables (results reported, model 1), then the independent variables (main-effects-only, model 2), then the interaction terms (model 3), and finally the two-way interaction terms (model 4). The control variables of firms' age and firms' dimensions explain 0.2 % of the variation in performance.

The next step of the analysis addresses main dimensions of EO, risk-taking, proactiveness, innovativeness and competitive aggressiveness on business performance over and above the base model. These variables account for an additional 37.4% of the variation in performance, as displayed in the second column of Table 16. Proactiveness, innovativeness and competitive aggressiveness have a statistically significant positive relationship with business performance (0,336, 0,163 and 0,282 respectively); *i.e.*, higher business performance is associated with greater Proactiveness, competitive aggressiveness ($P < 0,01$) and greater innovativeness ($P < 0,05$). This latter finding provides support for Hypothesis 2, 3 and 4.

The third model significantly increase the amount of explained variance (47.2%), and five of the two-way interactions are statistically significant ($P < 0,01$and $P < 0,05$). Thus, the Hypothesis 5 is partially supported by the data (*i.e.* risk-taking and proactiveness). However, a statistically significant negative contribution was noted for competitive aggressiveness (-0.164). This suggests that hypothesis 5 is not supported for competitive aggressiveness. Regarding network this variable does not act as a moderator therefore, this does not support H6 (all $p > 0,05$).

The results in Table 16 indicate that its standard regression coefficient ($\beta = 0.062$, ns) was not significant in model 3 and did not remain significant in model 4 ($\beta = 0.076$, ns). With regard to the interaction effects of network none of these was significantly related to intention to business performance. Thus this doesn't supported H6 for network.

Table 16. Standardized regression estimates

	MODEL 1	MODEL 2	MODEL 3	MODEL 4
Control Variables				
Firm's age	0,025	-0,026	-0,022	-0,007
Firm's dimension	-0,028	0,020	0,008	0,041
Main Effects				
Risk-taking		0,034	0,070	-0,173
Proactiveness		0,322**	0,336**	0,254*
Innovativeness		0,108†	0,163*	0,065
Competitive Aggressiveness		0,330**	0,282**	0,480**
Moderator				
Agglomeration (Agg.)			-0,108	-0,020
Network (Net.)			0,062	0,076
Interactions				
Risk-taking x (Agg.)				0,282**
Proactiveness x (Agg.)				0,269**
Innovativeness x (Agg.)				0,034
Competitive Aggressiveness x (Agg.)				-0,164*
Risk-taking x (Net.)				-0,009
Proactiveness x (Net.)				-0,093
Innovativeness x (Net.)				-0,085
Competitive Aggressiveness x (Net.)				0.091
F	0,199	22,087**	17,774**	12,148**
R^2	0,002	0,376	0,387	0,472
Adjusted R^2	-0,007	0,360	0,365	0,434
ΔR^2	0,002	0,374	0,011	0,085

**$p < 0,01$ *$p < 0,05$ †$p < 0,10$ (two-tailed) Source: our elaboration with SPSS 20 program

The test for interaction was carried out using the ModGraph program (an excel version program) by Jose (2008); which is based on the works of Field (2006) and Aiken and West (1991). Interaction graphs were generated using the mean values and standard deviations of both main effects (centered variables) as well the unstandardized regression coefficients so as to confirm the existence of interaction effects (Jose, 2008).

The plots were constructed by plotting low, medium and high scores of the

variables. For this, Jose's (2002) Excel version of ModGraph program for categorical variables was used. Following the recommendations of Aiken and West (1991), simple effects tests were conducted to determine whether the slopes differed significantly from zero

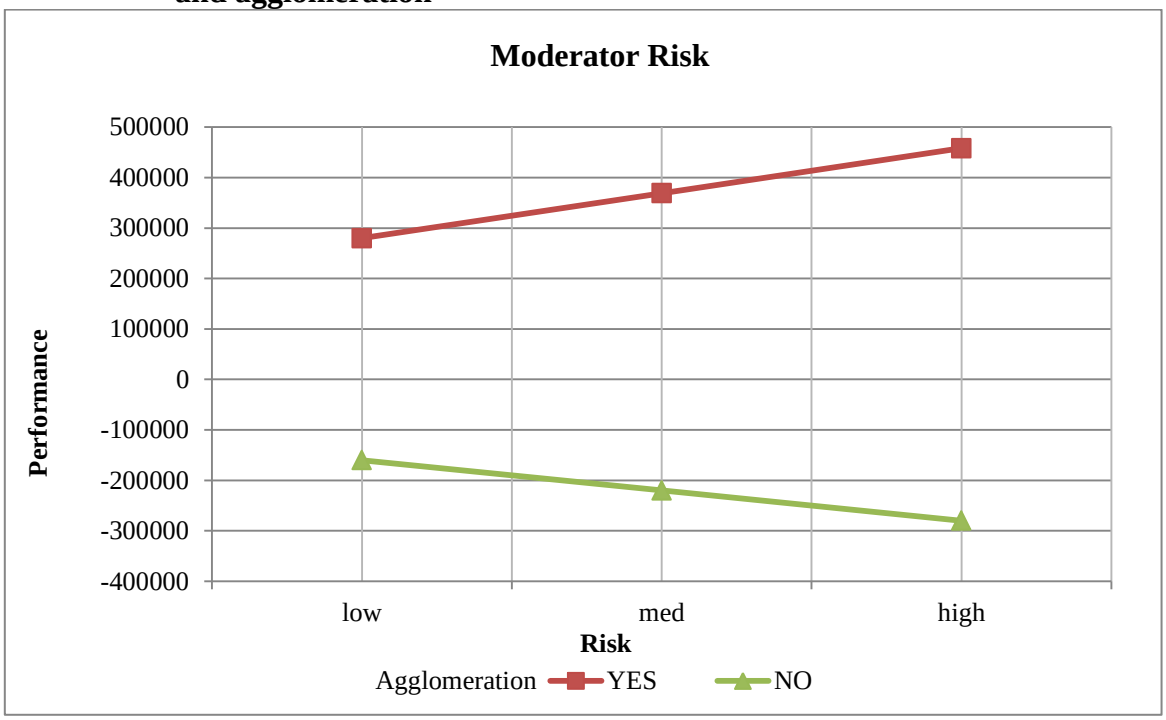
For each significant interaction, Jon's (2008) ModGraph program was used to generate figures descripting significant interaction. These plots are shown in figures 15-16.

Figure 15 shows that performance significantly increases as risk taking increases when agglomeration is low but not low levels of agglomeration.

Figure 16 and 17 reveal that agglomeration is significantly and positively related to performance.

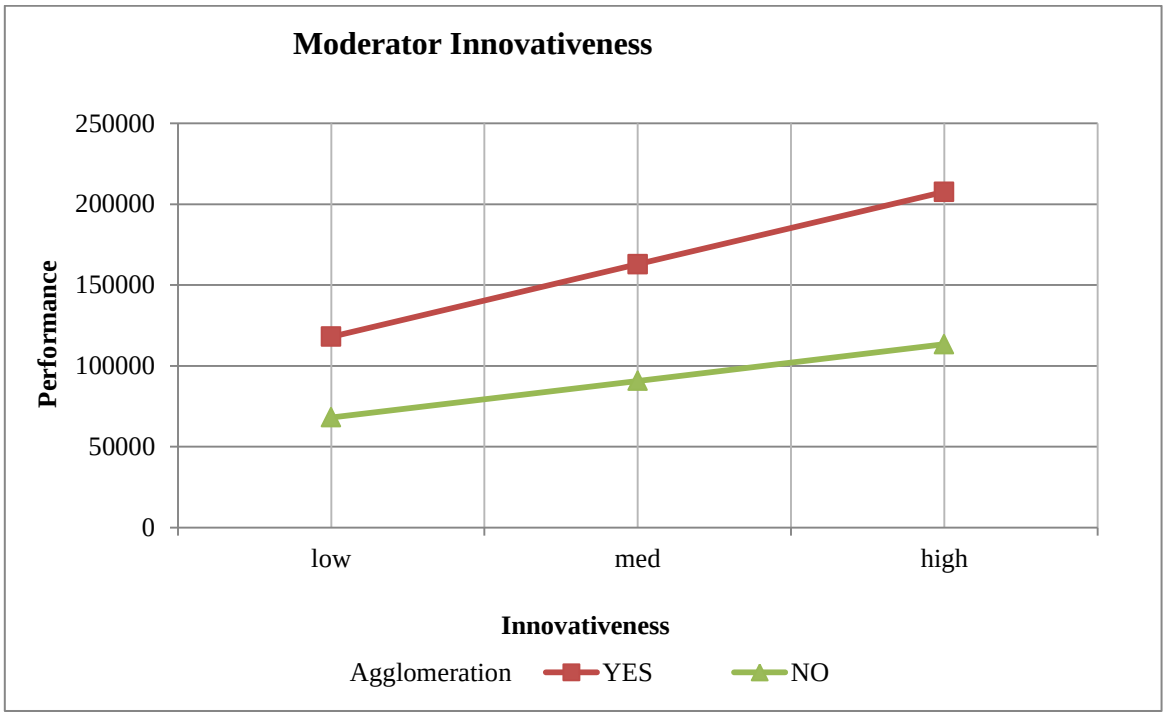
In other words as agglomeration increased performance increased for high levels of innovativeness and aggressiveness.

Figure 15. Moderating effects of the performance on the relationship between risk and agglomeration



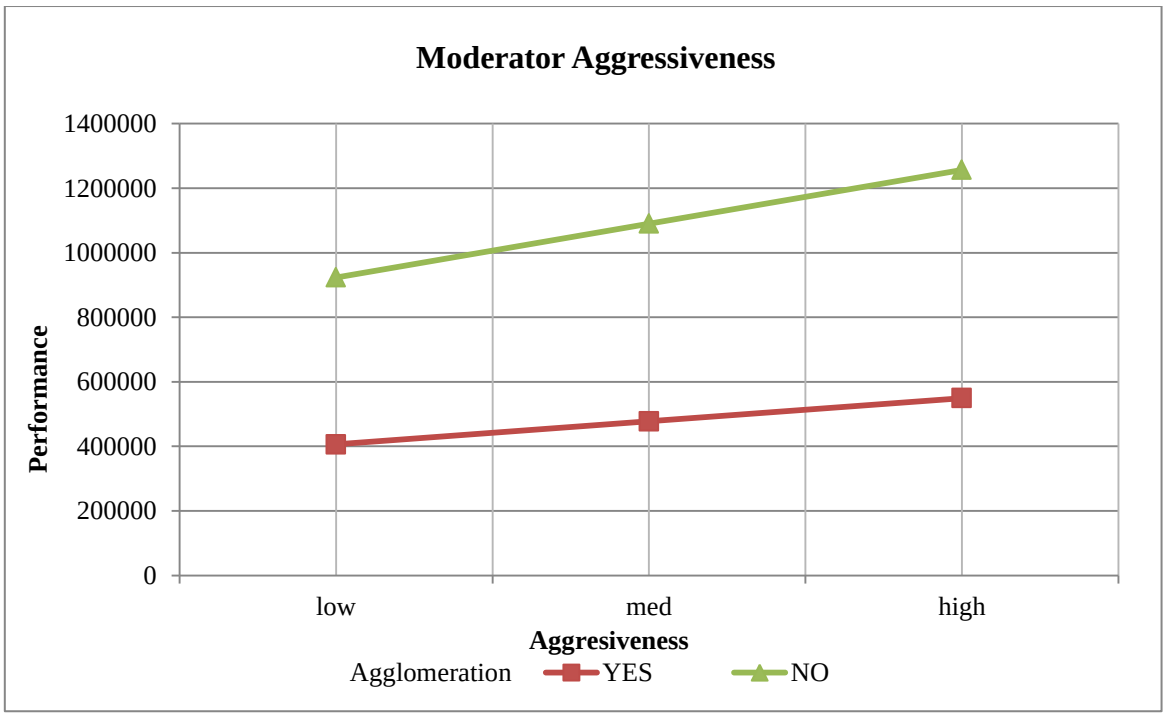
Source: our elaboration with ModGraph V3-1 program.

Figure 16. Moderating effects of the performance on the relationship between innovativeness and agglomeration



Source: our elaboration with ModGraph V3-1 program.

Figure 17. Moderating effects of the performance on the relationship between aggressiveness and agglomeration



Source: our elaboration with ModGraph V3-1 program.

SECOND PART

5 Second analysis - e-quality

5.1 E-commerce

5.1.1 E-commerce and web quality

With the start of the internet revolution in 1990, an increasing number of companies use business-to-consumer e-commerce. More importantly, companies are using the web to promote their products and services (Kim and Niehm, 2009). Research shows that the quality of the website is perceived as very important for generating more sales and maintaining loyal customers (Ranganathan and Ganapathy, 2002). The companies understand the importance of maintaining safe and reliable websites specifically to attract and retain customers.

In order to position their brands and leverage the online medium, companies need professionals who can critically evaluate the design and functionality of the website. The development of a strong online presence is essential for most businesses, if such sites are basic "brochure ware" or offer fully functional shopping carts tied to the transactional database.

Generally, we can assume that the company has developed its own website or hired a firm to do it, so the origin and legitimacy of the site are not in question. In addition, it can be assumed that the purpose of the site is to push the corporate brand, increase their visibility, and/or to sell goods or services through the site.

Researchers are trying to find balance between a company's website quality and customer satisfaction. While some studies focused on measuring quality website (Parasuraman *et al.*, 2005; Santos, 2003), other studies focused on the relationship between web quality, service quality and other variables (Aladwani and Palvia, 2002; Bressolles *et al.*, 2007; Kim and Stoel, 2004; Lin, 2007; Loiacono *et al.*, 2000; Yoo and Donthu, 2001). The background of the studies include retail (Kim and Stoel, 2004, Wolfinbarger and Gilly, 2003), banks and financial institutions (Herington and Weaven, 2009), travel, book store (Barnes and Vidgen, 2002), business to business and business to consumer (Lin, 2007) websites.

The main consequences of the quality of websites include customer satisfaction (Abbott *et al.*,2000; Kim *et al.*, 2009), loyalty and customer relationship (Kim and Niehm, 2009; Li and Suomi, 2009), the intention of initial purchase (DeLone and

McLean, 1992), continued purchase (Kuan *et al.,* 2008) and trust (Gregg and Walczak, 2010). Some studies concentrate on the characteristics of the interface of the website because the interior design has a profound influence on online shoppers.

5.1.2 Customer satisfaction

Customer satisfaction is an important goal for all business activities and has been a central concept in marketing literature. Companies face stiff competition because they move from a product and sales philosophy to a marketing philosophy, which gives a company a better chance to out-perform the competition (Kotler, 2000). The degree of customer satisfaction translates into higher profits for the companies and the increase in market share. The importance of customers has been highlighted by many researchers and academics.

Various researchers have tried to define customer satisfaction. Oliver (1981) defined satisfaction as "A summary of psychological state resulting when the emotion surrounding disconfirmed expectations is coupled with the consumer's prior feelings about the consumption experience". Kotler (2000) defined the satisfaction as "A person's feelings of pleasure or disappointment resulting from comparing a product perceived performance (or outcome) in relation to his or her expectations". Another definition was given by Hansemark and Albinsson (2004): "Satisfaction is an overall customer attitude towards a service provider, or an emotional reaction to the difference between what customers anticipate and what they receive, regarding the fulfillment of some need, goal or desire".

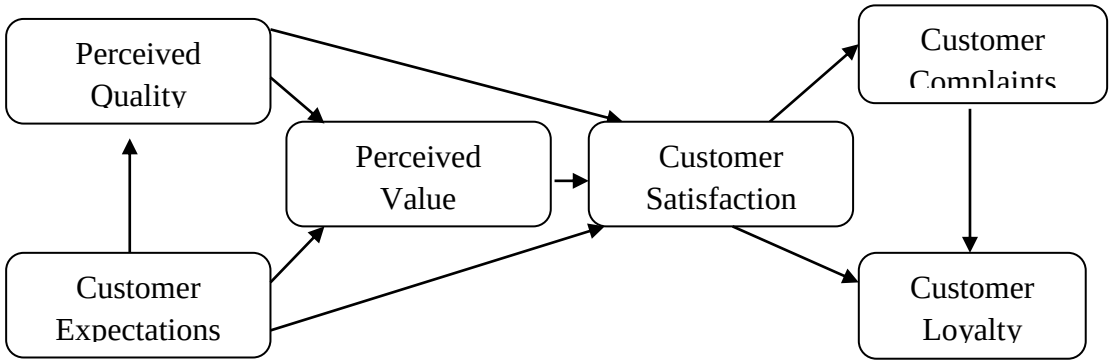
We must also consider that researchers distinguish between attitude and satisfaction. Therefore, an attitude is a perceived service quality, whereas satisfaction is related to a specific transaction (Hansemark and Albinsson, 2004). Oliver (1981) synthesizes the transaction-specific nature of satisfaction, and differentiates it from attitude, as follows: "Attitude is the consumer's relatively enduring affective orientation for a product, store, or process; instead, satisfaction is the emotional reaction following a disconfirming experience which acts on the base attitude level and is consumption-specific."

The distinction between the service quality and satisfaction has been defined by Parasuraman *et al.* (1988) as "Perceived service quality is a global judgment, or attitude, relating to the superiority of the service, whereas satisfaction is related to a specific

transaction". Customer satisfaction should be taken into consideration because it has a positive effect on the profitability of an organization.

Over the past decade, many national indices have been developed in order to measure consumer satisfaction, tat his a complex construct and is not easy to measure. There is an expanse of literature that presents numerous measurement techniques, but currently there is not an unequivocal and universally adopted method for this purpose. In 1994, the *National Quality Research Center* at the University of Michigan, in collaboration with the *American Society for Quality Control*, developed a system known as the *American Customer Satisfaction Index* (ACSI). This indicator measures the quality of the product as perceived by consumers and is used to judge the performance of the companies, markets, industries and the national economy. In the ACSI model, indices are more volatile components measured by several questions that are weighted within the model. The questions assess customer evaluations of the determinants of each index. The indices are reported on a scale from 0 to 100 (Angelova and Zekiri, 2011). A high value of this index leads to repeated purchase, and then to loyalty.

Figure 18. American Customer Satisfaction Index (ACSI) model



Source: www.theacsi.org

5.1.3 Service quality

What is perceived service quality? How must service quality be measured? These two issues have been widely discussed by researchers over the past three decades, and are among the most common themes in the management and marketing literature (Brady and Cronin, 2001; Ekinci, 2001; Parasuraman *et al.*, 1985, 1988, 1994; Seth and Deshmukh, 2005).

In order to clarify these questions, different models of quality of service have been proposed and extensively tested in applied research. Grönroos' (1982) model of service quality was the first attempt, followed by other leading researchers who proposed their conceptualizations (Brady and Cronin, 2001; Cronin and Taylor, 1992; Dabholkar, 1996; Parasuraman *et al.*, 1985, 1988; Parasuraman, *et al.* 1994; Rust and Oliver, 1994). All these models share a common characteristic: they propose a multidimensional conceptualization of service quality that is intrinsically linked to the measurement of consumer perceptions of quality. It is generally accepted that all these models have helped to understand and teach more about the concept of quality of service. However, there are still several issues that are a matter of debate. For example, one of the debates is: What is the relationship between service quality and its dimensions? Dabholkar *et al.* (1996) suggests a reflective model. Parasuraman *et al.* (1985) proposes a formative one. Brady and Cronin (2001) propose both reflective and formative perspectives. The lack of consensus is partly the result of the fact that the philosophical framework adopted for the development of models of service quality is not specified for the researchers mentioned above (Brady and Cronin, 2001). Therefore, the adoption of a realistic or constructivist position (Hunt, 1991) is of key concern in the evaluation and comparison of models of quality of service. We call this issue the "problem multidimensional."

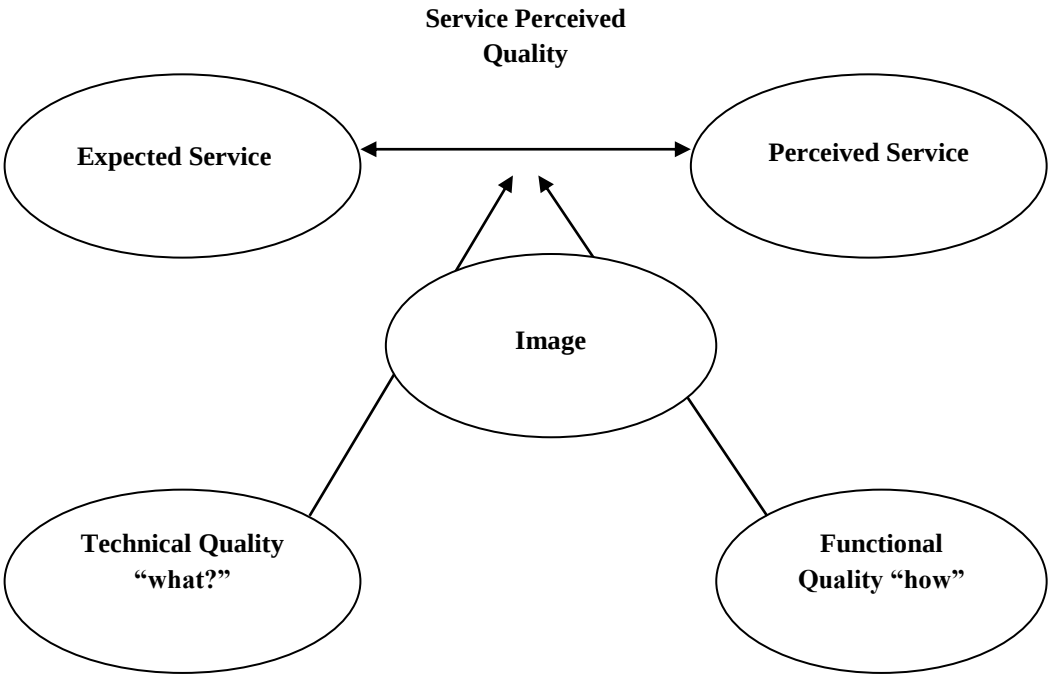
5.1.3.1 Service quality models

Because of the intangible, heterogeneous and inseparable nature of services, the quality of service can be defined as "the customer's assessment of the overall excellence or superiority of the service" (Zeithaml, 1988) or as "the degree of discrepancy between customers' normative expectations for service and their perceptions of service performance" (Parasuraman *et al.*, 1985).

In recent years, many models have been developed for measuring customer perceptions of service quality. The first service quality model was proposed by Grönroos' (1984), which considered the disconfirmation paradigm from customer satisfaction literature in order to propose that the quality of the service is dependent on expected service and perceived service. Based on this approach, the quality of service is the result of a comparison between expected service quality and perceived quality. Expected service quality is formed by variables such as, corporate image, advertising, pricing, on the other hand perceived quality is the result of consumer's view of a bundle of service dimensions, some of which are technical and some of which are functional in nature.

Technical quality refers to the outcome of the service performance or what the customer receives in the service encounter. Instead, the functional quality refers to the subjective perception of how the service is delivered and defines customers' perceptions of the interactions that occur during service delivery. In figure 19 is shown the graphic scheme of the Grönroos model. The model proposes that technical solutions or technical abilities of the employees are examples of variables that influence the technical dimension of quality, whereas the physical resources and customer-oriented techniques, accessibility of services of the company, the consumer orientation of self-service systems, and the ability to maintain continuous contact with its customers are examples of ways of influencing the functional quality dimensions.

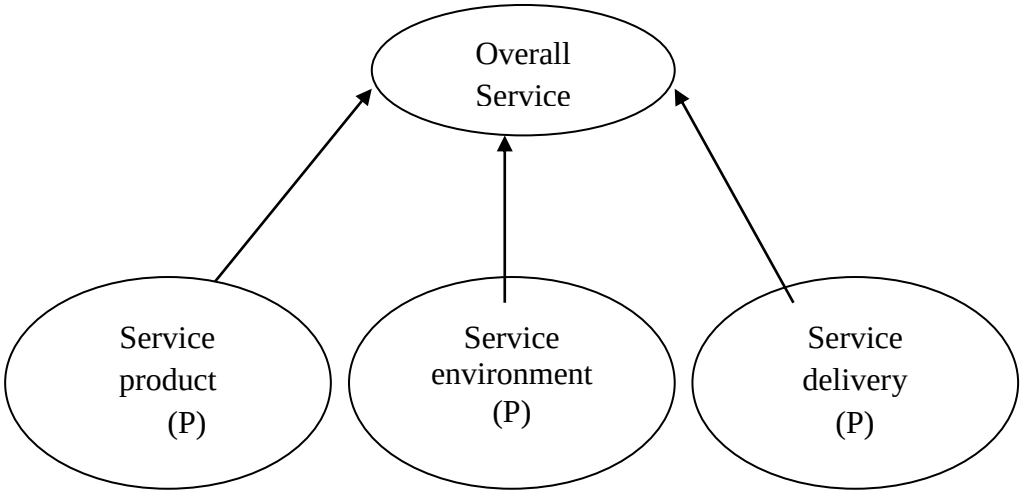
Figure 19. Grönroo's model



Source: Grönroos (1984)

Later, Rust and Oliver (1994) offered a three-component model: the service product (similar to technical quality), the service delivery (similar to functional quality), and the service environment.

Figure 20. Three-component model



Source: Rust and Oliver (1994)

Parasuraman *et al.,* (1985), based on the disconfirmation paradigm, developed the SERVQUAL model. This model is oriented to quantify the discrepancy between a customer's expectations for a service offer and the customer's perceptions of the service received. Parasuraman *et al.*'s (1985) argued that, regardless of the type of service, consumers evaluate the quality of service using the same general criteria, which can be grouped into five dimensions. The dimensions involve (Parasuraman *et al.*,(1991):

a) tangibles: the appearance of physical facilities, equipment, personnel, and communication materials;
b) reliability: the ability to perform the promised service dependably and accurately;
c) responsiveness: the willingness to help customers and to provide prompt service;
d) assurance: the knowledge and courtesy of employees and their ability to convey trust and confidence;
e) empathy: the provision of caring, individualized attention to customers.

This model consists of a series of 22 predefined questions, which are adaptable to the type of search. Respondents are asked to define for each statement what one would expect from an excellent service using a 7-point semantic differential scale. They are then called upon to judge, using the same scale, what was actually offered them (Parasuraman *et al.,* 1988).

The SERVQUAL and its adaptations to different sectors and contexts have been used for measuring service quality in many studies, although there are considerable weaknesses. The SERVQUAL has received some criticism in the literature about the most appropriate ways to assess service quality (Cronin and Taylor, 1992; Parasuraman *et al.*, 1991; Parasuraman *et al.,* 1993, 1994). Another debate was whether the model is practical to ask consumers about their expectations of service immediately before consumption and their perception of performance immediately after consumption (Parasuraman *et al.,* 1994).

SERVQUAL's weaknesses led to the development of alternative models to measure customer perceptions of service quality. For example in 1992, Cronin and Taylor developed the SERVPERF model in order to evaluate the quality of services without considering expectations, but basing it solely on performance perceptions. The model SERVPERF measured the quality of a service solely on the basis of clients' feedback on the 5 proposed dimensions used in the SERVQUAL model. This measure explained more of the variance in an overall measure of service quality than SERVQUAL. Furthermore, it obtained psychometrically superior assessment of service quality in terms of construct validity and operational efficacy through its performance items.

All of these criticisms led Parasuraman *et al.* (1991) to change SERVQUAL. They reviewed the concept of expectations, and included elements to account for importance scores for weighting the dimensions. Later, Parasuraman *et al.* (1994) again redesigned the structure of SERVQUAL to frame not only the discrepancy between perceived service and desired service but also the discrepancy between perceived service and adequate service. Finally, Parasuraman *et al.* (1994) noted that intercorrelation of dimensions is a very important issue to consider. They also suggested that future research should investigate the quality of service causes and implications of empirical correlations between the dimensions of service quality.

Dabholkar *et al.,* (1996) tested a hierarchical model of retail service quality, the Retail Service Quality Scale (RSQS). The RSQS is a multilevel model, where the quality of service retail is seen as a factor of a higher order defined by two additional levels of attributes. The instrument is based on five main dimensions: physical aspects, reliability, personal-interaction, problem solving and policy. There followed six sub-dimensions: appearance, convenience, promises, well-being, inspiring confidence and courtesy. The procedure used to develop the instrument was based on three techniques of qualitative research (phenomenological inter-views, in-depth interviews and tracking the customers

through the store to monitor evaluations of the shopping experience) and review of the literature. Dabholkar *et al.* (1996) used only measures based on performance and found that their scale had a strong validity and reliability and adequately captured customers' perceptions of retail service quality.

Brady and Cronin (2001) adopted a hierarchical and multidimensional model. These authors combined the traditional approach of service quality (*i.e.*, the Tri-component model of service quality by Rust and Oliver, 1994) with the multilevel conceptualization of service quality (Dabholkar *et al.*, 1996). They described a third-order factor model, in which service quality was formed by three primary dimensions. These included outcome quality, interaction quality, and environmental quality. These three primary dimensions are composed of three corresponding sub dimensions, namely attitude, behavior and experience (interaction quality); ambient conditions, design and social factors (physical environment quality); and waiting time, tangibles and valence (outcome quality). Brady and Cronin (2001) argue that the sub-dimensions directly contribute to the perception of the quality dimensions. The aggregate ratings of the sub-dimensions form their perception of the organization's performance for each of the three primary dimensions, and those perceptions then lead to an overall perception of service quality (Brady *et al.*, 2002).

The discussion about the dimensions of service quality is still ambiguous, but it is generally agreed that the perception of service quality are multidimensional and dimensions are specific to the sector, or industry-specific. Traditional service quality refers to the quality of service based on human interactions and experiences in on-web-based settings. Online service quality encompasses interactions between humans and technology.

5.1.4 Relationship between service quality and satisfaction

To achieve a high level of customer satisfaction, the majority of researchers suggest that the service provider should deliver a high quality service, as the quality of service is normally considered an antecedent of customer satisfaction (Brady and Cronin, 2001; Brady *et al.*, 2002; Cronin and Taylor, 1992). However, the exact relationship between satisfaction and service quality has been described as complex, characterized by the debate on the distinction between the two constructs and the random direction of their relationship (Brady *et al.*, 2002).

Cronin and Taylor (1992) found empirical support for the idea that the perceived quality of the service led to satisfaction and argued that the quality of the service was in fact an antecedent of consumer satisfaction. Cronin and Taylor (1992) have argued that consumer satisfaction seemed to exert a strong influence on purchase intentions for quality of service, and concluded that the strategic emphasis of service organizations should focus on total customer satisfaction programs. The authors thought that consumers could not purchase a high quality service due to factors such as convenience, price, or availability, and that these constructs can increase satisfaction while not actually affecting the consumer's perception of service quality. The authors later admitted that the directionality of the quality of service - relationship satisfaction was still under discussion and that future research on the topic should include multi-item measures. The authors suggested limiting the domain of quality of service to the attitudes and satisfaction of consumers, and in the long term, to transaction-specific judgments.

5.1.5 E-service

Boyer *et al.* (2002) has defined e-services as "All interactive services that are delivered over the Internet using advanced telecommunications, information and multimedia technologies. E-service is different from the traditional service, which is based on the flow of interactive information between customers and service providers". (Boyer *et al.*, 2002).

Companies are trying to establish a competitive advantage through interaction with their customers via the web. Quality and service have been regarded as having the potential to provide benefits not only strategic, but also enhancing operational efficiency and profitability (Zeithaml, 2000). The companies use the web to improve communications with their customers, to sell more products and services through an alternative channel, and to reduce the costs associated with the interaction with customers. E - service is becoming more and more critical for e-businesses to retain and attract customers. With the increasing adoption of e-services in the field of business, the importance of measuring/monitoring the quality and service was recognized in the virtual world (Jamie and Aron, 2010). The companies most experienced and successful using the web are beginning to realize the determining key to the success or failure is not just web presence or low prices, but instead focus on the provision of electronic service quality. To encourage repeated purchases and build customer loyalty, companies must divide their

attention in e-service and all factions to encounters that occur before, during and after the transaction (Zeithaml, 2002).

5.1.6 E-service quality

One of the first definitions of quality in e-services was suggested by Zeithaml *et al.* (2000): service quality can be defined as "the extent to which a website facilitates efficient and effective shopping, purchasing and delivery". Several authors have criticized this definition because it encompasses a rather narrow field of e-services by restricting itself to issues concerning Internet shopping (Fassnacht and Koese, 2006; Gummerus, *et al.*, 2004). Parasuraman *et al.* (2005) believes that the quality of service refers to the effectiveness and efficiency of browsing online, purchase online, and the provision of goods and services. Rowley and Slack (2006) points out that the existing literature on e-service quality primarily addresses the dimensions and measuring methods of e-service quality, and that there is no universally recognized definition of e-service.

5.1.6.1 Measuring e-service quality

With the introduction of the Internet and the increasing application of e-commerce in organizations, the importance of measuring and monitoring quality and service has gained recognition in the virtual world.

The conceptualization and development of e-SQ measures are necessary because they will help to monitor and improve the performance of online businesses (Yang, Peterson, and Cai, 2003). Most e-service quality scales are developed on the basis of the instrument SERVQUAL, by Parasuraman (1985, 1988). The SERVQUAL instrument was used to measure the quality of service, and some studies have applied the SERVQUAL model to measure e-service quality and have reformulated its items. However, the use of the SERVQUAL scale simply to reword the articles seems inefficient in terms of quality and service (Parasuraman *et al.*, 2005b) The dimensions of the generic SERVQUAL model must be formulated to be used in the context of e-services, as the e-service is very different from the traditional service. Three aspects that stand out:

a) absence of sales staff: in e -service, there is no interaction between the customers and the seller, as in the traditional service;
b) absence of traditional tangible: in e -service, the service process is almost completed in a virtual environment with some intangible elements;

c) self-service customers and in-service: self-service customers make purchase and implement control in the business process.

Given the differences between traditional service and e-service, the SERVQUAL model is not appropriate to measure the quality of e-services (Bressolles and Nantel 2009). Some dimensions of the SERVQUAL can be applied to e-service quality, but there are additional dimensions in e-service- many of which are specifically related to technology. This introduces a discussion of the different models of the dimensions of online service quality.

Loiacono *et al.* (2000) developed WebQual, a scale for rating websites on 12 dimensions: informational fit to task, interaction, trust, response time, design, intuitiveness, visual appeal, innovativeness, flow-emotional appeal, integrated communication, business processes, and substitutability. Researchers cite this study as the most comprehensive research, both theoretically and empirically, on the identification of the quality of the website (Parasuraman *et al.*, 2005; Wolfinbarger and Gilly, 2003). WebQual introduces these 12 dimensions to help designers better shape their websites. The researchers conducted the study on a sample of students who provided feedback for Websites without making actual purchases, so this scale excludes a critical detail: the customer service. For the same reason, WebQual does not include fulfillment as a dimension. The focus of the scale is, therefore, more focused on evaluation of design rather than a measure of service quality (Zeithaml *et al.,* 2002).

Zeithaml *et al.* (2000) developed e-SERVQUAL with 11 dimensions in a series of focus group interviews the dimension are access, ease of navigation, efficiency, flexibility, reliability, personalization, security/privacy, responsiveness, trust assurance, site aesthetics, and price knowledge. Their research concluded that the fundamental dimensions of service quality including regular efficiency, implementation, reliability and privacy were the same as online. At the same time, they provided services with which responsiveness, compensation, and real time access were used to help as core dimensions of service recovery for online services.

Yoo and Donthu (2001) developed a 4-dimensional scale called SITEQUAL to measure online service quality of websites. The four dimensions are ease of use, aesthetic design, processing speed, and security (Yoo and Donthu, 2001). The data for the development and testing of SITEQUAL was collected from a convenience sample. In the sample, students enrolled in marketing courses were invited to visit and interact with

three online shopping sites of their choice and to evaluate each site. The SITEQUAL does not capture all aspects of the buying process and, therefore, does not constitute a comprehensive assessment of the service quality of a site.

Cox and Dale (2001) set up a 6-dimensional scale to measure online retailing service quality. The six dimensions are website appearance, communication, accessibility, credibility, understanding and availability.

Barnes and Vidgen (2002) developed a completely different scale to measure e-service quality, which they also call WebQual. This scale provides an index of a site's quality and has five factors: usability, design, information, trust, and empathy. They took into account the customers' perceptions of weighted importance. Data used in developing and testing the questionnaire was obtained by means of convenience samples of university students/staff who were directed to visit one of three bookstore sites to collect information about a book of their choice. They were then instructed to rate their experience on a scale. The scale's design allows it to properly function without the necessity a respondent's completion of the purchasing process; it is, therefore, a transaction-specific assessment of a site rather than a comprehensive evaluation of the service quality of a site.

Wolfinbarger and Gilly (2003) introduced one of the first psychometrically robust electronic service quality oriented instruments, eTailQ. Their study offered important implications for measuring consumer perceptions of online shopping experiences. Their analyses suggest that judgments about the quality of an online site are strongly related to factors of website design and fulfillment/reliability. From their model, 14 specific elements measure the four factors globally. Four factors extracted from Wolfinbarger's and Gilly's model are defined as: Website design, customer service, fulfillment/reliability, and privacy/security. From their results emerged the idea that the inferences of security/privacy are initially obtained by other quality factors, particularly web design, when buyers are new to a website. Moreover, they argue that initially consumers judge security/privacy based on factors like the professional look and feel of the website, as well as functionality and organization reputation.

Yang and Fang (2004) further examined the differentiation of dimensions for online service satisfaction and dissatisfaction. They argue that there are four salient quality dimensions leading to both satisfaction and dissatisfaction including responsiveness, reliability, ease of use and competence.

In 2005, Parasuraman *et al.* adapted the SERVQUAL model in order to evaluate the quality of the service providers' on-line stores using ES-QUAL, focusing on four dimensions of service (efficiency, fulfillment, system availability and privacy). Successively, to evaluate also the quality of service in response to complaints, they added the scale E-REC-QUAL. This is the result of three dimensions of quality (responsiveness, compensation and contact details). In this research, the authors evaluate suppliers of retail on-line in terms of quality and service. Their results show that the efficiency embodies the strongest effects on the quality of service, followed by the availability of the system and its privacy.

5.2 Dimensions of website service quality

Today web source quality is the most crucial factor for the performance of e-business and e-government, and can increase the success of various web-based applications. Quality-oriented web evaluation and selection is necessary for efficient use of web information, information analysis, knowledge discovery and decision-making (Zhao and Zhu, 2014). With the rapid development of communication technologies and the globalization of the market in recent years, the Internet has become an important tool in the business world. With the Internet, distance and time barriers are disappearing. The world is increasingly becoming an integrated community of buyers and sellers that interact via the Internet. Services and products are completely moved into digital form and delivered through the Internet. Many researchers have begun to study the perception of the quality of websites (Barnes and Vidgen, 2002; Loiacono *et al.*, 2000). In an assumption concerning these studies, it seems that the website of a company is an essential tool for communication and is the primary interface for Internet users who are looking for both information and/or products; however, this hypothesis has not been explicitly verified in all cases. Through the web, an organization can get in touch with its customers, provide information, and may also sell goods and services online.

Today, the concepts of e-service quality and service have become increasingly important issues in research. E-service is different from traditional service, which is based on the interactive flow of information between customers and service providers. Basically, the website captures the attention of the people who know very little about the company and are interested in it. It tells users what the company is doing in the context of the industry in which it competes (Van Iwaarden *et al.*, 2004). Because the website is part

of the connection between a company and its customers, it is clear that it should reflect the quality efforts that are in place across the company. The companies therefore wish to offer quality interfaces to their customers (Hongxiu and Suomi, 2009).

In addition to this, there is another reason why a company must provide high quality websites: there is no human contact through a website, because the interaction takes place through technology. Although the companies may try to match human behavior with technology, the interaction is different, because some aspects of human interaction cannot be replaced with technology. These aspects include courtesy, friendliness, helpfulness, care, commitment, flexibility, and cleaning. These aspects must be replaced by a better performance on the "new" web-specific factors (Hongxiu and Suomi, 2009). E-service quality has been considered to have the potential not only to provide strategic advantages, but also to improve operational efficiency and profitability (Cronin, 2003; V.A. Zeithaml, 2000). E-service is becoming increasingly critical for companies to retain and attract customers. What brings online customers back to the company websites is a sense of loyalty that comes from good services offered by companies. Companies can achieve competitive capabilities by offering good electronic services to customers (Oliveir *et al.*, 2002). The quality of service has a strong impact on customer satisfaction. Improving the quality and service to satisfy and retain customers is becoming a challenging problem.

Numerous studies have been reserved to identify the basic dimensions of quality of web service that directly affect customers' perceived service quality of a website (Loiacono *et al.*, 2000; Madu and Madu, 2002; Wolfinbarger and Gilly, 2003; Yoo and Donthu, 2001; V. A. Zeithaml *et al.*, 2002). On the basis of previous studies of dimensions of quality for websites, seven attributes of quality of service are identified in this study as the main elements affecting the site. These include:

a) usability,
b) design,
c) speed,
d) information,
e) contact,
f) navigability,
g) content.

5.3 Conceptual framework

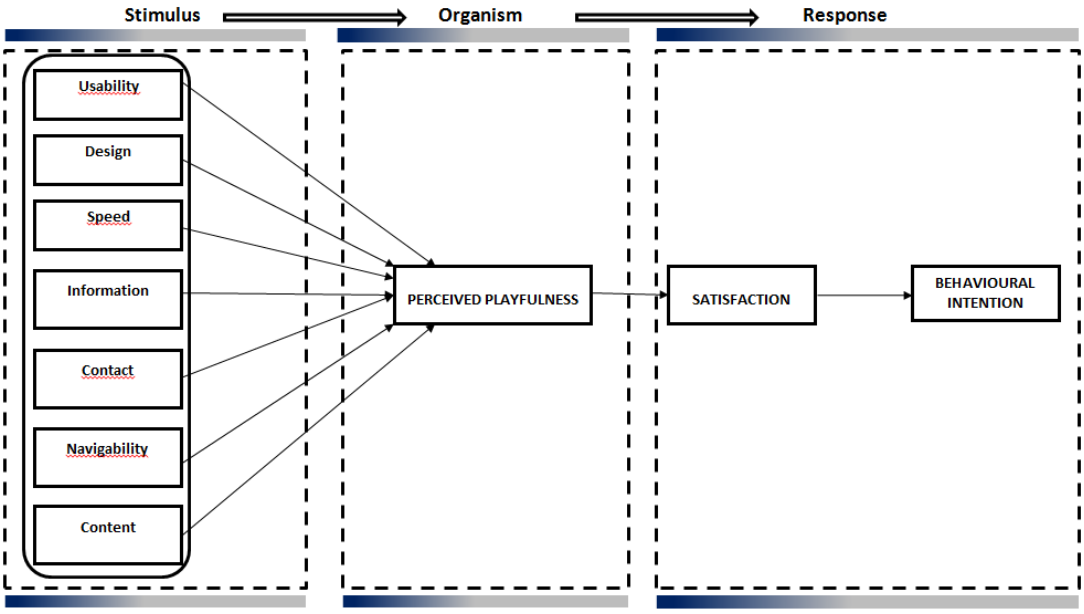
This section points to provide a conceptual framework unite with theoretical overview by explaining the key factors, variables, and relationships among theories or models in order to give a better understanding of the process in this research. A research framework which developed based on the Stimulus-Organism-Response (S-O-R) paradigm is displayed in Figure 24 (Eroglu *et al.* 2001, 2003). In the S-O-R framework, stimulus is characterized as an impact that affects internal, organismic states of the individual. The organism is represented by the processes that mediate the relationships between the stimulus and the individual's responses. The response is the final consequence, such as customer satisfaction or approach/avoidance behavior.

Barnes and Vidgen (2001) have claimed that website quality can only be measured from the consumer's point of view. DeLone and McLean's (2003) Information System (IS) success model conformed to this perspective by separating system quality, information quality, and service quality.

This study therefore proposes that from the consumer's viewpoint, the quality of a website can be addressed in terms of these three fundamental factors

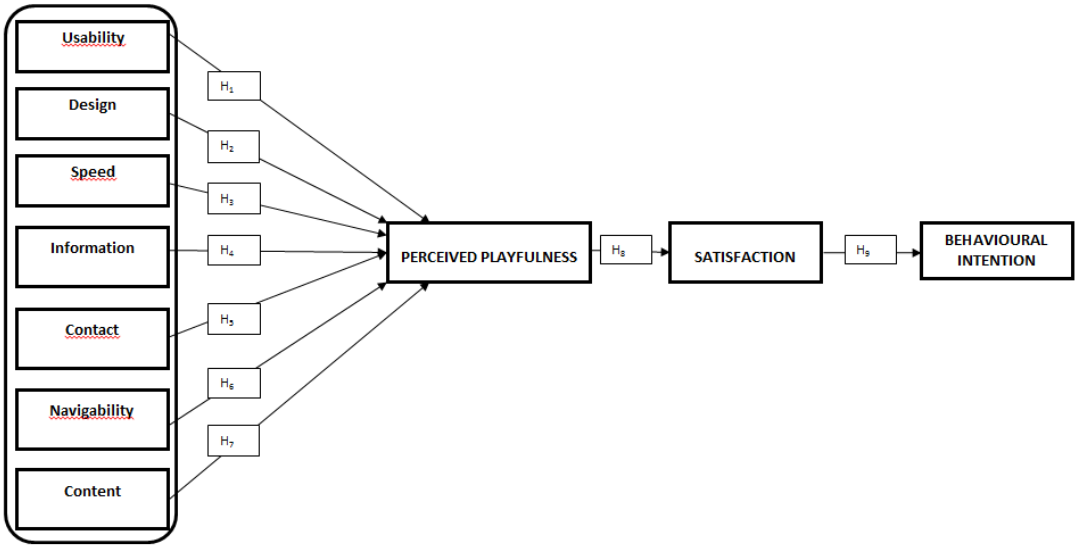
Additionally, Webster *et al.* (1993) found that perceived playfulness and perceived flow are psychological states which fluctuate with situational contexts and may be influenced by an individual's interaction with a situation. Accordingly, this study posited that website quality (*stimuli*) positively influences customers' perceived playfulness and perceived flow (*organism*), which in turn may affect customers' satisfaction and purchase intention. Moreover, according to Woszczynski *et al.*'s (2002) study, the relationships between perceived playfulness and perceived flow were hypothesized to be non-recursive or bidirectional. Based on the preceding literature review, the conceptual framework of the present research is shown in Figure 21. This framework describes the relationships between the e-service quality variables with perceived playfulness, satisfaction and behavioral intention. We have chosen empathy, consumer satisfaction and behavioral intention because many studies have considered these three variables.

Figure 21. Conceptual framework



Source: our elaboration

Figure 22. Relationships among e-service quality, perceived playfulness, satisfaction and behavioral intention



Source: our elaboration

5.3.1 Hypotheses development

Under the proposed research model, we have formulated seven hypotheses based on relationships between ten constructs adopted.

A brief summary of the definitions for the core constructs used in the proposed research model is presented in the following section.

5.3.1.1 Usability

Usability refers to the ease of use, especially with regard to the search for information (Yang and Fang, 2004; Yoo and Donthu, 2001). Ease of access to the information available is an important reason for consumers to choose to purchase via the Internet (Cristobal *et al.*, 2007; Wolfinbarger and Gilly, 2003). Usability is thus a key factor for the quality and service and customer satisfaction (Zeithaml *et al.*, 2002). This usability is an important aspect of e-service quality because the environment of e-business can be complex and intimidating for many customers (Parasuraman *et al.*, 2005).

Functions like looking for a site, the download speed, overall design, and organization are among the key elements that affect usability. Usability is affected by the type of consumer and type of activity. Usable systems must be compatible with users' cognitive skills in communication, comprehension, memory and problem solving (Barnes and Vidgen, 2002; Natarajan *et al.*, 2012).

Usability can be measured with the following five attributes: learnability, efficiency, memorability, low error, and personal satisfaction (Loiacono *et al.*, 2002).

Therefore, we hypothesize:

H1: Usability will have a positive and significant influence on perceived playfulness

Design

An empirical study found that *website design* factors are strong predictors of customer quality judgments, satisfaction, and loyalty for Internet retailers (Wolfmbarger and Gilly, 2003). The web design takes into account the graphic style that involves issues such as color, layout, print size and type, the number of photographs and graphics and animations (Malhotra *et al.*, 2002). Numerous studies have shown that the design involves site appearance and visual design (DeLone and McLen, 1992; Yang et al, 2005). It is believed that the design is an important element of perceived service quality site. According to Loiacono, Chen and Goodhue (2002) the time it takes to download a webpage, the graphical and textual features that affect the user's sense of ease or comfort with the website and the aesthetics of a website should be considered in website design. A good strategy includes knowing what to emphasize on a website, presenting with consistency, and using up-to-date technology (Tan *et al.*, 2009). In our study web design construct deals with the visual presentation of the website, the use of graphics, colors,

photographs, various font types to improve the look and feel of the website and other related characteristics. Based on our review of previous studies, we present our first hypothesis as follows.:

H2: Design will have a positive and significant impact on perceived playfulness

5.3.1.2 Speed

Speed refers to the promptness of online processing and interactive responsiveness to a consumer's request. Kim and Stoel (2004) concluded that fast response time had strong positive influence on consumer satisfaction with online shopping. Szymanski and Hise (2000) suggested that convenience and the saving of time and effort significantly influenced consumer satisfaction, while fast load speed reduced consumers' waiting time when they visited mobile websites. A study by Zona Research in 1999 showed that the tolerance of the expectation from the users is less than ten seconds; after eight seconds on average, if the page had not fully downloaded 30-50% of users would choose to neglect the page. If the wait is long, users just do not think they are being offered a good service and the level of trust in the supplier is bound to decrease. Fast response time could make consumers' visiting experience fluent and save consumers' time. Therefore, the following hypothesis is proposed:

H3: Speed will have a positive and significant impact on perceived playfulness

5.3.1.3 Information

Information refers to relevance, accuracy, understanding and usefulness of information provided by the e-commerce website (Susser and Ariga 2006). Hasan and Abuelrub (2011) call it *content quality*, and claim that it can significantly influence customer attitudes and interaction with e-commerce. For example, Jaiswal *et al.* (2010) show that information quality is a key feature influencing user satisfaction with and loyalty towards e-commerce. Thus, information quality should be paid much attention by presenting accurate, sufficient and relevant information. Such importance is further extended by Liu and Arnett (2000), who claim that information quality closely relates to business profitability, decision quality and performance, perceived benefits of information systems and the level of system usage. For example, by improving the accuracy and timeliness of information exchanged between a business and its suppliers

using Electronic Data Interchange (EDI), a form or business-to-business e-commerce, the business can obtain significant financial returns from inventory holding cost, obsolete inventory cost, transportation cost and premium freight (Mukhopadhyay *et al.*, 1995). Moreover, users' perceptions of information systems benefits and their acceptance of information systems are largely determined by whether unique, reliable, and up to date information can be delivered to meet their needs.

With a high level of quality information, information systems in general, and e-commerce systems in particular, can be fully used by a wider range of users (Yang *et al.*, 2004). Consumers visit mobile websites to look up information, such as price information, product information, and promotional information. Providing information is the fundamental objective of a website. The quality of information refers to the amount, accuracy and format of the information about the products and services offered on a website. Consumers seek general information, information about the product/service, customer support information, service information for the customer (Aladwani and Palvia, 2002), complete information on specific products and information to compare all alternatives (Ranganathan and Ganapathy, 2002). According to Yeung and Law (2003) the quality of information plays an essential role in the success of a website. Ranganathan and Grandon (2002) found that the quality of information is one of the most important reasons why travelers make reservations on a specific travel website. McKinney *et al.* (2002) concluded that the best quality information increases satisfaction with the online experience. Turban and Gehrke (2000) also showed that the measures of quality information on the website indicate whether or not customers will be attracted to a website. As a result, DeLone and McLean (2003) found that high-quality information is positively associated with customer satisfaction. Therefore, in this study we hypothesize:

H4: Information will have a positive and significant influence on perceived playfulness

5.3.1.4 Contact:

A website must provide facilities for users to interact with the Webmaster, a particular author of content in the site. Some of the possible methods used to facilitate interaction of users with the website are the following: providing summarized answers to FAQ's, clear error messages and contact information, interactive feedback systems, email

communications and toll free call systems (Yang and Fang, 2004). Points of contact for a customer include the options to speak with a live customer service agent online or through the phone (Aladwani and Palvia, 2002). Based on our review of previous studies, the following hypothesis is proposed:

H5: Contact positive influences perceived playfulness

5.3.1.5 Navigability

According to Palmer (2002), navigability is defined a ”the sequencing of pages, well organized layout, and consistency of navigation protocols”. Montoya-Weiss *et al.* (2003) argue that the navigability is normally measured by the number of clicks it takes to log on and through the site. Sigman and Boston (2013) also indicated several tools for effective navigation. First, the website should facilitate users to get information in the fewest possible steps. Secondly, the website should always provide hyperlinks within each web page. Thirdly the website must not contain broken hyperlinks. Finally, the relevance of the hyperlink and the description of the intended destination should be clearly communicated.

Madu and Madu (2002) proposed that the ease of navigation is key to improving customer satisfaction. They have established that users might be unhappy when the site is difficult to navigate. Loiacono *et al.* (2002) pointed out that the navigation mechanism is very important and stressed the importance of building a good quality website with constant connections and good navigational tools. In addition, for a site to be perceived positively by customers, it must provide functions that help customers find what they need quickly and easily, provide user friendly environments, and allow the customers to be in control by moving quickly back and forth through the pages (Natarajan *et al.*, 2012; Zeithaml, 2000).

Yoo and Donthu (2001) found that a positive correlation exists between customer perceptions of website navigation and satisfaction with website performance. Further support is provided by Huizingh and Hoekstra (2003) who found that navigation had a direct influence on consumer attitudinal changes towards websites.

Cry (2008) found that navigation of websites influenced consumers’ satisfaction and loyalty. Consumers need to take time and effort to learn and get used to mobile shopping, a new shopping channel. Good website navigation could make it easy for consumers to learn mobile shopping and bring good experiences when visiting websites. Therefore, the following hypothesis is proposed:

H6: Navigability positive influences perceived playfulness

5.3.1.6 Content

Content is one of the most important influences on perceptions of website experience. With the absence of tangibility on the Internet, the key driver of consumer traffic online would be the subject matter available that is relevant to consumer needs or goals (Coker, 2013). Specially on websites concerning wine, users come to the site looking for a particular piece of information. The main identity of web applications is found in their combination of information, services and functionality. The information provided on a website should be relevant, engaging and appropriate for users (Coker, 2013).

The content is the most critical part of a website. Users come to a website mainly looking for a specific type of information, giving less attention to the ease navigation, visual design and interactivity of the site (Coker, 2013). This is due to the fact that users are goal oriented and only look for the information they already have in mind when they come to the site (Natarajan *et al.*, 2012; Sigman and Boston, 2013). Consequently, they do not give much attention to aspects of website design apart from the contents of the site. In addition to relevancy, the novelty and quality of content helps to further enrich consumer experiences whilst on websites. As opposed to a website that contains plain text, a website with the right combination of animated graphics, videos and text would provide a far more enriching and valuable experience to consumers, and evidence have found higher satisfaction levels for the latter website (Coker, 2013). Moreover, intuition would suggest that consumers would be dissatisfied with websites with incomplete or incorrect information. Indeed, Natarajan *et al.* (2012) found evidence to prove information quality has a positive correlation with overall customer website satisfaction.

Thus, it is theorized that the relevancy, quality and novelty of website content also drive consumer perceptions of website experience satisfaction for e-commerce websites, leading to the following hypothesis:

H7: Content positive influences perceived playfulness

5.3.1.7 Perceived Playfulness

Moon and Kim (2001) defined perceived playfulness as "the extent to which the individual perceives that his or her attention is focused on the interaction with the World-Wide-Web; he is curious during the interaction; and he finds the interaction intrinsically enjoyable or interesting". The authors suggested the necessity to introduce perceived playfulness in the context of the World-Wide-Web and they found that it had a significant positive impact on attitude toward using and behavioral intention. Chen *et al.* (2002) also found perceived playfulness to be a significant factor motivating users to use a virtual store. Furthermore, Nysveen *et al.* (2005) have studied perceived playfulness in the context of mobile Internet services and found it plays an important role in determining user acceptance of these services. As per the flow theory, playfulness is considered as an intrinsic belief or motive, which is shaped by the individual's experience with the environment (Csikszentmihalyi, 1988). Flow has been described as a state of optimal psychological experience (Novak *et al.* 2000) or most enjoyable experience possible when a person is unconsciously engaged in an activity such that she or he becomes so absorbed thereby losing the sense of self (Chung and Tan 2004). Ahn *et al.* (2007) proposed that a satisfied customer not only comes from an extrinsic reward of purchasing products or services but also from personal and emotional reward from purchasing-derived pleasure. They also showed that playfulness is positively related to attitude toward use of online retailing and intention to use online retailing. Sandelands *et al.* (1983) confirmed that attitudinal outcome such as satisfaction stemmed from playful experience. As indicated by Woszczynski *et al.* (2002), user satisfaction is a consequence of the playful experience. Webster *et al.* (1993) mentioned that higher playfulness leads to immediate subjective experience such as satisfaction. Lin *et al.* (2005), in a study of continued use of a website, confirmed that playfulness is positively associated with satisfaction. Embedding playful attributes within the website not only distinguishes a site from others, but also improves the user's perceived level of satisfaction (Eighmey 1997). Accordingly, the hypothesis is made as following:

H8 Perceived playfulness is positively related to customer satisfaction

Individuals using a website and experiencing playfulness are more absorbed and interested in the interaction, and shape their intention to visit this portal again later (Lin *et al.* 2005). Davis *et al.* (1992) verified that perceived playfulness explained significant

variance in usage intentions. Lin *et al.* (2005) showed that perceived playfulness of web portal use is positively associated with their continuance intention. Ahn *et al.* (2007) showed that Internet shoppers were more likely to use Internet-based retailing when they felt more playful. Accordingly, the hypothesis is made as following:

H9 Perceived playfulness is positively related to behavioral intention

5.3.1.8 Customer Satisfaction

The difference between service quality and customer satisfaction has been previous introduced and briefly discussed. Satisfaction is a response to a perceived discrepancy between prior expectations and perceived performance after consumption. However, customer satisfaction is a biased concept because expectations differ from customer-to-customer. Any firm that wants to assess its performance needs to distinguish between measuring the following (Van Looy *et al.,* 2003): perceived service quality client satisfaction and technical quality.

Parasuraman (1988) found that consumers have different conceptions in respect to perceived customer value. However, according to Guertin and Nantel (2007) perceived value can be defined as "the consumer's overall assessment of the utility of a product based on perceptions of what is received and what is given". Essentially, value represents a trade-off of significant get and give components which are perceived as benefits and sacrifices for any given product or service (Guertin and Nantel, 2007). According to Woodruff (1997), customer value is "a customer's perceived preference for and evaluation of these product attributes, attribute performance, and consequences arising from use that facilitate [or block] achieving the customer's goal and purpose in use situations." Different customers may view the value of the same purchase differently on the Internet, even if they value the item purchased identically. One buyer may feel that shopping online is too complicated and they may find online shopping impersonal, whereas another buyer may find online shopping convenient and quick (Keeney, 1999).

Satisfaction and dissatisfaction are at either end of a continuum, while the actual position is defined by a comparison between expectations and outcome (Van Looy *et al.*, 2003).

A service satisfaction framework contains the following concepts:

a) satisfied client: this occurs when the outcome of the perceived service quality meets expectations;
b) delighted client: this occurs when the perceived service quality exceeds the expectations;
c) dissatisfied client: this occurs when the perceived service quality is below expectations.

It can be deduced from this framework that only a certain percentage of clients who are dissatisfied make their complaints heard. Customer satisfaction and complaint management are crucial parts of an organization's strategy to increase loyalty in customers and ultimately increase their profits. This is achieved when firms minimize client defections and have effective service recovery strategies that maximize repeat business. Organizations can achieve service through measuring their customers‟ satisfaction and managing complaints effectively (Van Looy *et al.*, 2003).

Several studies conclude that satisfaction is an affective, rather than cognitive, construct (Oliver, 1997; Olsen, 2002). Rust and Oliver (1994) define satisfaction as the "customer's fulfillment response" which is an evaluation as well as an emotion-based response. It is an indication of the customer's belief of the probability of a service leading to a positive feeling.

While Cronin *et al.* (2000) assessed service satisfaction using items that include interest, enjoyment, surprise, anger, wise choice, and doing the "right thing", we employ three items that have been used in previous studies (Zhang and Prybutok, 2005). The items are:

a) "I am satisfied with my previous online shopping experience";
b) "Online shopping is a pleasant experience";
c) "Overall, I am satisfied with my eservice experience".

The following theories, upon which the present study derives its theoretical foundation also addressed satisfaction in their models: DeLone and McLean *IS Success Model* (1992); TAM (Davis, 1989); TPB (Ajzen, 1985); *Information Systems Continuance Model,* (Bhattacherjee, 2001) and UTAUT (Venkatesh *et al.*, 2003).

5.3.1.9 Behavioral Intention

Behavioral intentions can be defined as a "customer's biased possibility of acting in a certain way" (Fishbein and Ajzen, 1975). In this regard, three behaviors in particular have been associated with profitability and the market share of a firm: word-of-mouth; repurchase intention; and feedback to the service provider.

Word-of-mouth is the flow of information regarding a product, service, or company from one customer to another. Therefore, it is safe to say that word-of-mouth is a trusted external source of information that customers can use to evaluate a product or service.

Researchers have found a positive association between quality, satisfaction and repurchase intentions (Bitner, *et al.*, 1990; Cronin and Taylor, 1992; Jones and Suh, 2000). However, other studies have not confirmed such a relationship (Sivadas and Baker Prewitt, 2000). In an attempt to explain the above confliction, Rust and Zahorik (1993) suggested that a satisfied customer might switch to an alternative supplier with a view to increase their present satisfaction level, whereas a dissatisfied customer might remain with an existing supplier because no better alternatives are available to them.

Feedback or customer feedback refers to the communication of negative (complaints) or positive (compliments) information to providers about their services. Information such as this is very useful for providers in that it allows them to identify areas in which adjustments of performance are required. Söderlund (1998) concluded that dissatisfied customers are significantly more likely to provide negative feedback than satisfied customers providing positive feedback, and that customers who provide negative feedback are seeking to achieve some form of compensation for unmet quality of service. Furthermore, in their study of the links between service quality and behavioral intentions, Parasuraman and his associates (Parasuraman, *et al.*, 1994; Zeithaml, *et al.*, 1996) identified the five dimensions of behavioral intentions: loyalty to the company, propensity to switch, willingness to pay more, external response to problem, and internal response to problem. Studying the influence of service quality on the five behavioral intention dimensions, they found positive effects with regards to loyalty to a company and a willingness to pay more. Negative effects included a tendency to switch an external response to a problem, and no significant effects with internal response to problems (Parasuraman, *et al.*, 1994; Zeithaml, *et al.*, 1996).

In another study (Bloemer *et al.*, 1999), the same items were used as by Zeithaml, *et al.* (1996) and different dimensions for behavioral intentions were found, namely:

repurchase intentions, word-of-mouth communication, price sensitivity and complaining behavior. They also found that relationships between service quality and behavioral intentions had notable differences across industries.

According to Zeithaml, *et al.* (1996) behavioral intentions can also be captured by such measures as repurchase intentions, word-of-mouth, loyalty, complaining behavior, and price sensitivity. High service quality, as perceived by the customer, often leads to favorable behavioral intentions, while a low service quality tends to lead to unfavorable behavioral intentions. Zeithaml, *et al.* (1996) further emphasized that behavioral intentions are relevant to a customer's decision to remain with or leave a company. When consumers are loyal to a company they are then willing to say positive things about the organization to others (Srinivasan *et al.,* 2002). Loyalty to a company and positive word-of-mouth are both favorable behavioral intentions.

A propensity to switch from providers, negative word-of-mouth, and complaining are unfavorable behavioral intentions (Liu *et al.,* 2001). Other researchers (Richins, 1983; Singh, 1988) have indicated that when consumers perceive to have experienced worse service performances than expected, they are likely to complain to a third party which is an example of negative word-of-mouth.

More recent studies have investigated the effect of customer satisfaction and perceived service quality on various kinds of behavioral intentions, such as loyalty, positive word-of-mouth (Boulding, *et al.*, 1993), intentions toward repeat patronage, and intentions toward communication to others (Liu *et al.,* 2000). Behavioural intentions have been studied as intervening variables between service quality and financial performance (Zeithaml, *et al.,* 1996). Several studies indicate that upset customers may tell on average 10-20 people about their negative experiences. Liu *et al.* (2001) stated/predicted that "with the increasing use of the Internet, communication among customers will soar".

Behavioural intentions of customers are an important predictor of the profitability of service organizations (Reichheld and Sasser, 1990; Slater and Narver, 2000). There is a strong link between customer loyalty and organizations profitability (Rust and Zahorik, 1993; Loveman, 1998). It has been difficult to demonstrate the exact nature of the relationship between the perceptions of customers and their future behavior (Mittal and Kamakura, 2001). Both costs and the revenue of organizations are affected by repeat purchases, positive word-of-mouth and customer feedback. Moreover, there is strong evidence that service quality has either a direct influence on the behavioral intentions of

customers and/or an indirect influence on such intentions, mediated through customer satisfaction (Zeithaml, *et al.*, 1996; Cronin, *et al.*, 2000).

According to a model presented by Zeithaml *et al.* (1996), behavioral intentions can be captured by such measures as repurchase intentions, word of mouth, loyalty, complaining behavior, and price sensitivity. High service quality (as perceived by the customer) often leads to favorable behavioral intentions while low service quality tends to lead to unfavorable behavioral intentions. Zeithaml *et al.* (1996) further emphasized that behavioral intentions are relevant to a customer's decision to remain with or leave a company. Zhang and Prybutok (2005) concluded that customer experiences are related to behavioral intentions. The more positive the customer's experience, the more likely he or she is willing to reuse the service.

Several authors (Ajzen, 1985; Bhattacherjee, 2001; Venkatesh *et al.*, 2003) studied the interrelationships among Service Quality (SQ), Satisfaction (SAT) and Behavioral Intention (BI). The literature is somewhat inconsistent about the causal ordering of service quality and satisfaction and which of the two constructs is a better predictor of behavioral intentions (Cronin and Taylor, 1992). One group of researchers holds that satisfaction is antecedent to service quality (SAT→SQ), while another group believes that service quality is antecedent to satisfaction since service quality is a cognitive evaluation and positive perceptions of service quality can lead to satisfaction which in turn leads to favorable behavioral intentions (SQ→SAT→BI) (Brady and Robertson, 2001). A third group of researchers maintain that there is a non-recursive relationship between service quality and satisfaction (Taylor and Cronin, 1994). This perspective holds that none of the two constructs is an antecedent or subordinate to the other.

According to Dabholkar (1996), the antecedent role of service quality and satisfaction depends on whether the consumer is cognitive or affective oriented. Cognitive-oriented customers perceive satisfaction as being affected by service quality while affective-oriented consumer will perceive service quality as being affected by satisfaction. Brady and Robertson (2001), tested this proposition in the fast food industry across two distinct cultures: the US, (cognitive-oriented), and Equador (affective-oriented). Their results suggest that the SQ→SAT causal order holds well for both cultures. Moreover, a preponderant evidence of research results tends to support the SQ→SAT model (Cronin *et al.*, 2000).

Whatever the causal ordering of these two constructs, most authors conclude that both service quality and satisfaction have direct links to behavioral intentions (Cronin and Taylor, 1992; Cronin *et al.*, 2000).

In the present study, we argue that satisfaction moderates the relationship between the main dimensions of web quality (i.e. usability, design, speed, information, contact, navigability and content) perceived playfulness and behavioral intention.

5.4 Research approach

Denzin and Lincoln (1994) mentioned two types of approaches available for researchers and these are qualitative and quantitative approach. Selectivity and distance to the object of research characterize a quantitative approach whereas a qualitative approach is characterized by nearness to the object of research. Both approaches have their strengths and weaknesses and neither one of the approaches can be held better than the other one. The best research method to use for a study depends on that study's research purpose and the accompanying research questions (Yin, 1994).

Quantitative research typically has a logical and linear structure: hypothesis take the form of expectations about likely casual links between the constituent concepts identified in the hypothesis. Thus, the determination of casual links specified by the hypothesis will result in the acceptance, or rejection of the theoretical proposition. Hence, quantitative research places emphasis on methodology, procedure and statistical *measures of validity* (Denzin and Lincoln, 1994).

From above discussion, quantitative research is best to this thesis because of linear structure between e-quality and its constructs (usability, design, speed, information, contact, navigability, content, perceived playfulness, satisfaction and behavioral intention). In addition, quantitative approach is needed for demonstration of hypothesis that comes from research questions so we apply quantitative approach in this research.

5.4.1 Research on website consortia

5.4.1.1 Research purpose

Several ways could be followed to carry out research. Most types of research can be classified on the bases of research concerns about the problem before starting the investigation. According to the Yin (1994), there are three classifications of research

available when dealing with a research problem: exploratory, descriptive, and explanatory.

Exploratory research is designed to allow an investigator to just *look around* with respect to some phenomenon, with the aim being to develop suggestive ideas. The purpose is to gather as much information as possible concerning a specific problem. Exploratory research is often used when a problem is not well known, or the available knowledge is not absolute. The technique is best suited for information gathering when performing an exploratory research is interview.

Descriptive research describes various phenomenon connected to individuals, situation, or events that occur. The purpose might be to develop empirical generalizations. Once such generalizations begins to appear, they are worth explaining, which leads to theory development. Moreover, descriptive research is often used when a problem is well structured and there is no attention to investigate cause/effect relations. Descriptive research is recommended when you search data, often secondary, in order to describe a few aspects of a clearly structured problem.

Explanatory research objective is to develop precise theory that can be used to explain the empirical generalizations. Based on this, the researcher formulates hypotheses that are tested empirically a study is explanatory when the focus is on cause/effect relationships, explaining that causes produced what effects. Explanatory research approach should be used when it is necessary to show that one variable causes or determines the value of the other variables. A high level of flexibility characterizes an exploratory case study and it is suitable when a problem is difficult to demarcate. This kind of research is also appropriate when it does not exist a clear apprehension about what model that should be used and what qualities and relations that is important.

In this study, research purpose and research questions indicate that this thesis is primarily exploratory and then descriptive. It is exploratory since in this study intended to design new model. Also, it is descriptive because model is describing the relationship between e-loyalty and their constructs.

5.4.1.2 Research strategy

According to Yin (1994), there are five primary research strategies in social science: experiments, surveys, archival analysis, histories and studies. Also, he claims that each strategy has certain advantages and disadvantages, which are determined by three condition: first, the type research question posed; second, the extend of control an

investigator has over the actual behavioral events; third, the degree of focus on contemporary as opposed to historical events.

In this research we aim at to probe the relationship some variables and to test some hypothesizes in a sample of websites so case study seems to be inappropriate. Survey is useful when the research goal is to estimate about some conclusion, so in this study the survey selected as research strategy.

5.4.1.3 Data collection method

There are two major approaches to gather information about a situation, person, problem or phenomenon. Sometimes information required is already available and only need to be extracted. However, there are times when the information must be collected. Based upon these board approaches for information gathering, data are categorized as: secondary data and primary data. Whilst primary data are collected by the investigator conducting the research, secondary data are collected from secondary sources such as publications, personal records, interviews and/or questionnaire (Haie *et. al*, 2003). In this study quantitative survey is used as data collection method. Based on our research objectives, a questionnaire was prepared to extract customer's experience in online shopping from e-retailers. The questionnaire is designed according to the conceptual framework, which was drawn from literature.

A questionnaire should be reliable and valid.

- *Reliability*

Reliability means that if the test is repeated under the similar condition, to what extent the findings are similar and reliable (Cooper and Schindler, 2003). Different methods are available to measure the reliability such as retest method, split-half method, parallel method, Richardson method, and Cronbach alpha coefficient method. The popular and commonly used to assess internal consistency is Cronbach alpha. (Hair *et al.*, 2007) have provided rules of thumb for interpreting alpha values. They mentioned an alpha of 0.6 or higher as an appropriate range to measure the reliability. In this study to assess the reliability of questionnaire Coronbach alpha was used. As a result of assessing reliability of questionnaire, Cronbach's alpha is 0,964 that is higher that minimum level (0.60).

- *Validity*

Concept of validity or internal validity response to how precisely the questions measure corresponding components. To determine the validity of questionnaire, various methods are available, one of them is *content validity method*. This method usually is determined by experts in the proposed study objects. Content validity in the questionnaire of this research was accepted by some e-retailers professionals, research advisor and supervisor.

- *Factor Validity*

Factor Validity is a kind of construct validity that is acquired through factor analysis. Factor analysis is a statistical art that is applied extensively in humanities. Indeed, use of this analysis is essential and necessary in the offshoots that are used in the tests and questionnaires. The use of factor analysis distinguishes that whether the questionnaire tests the proposed characteristics (Aghamiri, 2007).

5.5 Statistical method

Much effort was made in the last decade to study the casual relations between variables. One of the modern methods in this field is the *Structural Equation Modeling* (SEM) or *multivariate analysis with latent variables*. SEM is a comprehensive statistical process which is a set of linear equations for testing the hypothesis about the relationship between observed and latent variable (Lavee, 1988) and uses a confirmatory approach (Byrne, 2001). Structural equation modeling techniques are a second - generation multivariate techniques (Patrick, 1997) and have gained increasing popularity in management sciences, notably marketing and organization behavior, in the last decade. Bagozzi (1980) suggested that casual models developed following the structural equation modeling approach had a number of advantages:

a) they make assumptions, constructs, and hypothesized relationships in a researcher's theory explicit;
b) they add a degree of precision to e researcher's theory, since they require clear definitions of constructs, operationalizations, and the functional relationship between constructs;
c) they permit a more complete representation of complex theories;

d) they provide a formal framework for constructing and testing both theories and measures.

Selection of the sample size is very important in this stage because most of available estimation methods in the structural equation modeling and assessing indicators of proportional model are sensitive compare to the sample size.

The main goal in SEM is to find "the extent to which a hypothesized model "fits" or, in other words, adequately describe sample data" (Byrne, 2001). There are a number of measures generated by LISREL[31] to evaluate the goodness of fit of the model. The most popular index is perhaps the *chi-square statistic*. This statistic tests the proposed model against the general alternative in which all observed variables are correlated (in LISREL terms, unconstrained). It measures the distance (difference, discrepancy, deviance) between the sample covariance or correlation matrix and the fitted covariance or correlation matrix. Also some other indices were developed to evaluate the whole model fit; some of important fit indices are mentioned in the following (table 17).

Table 17. Fit indices

Goodness of fit measure		**Recommended value**
Chi square		$P \geq 5$
Chi square/degrees of freedom		≤ 3
Root Mean Square Error of Approximation	(RMSEA)	$\leq 0{,}1$
Normed Fit Index	(NFI)	$\geq 0{,}90$
Non-Normed Fit Index	(NNFI)	$\geq 0{,}90$
Comparative Fit Index	(CFI)	$\geq 0{,}90$
Goodness of Fit Index	(GFI)	$\geq 0{,}90$
Adjusted Goodness of Fit Index	(AGFI)	$\geq 0{,}80$

Source: our elaboration

5.6 Measurement of constructs

The questionnaire comprises of 4 main category and 16 sub categories. In the first part of questionnaires there are question about general demographic information including gender, age, job, and education considered. In the second part of questionnaire,

[31] LISREL is an acronym for linear structural relations, it is a statistical software package used in structural equation modeling (SEM) for manifest and latent variables.

questions regarding customer loyalty, customer satisfaction, customer trust, and quality of website were asked.

Table 18. Measures in literatury

Constructs	Measures	Sources
E-Quality	Usability (6 Questions)	Barnes and Vidgen, 2002; Barnes and Vidgen, 2012; Yoo *et al.* 2001; Sigman and Boston 2013; Abdinnour-Helm *et al.* 2005; Natarajan *et al.*, 2012.
	Design (12 Questions)	Barnes and Vidgen, 2002; Barnes and Vidgen, 2012; Yoo *et al.*, 2001; Sigman and Boston 2013; Natarajan *et al.*, 2012.
	Speed (5 Questions)	Akinci *et al.* 2010; Parasuraman *et al.*, 2005; Yoo *et al.*, 2001; Sigman and Boston 2013; Natarajan *et al.*, 2012.
	Information (9 Questions)	Akinci *et al.*, 2010; Barnes and Vidgen, 2002; Barnes and Vidgen, 2012; Yoo *et al.*, 2001; Sigman and Boston 2013; Abdinnour-Helm *et al.*, 2005; EUCS; Natarajan *et al.*, 2012; Parasuraman *et al.*, 2005.
	Contact (5 Questions)	Parasuraman *et al.*, 2005; Sigman and Boston 2013.
	Navigability (8 Questions)	Sigman and Boston 2013; Natarajan *et al.*, 2012.
	Content (5 Questions)	Sigman and Boston 2013; Natarajan *et al.*, 2012.
	Perceived playfulness (3 Questions)	Moon and Kim 2001.
	Satisfaction (2 Questions)	Abdinnour-Helm *et al.*, 2005.
	Behavioural Intention (3 Questions)	Parasuraman *et al.*, 2005.

Source: our elaboration

The questionnaire was assessed by experts with the purpose of make priority and ranking of constructs.

According to Saunders *et al.* (2000) the purpose of the pilot test is to refine the questionnaires so that respondents will have no problem in answering the questions and will be no problem in recording data. For small scale questionnaires, it is unlikely to have sufficient time or financial resources for such testing. However, it is still important to have questionnaire pilot tested. For most questionnaires the minimum number for a pilot test is 10 (Fink, 1995).

As a result of pilot test, some questions removed due to same meaning and concepts, for instance, the website design removed due to same meaning with E-quality

measures. Also, some other questions change to explicit expression in order to be more understandable by respondents.

The constructs in this study were developed by using measurement scales adopted from previous studies. The study variables were measured using a Likert-type scale. Usability, content, reliability, security, interaction, and satisfaction were measured on a seven-point scale. These measurements are adapted and abridged from Parasuraman *et al.* (2005), and Lin (2007). These variables were anchored at 1, "strongly disagree", 4, "neither agree nor disagree" and 7, "strongly agree". Each of the Likert-type scale items' sum scores were calculated and used in the testing of hypotheses.

5.6.1 Usability

Usability was measured with six items. The items measure the extent to which people find it easy to navigate the website. The items representing this measure are desire in the table 19.

Table 19. Usability items

N°	Questions
Q1	The interaction with the site is clear and understandable
Q2	I find the site easy to navigate
Q3	The site is easy to use
Q4	The customer can browse without having to login
Q5	The site offer features for non-Italian speakers
Q6	The sizing function of the characters of the text is clearly visible

Source: our elaboration

5.6.2 Design

Design was measured with twelve items. The items measure website appearance and visual design. Graphic style involves issues such as color, layout, print size and type, number of photographs and graphics, and animation. The items representing this measure are describe in the table 20.

Table 20. Design items

N°	Questions
Q7	The color contrast is sufficient
Q8	There is consistency between the design elements when you browse through the various pages of the site (colors fonts and sizes)
Q9	The site stands out for its originality as compared to other similar sites
Q10	The text of the site is easy to read
Q11	The site is creative

Q12	The pictures and graphics add to the appeal of the site
Q13	The animation in this site enriches the content
Q14	The site shows beautiful images of the products
Q15	The site has an attractive appearance
Q16	The design is suitable for the type of site
Q17	The site conveys a sense of professionalism / competence
Q18	The images of the site are easy to understand and interpret

Source: our elaboration

5.6.3 Speed

Processing speed was measured using five items. The items assess the speed response times of web pages.

Table 21. Speed items

N°	Questions
Q19	It is easy access to the results of research information
Q20	The site loads pages quickly (1 or 2 seconds)
Q21	The site works correctly (there are no bugs)
Q22	The site does not hang (during the consultation never occur interruptions)
Q23	The home page of the site open quickly

Source: our elaboration

5.6.4 Satisfaction

We define satisfaction as the positive feeling evoked after an interaction with a website. Satisfaction was measured using five items.

Table 22. Satisfaction items

N°	Questions
Q24	The site provides the information for which it was made
Q25	The site frequently updates the contents and information (news, etc.)

Source: our elaboration

5.6.5 Perceived playfulness

Perceived Playfulness is the extent to which the individual perceives that his or her attention is focused on the interaction with the World-Wide-Web; he is curious during the interaction; and he finds the interaction enjoyable or interesting. The perceived playfulness was measured using three items.

Table 23. Perceived playfulness items

N°	Questions
Q26	When interacting with the web portal, I am not aware of the time as it elapses
Q27	When interacting with the web portal, I am not aware of distracting noise
Q28	When interacting with the web portal, I often forget other commitments

Source: our elaboration

5.6.6 Information

Quality of information was measured with nine items. The items asked the individual's perception of the information that could be found on the website under billing.

Table 24. Information items

N°	Questions
Q29	The information in this site are very well organized
Q30	The information you are looking for can be found easily
Q31	The site provides credible information
Q32	The site provides timely information
Q33	The website provides useful information
Q34	The website provides comprehensive information
Q35	The site provides information that is understandable for users of all levels
Q36	The website provides information at the right level of detail
Q37	The site presents information in an appropriate format

Source: our elaboration

5.6.7 Contact

Contact was measured using five items. The items assess the needs of customers to be able to speak with live customer service agents online or through the phone as well as the availability of assistance through telephone or online representatives of the website.

Table 25 Contact items

N°	Questions
Q38	The site provides a phone number to reach the company (owner of site)
Q39	The request or download the material is easy
Q40	The contact information is easy to locate and comprehensive
Q41	The site provides adequate support for users who do not speak Italian
Q42	The site offers the opportunity to speak to an operator if a problem arises

Source: our elaboration

5.6.8 Behavioral intention

Behavioral intention is an individual's intention to recommend an online retailer, visit the retailer's website, and purchase their merchandise in the future (Mathwick, 2002). The items measure customer behavior to the website in terms of whether the respondents speak well of the site and work to keep the customer loyal to the website. behavioral intention was measured using three items.

Table 26. Behavioral intention items

N°	Questions
Q43	The probability to speak positively of this site is high
Q44	The probability of recommending this site to someone is high
Q45	The probability to see this site in the future is high

Source: our elaboration

5.6.9 Navigability

Navigability was measured using eight items. The items assess the sequencing of pages, well-organized layout, and consistency of navigation protocols.

Table 27. Navigability items

N°	Questions
Q46	There is a search box on every page
Q47	The site navigation is clear and non-repetitive
Q48	The links are useful
Q49	The links are clear, understandable and properly labeled
Q50	Link back to the Home Page is understandable and is present on every page of the site
Q51	The menu bars and other navigation elements are consistent from page to page
Q52	The reference links (windows) Pop up is understandable
Q53	Link back to top is easily understandable

Source: our elaboration

5.6.10 Content

Content was measured using five items. The items measure the extent to which individuals perceive the content of website as appropriate and attractive. The content was measured using five items.

Table 28. Content items

N°	Questions
Q54	The purpose of the site are clearly spelled out
Q55	The subjects covered are clear
Q56	The useful links section are exhaustive
Q57	The information and sources of external links are appropriate and accurate
Q58	The size of the web page is appropriate

Source: our elaboration

5.7 Data analysis and results

This study used LISREL 9.2 to test the relationships hypothesized and used SPSS 20 to analyze the data which include descriptive statistics, reliability, and validity.

5.7.1 Profile of the respondents

The questioner was put on *Google Drive* and proposed to people connected on line. At the end of the research, more than 300 questionnaires were collected for each consortium (Table 29) for a total of 2782 questionnaires. There weren't missing data, for the compilation of all the questions was obligatory in order to send in the questionnaire.

Table 29. Collected questionnaires for the wine consortia

Name of Consortium	Number of collected questionnaires
Friuli Annia Consortium	302
Friuli Aquileia Consortium	300
Colli Orientali del Friuli Consortium	304
Collio and Carso Consortium	300
Friuli Grave Consortium	303
Friuli Isonzo Consortium	366
Friuli Latisana Consortium	300
Lison-Pramaggiore Consortium	303
Ramandolo Consortium	304
Total Questionnaires	2.782

Source: our elaboration with Google Drive Program

The statistical regarding gender, age and education are summarized in the Table 30.

Table 30. Sample characteristics

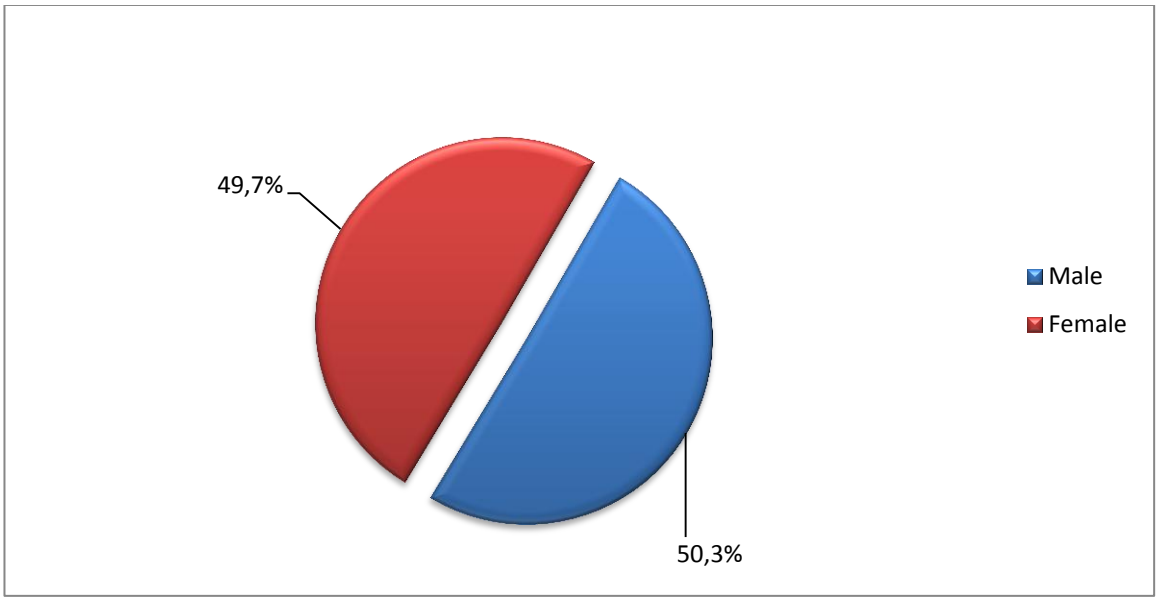
Variable		Frequency	%
Gender	Male	1.400	50,3
	Female	1.382	49,7
	Total	**2.782**	**100,0**
Age	19 years and less	459	16,5
	From 19 years to 29 years	1.560	56,1
	From 30 years to 39 years	317	11,4
	From 40 years to 49 years	255	9,2
	From 50 years to 65 years	159	5,7
	65 years and more	32	1,2
	Total	**2.782**	**100,0**
Education Level	Primary school	33	1,2
	Secondary school	572	20,6
	High school diploma	1.219	43,8
	Degree	698	25,1
	Phd	221	7,9
	Other	39	1,4
	Total	**2.782**	**100,0**

Source: our elaboration

According to figure 23, 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 degree and the lowest frequency for education is related to those with a primary school.

To better understand the descriptive analysis, we have created the following graphs. As we see from Figure 23, the total sample consists of 2782 questionnaires in which 50.3% of respondents are men and 49.7% of them are women.

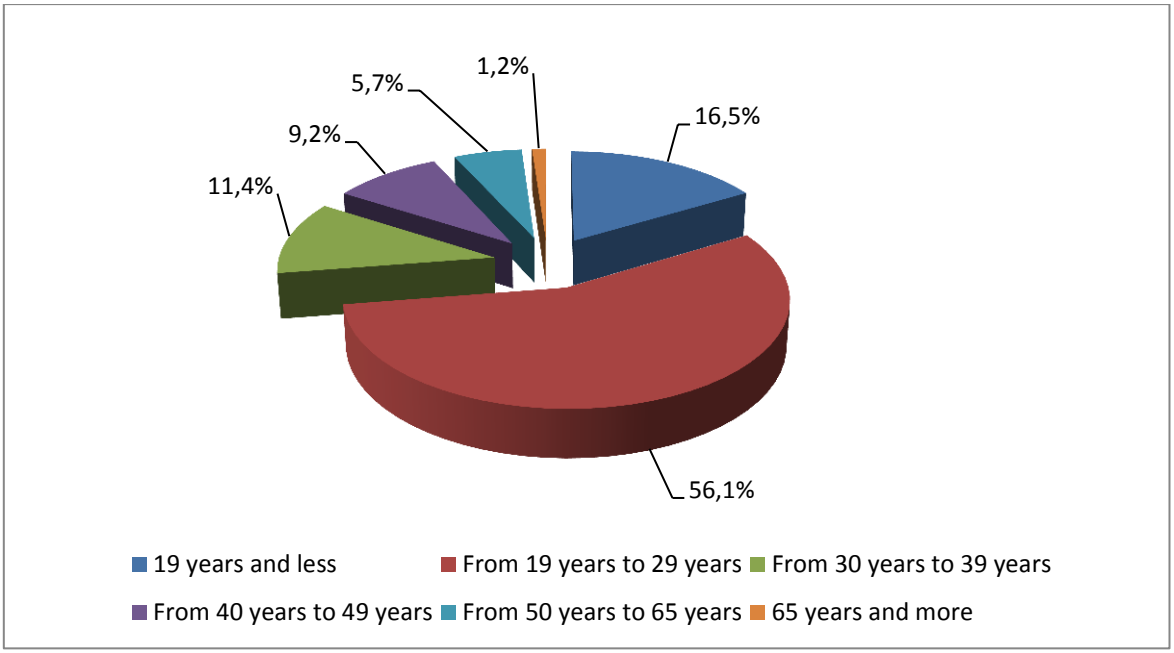
Figure 23. Gender groups



Source: Our Elaboration

The graph in Figure 24 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 24Age groups

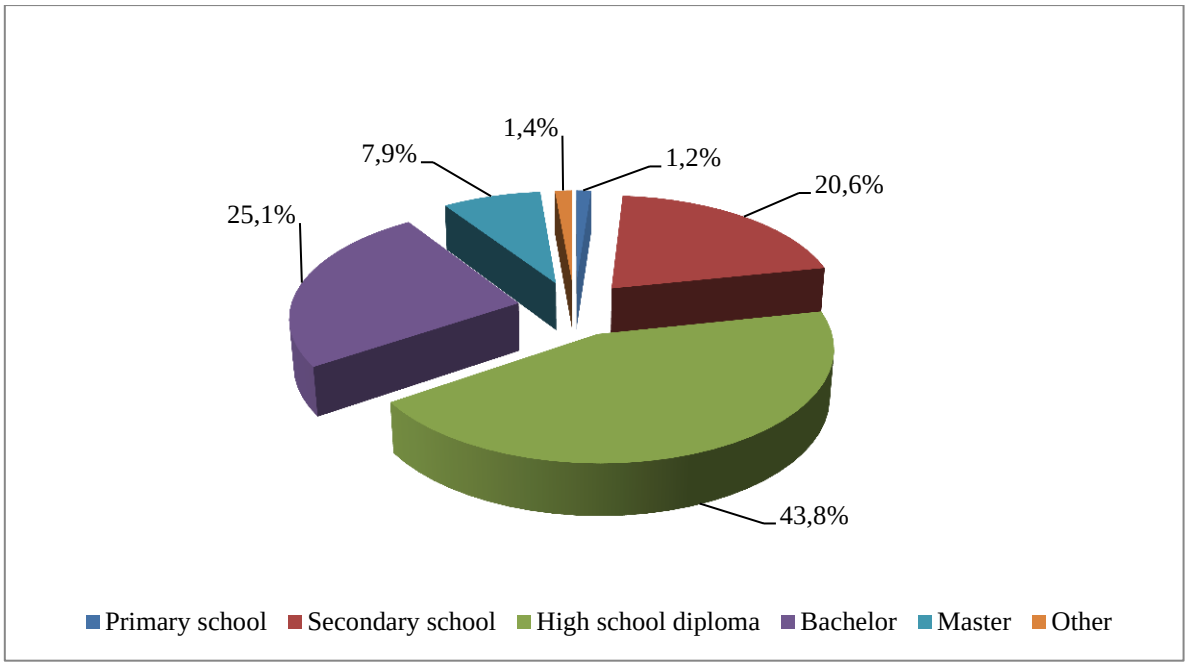


Source: Our Elaboration

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 25.

Figure 25. Educational groups



Source: Our Elaboration

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.

5.7.2 Reliability and validity analysis

A principal component factor analysis was conducted to validate the underlying structure of e-service quality dimensions (Tables 31). For all nine consortia factor analysis was made. During processing of factor analysis were considered only the questions in the questionnaire that had the Cronbach's Alpha greater than 0,6. Results of the factor analysis indicated coefficient nine significant dimensions.

Table 31. Factor analysis of the consortium Friuli Annia

Construct and items	Factor Loading[34]	Eigenvalue[33]	Percent of Variance[32]	Alpha coefficient
Usability		3,33	55,47	0,83
Q3	0,87			
Q1	0,85			
Q2	0,78			
Q5	0,70			
Q4	0,67			
Q6	0,54			
Design		7,72	64,37	0,95
Q9	0,85			
Q17	0,85			
Q11	0,83			
Q15	0,83			
Q14	0,83			
Q16	0,82			
Q13	0,82			
Q12	0,82			
Q18	0,78			
Q10	0,75			
Q7	0,73			
Q8	0,71			
Speed		3,28	65,63	0,86
Q21	0,88			
Q20	0,84			
Q23	0,84			
Q22	0,83			
Q19	0,64			
Satisfaction				
Q25	0,73			
Q24	0,66			
Perceived Playfulness		3,24	64,73	0,86
Q27	0,88			
Q28	0,87			
Q26	0,86			
Information		6,43	71,43	0,95

[32] Percent of Variance: this column contains the percent of total variance accounted for by each factor.
[33] The eigenvalue for a given factor measures the variance in all the variables which is accounted for by that factor.
[34] The factor loadings, also called component loadings in Principal Component Analysis, are the correlation coefficients between the cases (rows) and factors (columns).

Construct and items	Factor Loading[34]	Eigenvalue[33]	Percent of Variance[32]	Alpha coefficient
Q33	0,88			
Q34	0,88			
Q31	0,87			
Q36	0,87			
Q30	0,86			
Q35	0,85			
Q32	0,83			
Q37	0,82			
Q29	0,75			
Contact		3,10	61,95	0,84
Q39	0,84			
Q41	0,81			
Q38	0,77			
Q40	0,77			
Q42	0,75			
Behavioral Intention		2,54	84,68	0,91
Q43	0,93			
Q44	0,92			
Q45	0,91			
Navigability		5,05	63,12	0,91
Q48	0,88			
Q49	0,87			
Q47	0,84			
Q53	0,81			
Q51	0,80			
Q52	0,80			
Q50	0,76			
Q46	0,54			
Content		3,68	73,56	0,91
Q54	0,88			
Q56	0,88			
Q57	0,87			
Q55	0,85			
Q58	0,81			

Source: Our Elaboration with SPSS 20.0 program

Table32 . Factor analysis of the consortium Friuli Aquileia

Construct and items	Factor Loading	Eigenvalue	Percent of Variance	Alpha coefficient
Usability		2,26	37,74	0,69
Q2	0,84			
Q1	0,83			
Q3	0,59			
Q5	0,50			
Q4	0,49			
Design		2,09	17,38	0,61
Q9	0,65			
Q15	0,61			
Q16	0,54			
Q11	0,54			
Q18	0,51			
Q7	0,41			
Q9	0,65			
Speed		2,28	45,63	0,73
Q21	0,86			
Q22	0,86			
Q23	0,83			
Q20	0,31			
Satisfaction				
Q25	0,68			
Q24	0,55			
Perceived Playfulness		2,00	40,05	0,62
Q27	0,74			
Q26	0,64			
Q28	0,53			
Information		3,01	33,48	0,83
Q33	0,89			
Q31	0,88			
Q37	0,84			
Q32	0,60			
Q29	0,58			
Contact		1,98	39,60	0,65
Q40	0,77			
Q39	0,68			
Q38	0,67			
Q41	0,63			
Behavioral Intention		1,64	54,78	0,60
Q44	0,76			
Q45	0,75			
Q43	0,71			
Navigability		2,79	34,85	0,72
Q48	Q48			

Construct and items	Factor Loading	Eigenvalue	Percent of Variance	Alpha coefficient
Q49	Q47			
Q47	Q49			
Q53	Q52			
Q51	Q50			
Q52	Q51			
Q50	Q53			
Content		2,48	49,50	0,72
Q55	0,86			
Q54	0,83			
Q56	0,76			
Q57	0,57			
Q58	0,37			

Source: Our Elaboration with SPSS 20.0 program

Table33 Factor analysis of the consortium Colli Orientali del Friuli

Construct and items	Factor Loading	Eigenvalue	Percent of Variance	Alpha coefficient
Usability		3,85	64,18	0,89
Q3	0,86			
Q4	0,85			
Q2	0,82			
Q5	0,81			
Q1	0,76			
Q6	0,69			
Design		7,32	61,01	0,94
Q10	0,82			
Q12	0,82			
Q17	0,80			
Q8	0,80			
Q16	0,78			
Q11	0,78			
Q15	0,78			
Q9	0,77			
Q14	0,77			
Q13	0,76			
Q18	0,76			
Q7	0,71			
Speed		3,65	73,07	0,91
Q21	0,89			
Q22	0,86			
Q23	0,86			
Q20	0,86			
Q19	0,79			
Satisfaction				
Q25	0,84			

Construct and items	Factor Loading	Eigenvalue	Percent of Variance	Alpha coefficient
Q24	0,83			
Perceived Playfulness		3,62	72,43	0,90
Q27	0,87			
Q26	0,87			
Q28	0,85			
Information		6,19	68,76	0,94
Q31	0,88			
Q33	0,86			
Q30	0,84			
Q36	0,83			
Q34	0,83			
Q35	0,83			
Q29	0,80			
Q32	0,80			
Q37	0,79			
Contact		3,11	62,28	0,85
Q40	0,86			
Q38	0,82			
Q41	0,81			
Q39	0,77			
Q42	0,67			
Behavioral Intention		2,45	81,72	0,89
Q44	0,92			
Q43	0,91			
Q45	0,89			
Navigability		5,46	68,22	0,93
Q50	0,88			
Q51	0,86			
Q48	0,86			
Q49	0,86			
Q47	0,85			
Q52	0,85			
Q53	0,79			
Q46	0,63			
Content		3,91	78,30	0,93
Q56	0,91			
Q57	0,90			
Q55	0,90			
Q58	0,86			
Q54	0,85			

Source: Our Elaboration with SPSS 20.0 program

Table34 Factor analysis of the consortium Collio

Construct and items	Factor Loading	Eigenvalue	Percent of Variance	Alpha coefficient
Usability		2,98	49,58	0,74
Q1	0,87			
Q2	0,84			
Q3	0,81			
Q5	0,55			
Q6	0,55			
Q4	0,51			
Design		5,80	48,32	0,90
Q17	0,80			
Q15	0,79			
Q13	0,76			
Q16	0,76			
Q11	0,76			
Q18	0,74			
Q12	0,72			
Q14	0,66			
Q7	0,64			
Q9	0,57			
Q8	0,53			
Q10	0,54			
Speed		3,37	67,32	0,87
Q28	0,89			
Q26	0,85			
Q27	0,84			
Q24	0,82			
Q25	0,69			
Satisfaction				
Q25	0,81			
Q24	0,61			
Perceived Playfulness				
Q27	0,91			
Q26	0,90			
Q28	0,90			
Information		3,49	69,82	0,88
Q36	0,85			
Q33	0,84			
Q34	0,79			
Q30	0,77			
Q37	0,77			
Q29	0,76			
Q35	0,75			
Q31	0,69			
Q32	0,50			
Contact		2,25	45,01	0,66

Construct and items	Factor Loading	Eigenvalue	Percent of Variance	Alpha coefficient
Q40	0,75			
Q39	0,72			
Q38	0,68			
Q42	0,62			
Q41	0,56			
Behavioral Intention		2,29	76,23	0,84
Q44	0,92			
Q43	0,85			
Q45	0,84			
Navigability		4,48	56,06	0,86
Q49	0,85			
Q47	0,83			
Q52	0,79			
Q50	0,76			
Q48	0,76			
Q53	0,75			
Q51	0,72			
Q46	0,48			
Content		3,42	68,36	0,88
Q56	0,87			
Q55	0,87			
Q57	0,86			
Q54	0,81			
Q58	0,72			

Source: Our Elaboration with SPSS 20.0 program

Table35 Factor analysis of the consortium Friuli Grave

Construct and items	Factor Loading	Eigenvalue	Percent of Variance	Alpha coefficient
Usability		2,27	37,75	0,71
Q3	0,84			
Q4	0,79			
Q5	0,77			
Q6	0,58			
Design		6,08	50,64	0,91
Q15	0,76			
Q11	0,74			
Q14	0,74			
Q16	0,74			
Q12	0,72			
Q17	0,71			
Q7	0,71			
Q8	0,70			
Q9	0,68			
Q10	0,68			
Q13	0,68			

Construct and items	Factor Loading	Eigenvalue	Percent of Variance	Alpha coefficient
Q18	0,66			
Speed		3,30	65,99	0,87
Q22	0,84			
Q21	0,84			
Q20	0,83			
Q23	0,81			
Q19	0,73			
Satisfaction				
Q24	0,76			
Q25	0,71			
Perceived Playfulness		3,31	66,10	0,86
Q27	0,88			
Q26	0,88			
Q28	0,82			
Information		5,09	56,58	0,90
Q30	0,78			
Q34	0,77			
Q29	0,77			
Q36	0,76			
Q37	0,76			
Q32	0,74			
Q31	0,74			
Q35	0,73			
Q33	0,71			
Contact		2,54	50,89	0,72
Q40	0,78			
Q39	0,77			
Q41	0,75			
Q38	0,75			
Q42	0,46			
Behavioral Intention		2,36	78,56	0,86
Q44	0,90			
Q43	0,88			
Q45	0,87			
Navigability		4,65	58,16	0,88
Q49	0,82			
Q48	0,81			
Q52	0,81			
Q50	0,80			
Q53	0,79			
Q51	0,79			
Q47	0,76			
Q46	0,45			
Content		3,15	63,08	0,85
Q57	0,84			
Q56	0,80			

Construct and items	Factor Loading	Eigenvalue	Percent of Variance	Alpha coefficient
Q55	0,79			
Q54	0,78			
Q58	0,77			

Source: Our Elaboration with SPSS 20.0 program

Table36 Factor analysis of the consortium Friuli Isonzo

Construct and items	Factor Loading	Eigenvalue	Percent of Variance	Alpha coefficient
Usability		2,41	40,14	0,61
Q1	0,87			
Q2	0,86			
Q3	0,83			
Q4	0,35			
Design		5,80	48,34	0,90
Q15	0,80			
Q16	0,80			
Q17	0,75			
Q12	0,72			
Q11	0,71			
Q9	0,70			
Q18	0,68			
Q7	0,64			
Q10	0,63			
Q8	0,63			
Q14	0,62			
Q13	0,62			
Speed		2,82	56,39	0,77
Q20	0,86			
Q23	0,80			
Q22	0,80			
Q21	0,77			
Q19	0,44			
Satisfaction				
Q24	0,87			
Q25	0,67			
Perceived Playfulness		3,13	62,57	0,83
Q26	0,89			
Q27	0,88			
Q28	0,61			
Information		5,06	56,19	0,90
Q37	0,81			
Q33	0,80			
Q29	0,79			
Q31	0,76			
Q30	0,75			
Q34	0,74			

Construct and items	Factor Loading	Eigenvalue	Percent of Variance	Alpha coefficient
Q32	0,73			
Q36	0,71			
Q35	0,65			
Contact		1,94	38,80	0,62
Q40	0,74			
Q38	0,65			
Q42	0,56			
Q39	0,68			
Q41	0,45			
Behavioral Intention		2,32	77,30	0,85
Q44	0,92			
Q45	0,86			
Q43	0,86			
Navigability		3,63	45,39	0,80
Q49	0,77			
Q48	0,76			
Q52	0,69			
Q47	0,68			
Q51	0,68			
Q50	0,66			
Q53	0,66			
Q46	0,44			
Content		2,70	53,99	0,78
Q57	0,81			
Q56	0,81			
Q55	0,74			
Q54	0,70			
Q58	0,69			

Source: Our Elaboration with SPSS 20.0 program

Table37 Factor analysis of the consortium Friuli Latisana

Construct and items	Factor Loading	Eigenvalue	Percent of Variance	Alpha coefficient
Usability		2,54	42,27	0,80
Q2	0,90			
Q1	0,89			
Q3	0,76			
Q4	0,64			
Design		4,74	39,51	0,86
Q15	0,83			
Q16	0,78			
Q17	0,78			
Q14	0,75			
Q9	0,73			
Q11	0,69			
Q12	0,68			

Construct and items	Factor Loading	Eigenvalue	Percent of Variance	Alpha coefficient
Q18	0,58			
Q10	0,46			
Q8	0,30			
Q7	0,37			
Speed		2,57	51,46	0,81
Q20	0,81			
Q21	0,80			
Q22	0,80			
Q23	0,78			
Satisfaction				
Q25	0,56			
Q24	0,48			
Perceived Playfulness		2,95	58,95	0,79
Q26	0,94			
Q27	0,90			
Q28	0,84			
Information		4,23	47,03	0,86
Q33	0,83			
Q36	0,80			
Q34	0,76			
Q32	0,75			
Q29	0,72			
Q30	0,70			
Q37	0,64			
Q31	0,53			
Contact		1,64	32,74	0,60
Q40	0,72			
Q38	0,61			
Behavioral Intention		2,34	77,99	0,86
Q44	0,94			
Q43	0,90			
Q45	0,80			
Navigability		2,53	31,65	0,68
Q49	0,70			
Q47	0,69			
Q51	0,66			
Q48	0,59			
Q53	0,53			
Q50	0,52			
Q46	0,35			
Q52	0,34			
Content		2,99	59,74	0,82
Q54	0,83			
Q57	0,81			
Q56	0,78			
Q55	0,74			

Construct and items	Factor Loading	Eigenvalue	Percent of Variance	Alpha coefficient
Q58	0,70			

Source: Our Elaboration with SPSS 20.0 program

Table38 Factor analysis of the consortium Lison-Pramaggiore

Construct and items	Factor Loading	Eigenvalue	Percent of Variance	Alpha coefficient
Usability		2,55	42,48	0,80
Q3	0,86			
Q2	0,82			
Q1	0,81			
Q5	0,69			
Design		6,34	52,87	0,92
Q14	0,78			
Q15	0,75			
Q18	0,74			
Q13	0,74			
Q11	0,72			
Q8	0,72			
Q17	0,72			
Q16	0,72			
Q7	0,72			
Q9	0,71			
Q10	0,70			
Q12	0,70			
Speed		2,63	52,59	0,82
Q20	0,86			
Q22	0,83			
Q21	0,78			
Q23	0,77			
Satisfaction				
Q24	0,77			
Q25	0,73			
Perceived Playfulness		3,21	64,13	0,86
Q28	0,85			
Q26	0,82			
Q27	0,82			
Information		5,13	56,97	0,90
Q33	0,81			
Q37	0,78			
Q35	0,78			
Q32	0,76			
Q34	0,76			
Q36	0,74			
Q31	0,74			
Q29	0,73			
Q30	0,69			

Construct and items	Factor Loading	Eigenvalue	Percent of Variance	Alpha coefficient
Contact		2,08	41,55	0,78
Q39	0,84			
Q41	0,83			
Q40	0,82			
Behavioral Intention		2,23	74,29	0,83
Q43	0,87			
Q45	0,86			
Q44	0,86			
Navigability		4,02	50,28	0,87
Q49	0,84			
Q47	0,82			
Q51	0,81			
Q52	0,76			
Q48	0,74			
Q53	0,74			
Q50	0,54			
Content		3,27	65,37	0,87
Q54	0,85			
Q57	0,82			
Q55	0,80			
Q56	0,80			
Q58	0,76			

Source: Our Elaboration with SPSS 20.0 program

Table39 Factor analysis of the consortium Ramandolo

Construct and items	Factor Loading	Eigenvalue	Percent of Variance	Alpha coefficient
Usability		3,20	53,35	0,81
Q3	0,84			
Q1	0,80			
Q2	0,75			
Q4	0,70			
Q6	0,65			
Q5	0,63			
Design		7,28	60,63	0,94
Q16	0,85			
Q15	0,84			
Q11	0,83			
Q9	0,83			
Q17	0,81			
Q7	0,78			
Q12	0,78			
Q13	0,76			
Q14	0,72			
Q8	0,72			
Q10	0,72			

Construct and items	Factor Loading	Eigenvalue	Percent of Variance	Alpha coefficient
Q18	0,67			
Speed		3,05	61,08	0,84
Q22	0,80			
Q20	0,80			
Q23	0,77			
Q19	0,77			
Q21	0,77			
Satisfaction				
Q25	0,76			
Q24	0,66			
Perceived Playfulness		3,12	62,42	0,85
Q28	0,86			
Q26	0,85			
Q27	0,80			
Information		5,15	57,18	0,91
Q30	0,79			
Q29	0,78			
Q36	0,78			
Q34	0,77			
Q37	0,76			
Q33	0,75			
Q31	0,75			
Q32	0,72			
Q35	0,70			
Contact		2,96	59,13	0,82
Q40	0,83			
Q39	0,79			
Q38	0,77			
Q42	0,75			
Q41	0,71			
Behavioral Intention		2,44	81,41	0,89
Q45	0,91			
Q44	0,90			
Q43	0,90			
Navigability		3,98	49,74	0,85
Q49	0,77			
Q47	0,75			
Q52	0,73			
Q48	0,73			
Q53	0,72			
Q50	0,66			
Q46	0,64			
Q51	0,63			
Content		3,23	64,69	0,86
Q56	0,83			
Q57	0,82			

Construct and items	Factor Loading	Eigenvalue	Percent of Variance	Alpha coefficient
Q58	0,82			
Q54	0,79			
Q55	0,76			

Source: Our Elaboration with SPSS 20.0 program

5.8 Structural Equation Models

Using structural equation modeling, the hypothesized relationships in the proposed research model were tested and analyzed. The chi-square values of the eight valid model are reported in the table 40[35]

Table 40. Chi-square value of the models

Consortia	Chi-Square Value	Degrees of Freedom
Friuli Annia	3729.29	1509 (p\0.001)
Friuli Aquileia	3858.19	1509 (p\0.001)
Colli Orientali del Friuli	5577.70	1509 (p\0.001)
Collio	3340.112	1509 (p\0.001)
Friuli Grave	3150.02	1509 (p\0.001)
Friuli Isonzo	4844.25	1509 (p\0.001)
Friuli Latisana	6800.98	1509 (p\0.001)
Ramandolo	2936.46	1509 (p\0.001)

The ratio of the Chi-square to the degrees of freedom was 2.47 (Friuli Annia), 2.56 (Friuli Aquileia), 3.70 (Colli Orientali del Friuli), 2.21 (Collio), 2.09 (Friuli Grave), 3.21 (Friuli Isonzo), 4.51 (Friuli Latisana), 1.95 (Ramandolo) which were all smaller than the recommended level of 5 (Bagozzi and Yi, 1988). A comparison of all fit indices, with their corresponding recommended values (Bagozzi and Yi, 1988), indicated a good model fit for Friuli Annia (GFI = 0.619, AGFI = 0.582, CFI = 0.979, NFI = 0.966), an acceptable model fit for Friuli Aquileia (GFI = 0.70, AGFI = 0.68, CFI = 0.56, NFI = 0.44), a good model fit for Colli Orientali del Friuli (GFI = 0.61, AGFI = 0.57, CFI = 0.95, NFI = 0.93), a good model fit for Collio (GFI = 0.704, AGFI = 0.675, CFI = 0.986, NFI = 0.975), a good model fit for Friuli Grave (GFI = 0.69, AGFI = 0.67, CFI = 0.98,

[35] The model doesn't converge for the Consortium Lison-Pramaggiore

NFI = 0.96),), a good model fit for Friuli Isonzo (GFI = 0.604, AGFI = 0.566, CFI = 0.95, NFI = 0.93), a bad model fit for Friuli Latisana (GFI = 0.48, AGFI = 0.43, CFI = 0.816, NFI = 0.776), a good model fit for Ramandolo (GFI = 0.718, AGFI = 0.691, CFI = 0.986, NFI = 0.972). The accepted criteria for RMSEA (values less than 0.08 Jöreskog and Sörbom; 1996; Hu and Bentler, 1999) are respected only for Friuli Aquileia (RMSEA = 0.068); Collio (RMSEA = 0.0682); Friuli Grave (RMSEA = 0.071), Ramandolo (RMSEA = 0.0642).

As displayed in Table 40, the analytical results indicate that design, followed by information are the two web quality dimensions more positively associated with perceived playfulness thus H2 and H4 are supported respectively in six consortia (*i.e.* design) and in four consortia (*i.e.* information). Regarding the H8 the relationships between customers' perceived playfulness and satisfaction are supported in seven consortia and positive. Finally H9 is always supported.

Table 41. Path analysis[36]

Hypothesis	Path analysis*	Consortia								
		Friuli Annia	Friuli Aquileia	Colli Orientali del Friuli	Collio	Friuli Grave	Friuli Isonzo	Friuli Latisana	Ramandolo	Total
H1	US → PP	✓	✓					✓		3
H2	DE → PP	✓		✓		✓	✓	✓	✓	6
H3	SP → PP			✓	✓	✓				3
H4	IN → PP			✓	✓	✓	✓			4
H5	CCT → PP			✓					✓	2
H6	NA → PP									0
H7	CNT → PP					✓		✓		2
H8	PP → SAT	✓	✓	✓	✓	✓	✓	✓	✓	8
H9	SAT → BI	✓		✓	✓	✓	✓	✓	✓	7

*US=Usability DE=Design SP=Speed IN=Information CCT=contact NA=Navigability CNT=content PP= Perceived Playfulness SAT=Satisfaction BI=behavioral intention; Source: our elaboration with Lisrel program

Table 42. Main index of model fitting of the consortium Friuli Annia

Main index of model fitting		
Degrees of Freedom		1509
Minimum Fit Function Chi-Square	(P = 0.0)	3729,290
Root Mean Square Error of Approximation	(RMSEA)	0,0912
Normed Fit Index	(NFI)	0,966
Non-Normed Fit Index	(NNFI)	0,978
Comparative Fit Index	(CFI)	0,979
Goodness of Fit Index	(GFI)	0,619
Adjusted Goodness of Fit Index	(AGFI)	0.582

Source: Our Elaboration with Lisrel program

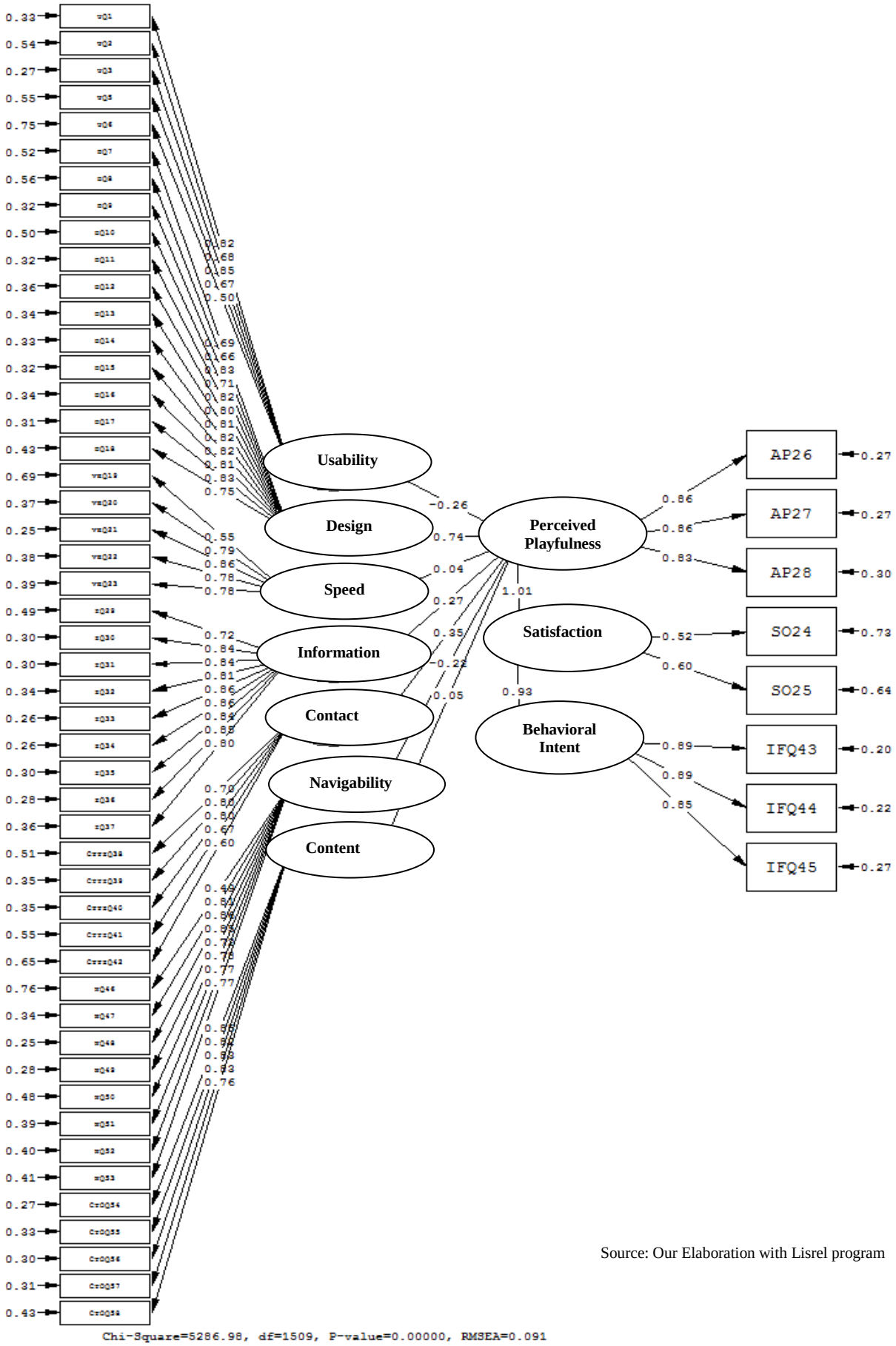
[36] The model doesn't converge for the Consortium Lison-Pramaggiore.

Table 43. Direct, indirect and total effects in the total model (standardized estimates) consortium Friuli Annia

Hypothesis	Path analysis	Direct effect	t-value	Indirect effect	Hypothesis decision
H1	US → PP	-0,26	-1,92	-0,26	Accept
H2	DE → PP	0,74	10,84	0,75	Accept
H3	SP → PP	0,04	0,74	0,04	Reject
H4	IN → PP	0,27	1,77	0,27	Reject
H5	CCT → PP	0,35	1,09	0,35	Reject
H6	NA → PP	-0,22	-0,76	-0,22	Reject
H7	CNT → PP	0,05	0,33	0,05	Reject
H8	PP → SAT	1,01	9,61	1,02	Accept
H9	SAT → BI	0,98	9,51	0,99	Accept

Source: Our Elaboration with Lisrel program

Figure 26. Output Lisrel program for consortium Friuli Annia



Source: Our Elaboration with Lisrel program

Table 44. Main index of model fitting of the Consortium Friuli Aquileia

Main index of model fitting		
Degrees of Freedom		1509
Minimum Fit Function Chi-Square	(P = 0.0)	3858,19
Root Mean Square Error of Approximation	(RMSEA)	0,068
Normed Fit Index	(NFI)	0,44
Non-Normed Fit Index	(NNFI)	0,53
Comparative Fit Index	(CFI)	0,56
Goodness of Fit Index	(GFI)	0,70
Adjusted Goodness of Fit Index	(AGFI)	0,68

Source: Our Elaboration with Lisrel program

Table 45. Direct, indirect and total effects in the total model (standardized estimates) consortium Friuli Aquileia

Hypothesis	**Path analysis**	**Direct effect**	**t-value**	**Indirect effect**	**Hypothesis decision**
H1	US → PP	0,08	2,26	0,07	Accept
H2	DE → PP	-0,11	0,31	-0,09	Reject
H3	SP → PP	0,27	0,49	0,22	Reject
H4	IN → PP	0,01	0,32	0,01	Reject
H5	CCT → PP	-0,05	-0,55	-0,04	Reject
H6	NA → PP	-0,05	-0,18	-0,04	Reject
H7	CNT → PP	0,00	0,11	0,00	Reject
H8	PP → SAT	0,83	3,87	0,69	Accept
H9	SAT → BI	-0,10	-0,79	-0,08	Reject

Source: Our Elaboration with Lisrel program

Table 46. Main index of model fitting of the Consortium Colli Orientali del Friuli

Main index of model fitting		
Degrees of Freedom		1509
Minimum Fit Function Chi-Square	(P = 0.0)	5577,70
Root Mean Square Error of Approximation	(RMSEA)	0,095
Normed Fit Index	(NFI)	0,93
Non-Normed Fit Index	(NNFI)	0,94
Comparative Fit Index	(CFI)	0,95
Goodness of Fit Index	(GFI)	0,61
Adjusted Goodness of Fit Index	(AGFI)	0,57

Source: Our Elaboration with Lisrel program

Table 47. Direct, indirect and total effects in the total model (standardized estimates) consortium Colli Orientali del Friuli

Hypothesis	**Path analysis**	**Direct effect**	**t-value**	**Indirect effect**	**Hypothesis decision**
H1	US → PP	0,01	0,18	0,01	Reject
H2	DE → PP	0,44	6,67	0,45	Accept
H3	SP → PP	0,15	2,64	0,15	Accept
H4	IN → PP	0,34	3,88	0,35	Accept
H5	CCT → PP	0,26	2,22	0,27	Accept
H6	NA → PP	-0,08	-0,40	-0,08	Reject
H7	CNT → PP	-0,10	-0,85	-0,10	Reject
H8	PP → SAT	1,02	16,21	1,04	Accept
H9	SAT → BI	0,86	13,71	0,88	Accept

Source: Our Elaboration with Lisrel program

Table 48. Main index of model fitting of the Consortium Collio

Main index of model fitting		
Degrees of Freedom		1509
Minimum Fit Function Chi-Square	(P = 0.0)	3340,112
Root Mean Square Error of Approximation	(RMSEA)	0,0682
Normed Fit Index	(NFI)	0,975
Non-Normed Fit Index	(NNFI)	0,985
Comparative Fit Index	(CFI)	0,986
Goodness of Fit Index	(GFI)	0,704
Adjusted Goodness of Fit Index	(AGFI)	0,675

Source: Our Elaboration with Lisrel program

Table 49. Direct, indirect and total effects in the total model (standardized estimates) consortium Collio

Hypothesis	**Path analysis**	**Direct effect**	**t-value**	**Indirect effect**	**Hypothesis decision**
H1	US → PP	-0,01	-0,08	-0,01	Reject
H2	DE → PP	0,12	1,25	0,12	Reject
H3	SP → PP	0,33	4,45	0,33	Accept
H4	IN → PP	0,47	5,13	0,47	Accept
H5	CCT → PP	0,04	0,48	0,04	Reject
H6	NA → PP	0,09	1,20	0,09	Reject
H7	CNT → PP	-0,03	-0,34	-0,03	Reject
H8	PP → SAT	1,01	15,69	1,02	Accept
H9	SAT → BI	0,85	14,12	0,86	Accept

Source: Our Elaboration with Lisrel program

Table 50. Main index of model fitting of the Consortium Friuli Grave

Main index of model fitting		
Degrees of Freedom		1509
Minimum Fit Function Chi-Square	(P = 0.0)	3150,02
Root Mean Square Error of Approximation	(RMSEA)	0,071
Normed Fit Index	(NFI)	0,96
Non-Normed Fit Index	(NNFI)	0,98
Comparative Fit Index	(CFI)	0,98
Goodness of Fit Index	(GFI)	0,69
Adjusted Goodness of Fit Index	(AGFI)	0,67

Source: Our Elaboration with Lisrel program

Table 51. Direct, indirect and total effects in the total model (standardized estimates) consortium Friuli Grave

Hypothesis	**Path analysis**	**Direct effect**	**t-value**	**Indirect effect**	**Hypothesis decision**
H1	US → PP	0,09	0,58	0,09	Reject
H2	DE → PP	0,40	2,79	0,42	Accept
H3	SP → PP	-0,12	-1,94	-0,12	Accept
H4	IN → PP	0,38	3,38	0,40	Accept
H5	CCT → PP	0,00	0,03	0,00	Reject
H6	NA → PP	-0,10	1,35	-0,10	Reject
H7	CNT → PP	0,29	2,74	0,30	Accept
H8	PP → SAT	1,04	13,94	1,08	Accept
H9	SAT → BI	0,65	9,60	0,68	Accept

Source: Our Elaboration with Lisrel program

Table 52. Main index of model fitting of the Consortium Friuli Isonzo

Main index of model fitting		
Degrees of Freedom		1509
Minimum Fit Function Chi-Square		4844,250
Root Mean Square Error of Approximation	(RMSEA)	0.0983
Normed Fit Index	(NFI)	0,930
Non-Normed Fit Index	(NNFI)	0,947
Comparative Fit Index	(CFI)	0,950
Goodness of Fit Index	(GFI)	0,604
Adjusted Goodness of Fit Index	(AGFI)	0,566

Source: Our Elaboration with Lisrel program

Table 53. Direct, indirect and total effects in the total model (standardized estimates) consortium Friuli Isonzo

Hypothesis	**Path analysis**	**Direct effect**	**t-value**	**Indirect effect**	**Hypothesis decision**
H1	US → PP	-0,03	-0,59	-0,03	Reject
H2	DE → PP	0,62	7,32	0,62	Accept
H3	SP → PP	0,03	0,83	0,03	Reject
H4	IN → PP	0,20	2,21	0,20	Accept
H5	CCT → PP	0,03	0,59	0,03	Reject
H6	NA → PP	0,12	1,08	0,12	Reject
H7	CNT → PP	-0,01	-0,09	-0,01	Reject
H8	PP → SAT	1,00	12,60	1,00	Accept
H9	SAT → BI	0,74	10,09	0,74	Accept

Source: Our Elaboration with Lisrel program

Table 54. Main index of model fitting of the Consortium Friuli Latisana

Main index of model fitting		
Degrees of Freedom		1509
Minimum Fit Function Chi-Square		6800,978
Root Mean Square Error of Approximation	(RMSEA)	0,131
Normed Fit Index	(NFI)	0,776
Non-Normed Fit Index	(NNFI)	0,805
Comparative Fit Index	(CFI)	0,816
Goodness of Fit Index	(GFI)	0,480
Adjusted Goodness of Fit Index	(AGFI)	0,430

Source: Our Elaboration with Lisrel program

Table 55. Direct, indirect and total effects in the total model (Standardized estimates) consortium Friuli Latisana

Hypothesis	**Path analysis**	**Direct effect**	**t-value**	**Indirect effect**	**Hypothesis decision**
H1	US → PP	0,14	2,47	0,18	Accept
H2	DE → PP	0,35	2,23	0,44	Accept
H3	SP → PP	0,05	0,58	0,06	Reject
H4	IN → PP	-0,06	-0,41	-0,08	Reject
H5	CCT → PP	-0,24	-1,65	-0,30	Reject
H6	NA → PP	-0,05	-0,67	-0,06	Reject
H7	CNT → PP	0,47	3,87	0,59	Accept
H8	PP → SAT	1,25	8,54	1,56	Accept
H9	SAT → BI	0,37	5,72	0,46	Accept

Source: Our Elaboration with Lisrel program

Table 56. Main index of model fitting of the Consortium Ramandolo

Main index of model fitting		
Degrees of Freedom		1509
Minimum Fit Function Chi-Square		2936,457
Root Mean Square Error of Approximation	(RMSEA)	0,0642
Normed Fit Index	(NFI)	0,972
Non-Normed Fit Index	(NNFI)	0,985
Comparative Fit Index	(CFI)	0,986
Goodness of Fit Index	(GFI)	0,718
Adjusted Goodness of Fit Index	(AGFI)	0,691

Source: Our Elaboration with Lisrel program

Table 57. Direct, indirect and total effects in the total model (standardized estimates) consortium Ramandolo

Hypothesis	**Path analysis**	**Direct effect**	**t-value**	**Indirect effect**	**Hypothesis decision**
H1	US → PP	-0,14	-1,11	-0,10	Reject
H2	DE → PP	0,47	6,55	0,33	Accept
H3	SP → PP	0,05	0,57	0,04	Reject
H4	IN → PP	0,22	1,74	0,15	Reject
H5	CCT → PP	0,23	1,94	0,16	Accept
H6	NA → PP	0,25	0,61	0,18	Reject
H7	CNT → PP	-0,02	-0,05	-0,01	Reject
H8	PP → SAT	0,70	11,28	0,49	Accept
H9	SAT → BI	1,42	10,69	0,99	Accept

Source: Our Elaboration with Lisrel program

5.9 Discussion

The results of this study provide support for the research framework presented in Figures 21 and 22 and for the hypotheses regarding the directional linkages among the model variables that are summarized for each one of the consortium in tables 42, 44, 46, 48, 50, 52, 54, and 56.

The results of Friuli Annia show that only design has a positive impact on perceived playfulness and, in turn, on satisfaction and behavioral intention. In fact H1 is not supported because the results of the model show that there is a negative impact of usability on perceived playfulness.

The analytical results of Friuli Aquileia demonstrate that only usability affects customers' perceived playfulness and, in turn, on satisfaction. Moreover, the results reveal that the relationships between satisfaction and behavioral intention are not supported.

Regarding the results of Colli Orientali del Friuli it is possible to say that design, speed, information, and contact have a positive impact on perceived playfulness and, in turn, on satisfaction and behavioral intention.

The Collio's results show that only speed, information and satisfaction have a positive impact on perceived playfulness and in turn on satisfaction that has a positive impact on behavioral intention.

Analyzing the results of Friuli Grave reported in table 50 it is possible to see that H2, H3, H4 and H7 are supported as well as H8 and H9. This means that design, speed, information and content impact on perceived playfulness and, in turn, on satisfaction and behavioral intention.

The results of Friuli Isonzo show that design, information positively affect perceived playfulness and, in turn satisfaction and behavioral intention (hypothesis H8 and H9 supported).

Regarding Friuli Latisana usability, design and content affect perceived playfulness and, in turn, satisfaction and behavioral intention.

Finally regarding Ramandolo design, contact positively impact on perceived playfulness and in turn o satisfaction and behavioral intention.

The data of Lison-Pramaggiore don't fitted the model.

This study confirms that two website quality dimensions (*i.e.* design and information) positively affect perceived playfulness and, in turn, would influence their satisfaction and behavioral intention.

Conclusion

As mentioned above the thesis was divided into two parts. The first part of the research program involved the EO-performance link. The second part of the research program involved a structural equation model for e-quality of the SMEs of the wine sector.

The first part is motivated by a general tendency in today's business environment that observed the shortening of product and business model life cycles (Hamel, 2000). Consequently, the future profit streams from existing operations are uncertain and businesses need to constantly seek out new opportunities. Therefore, they may benefit from adopting an entrepreneurial orientation. This involves a willingness to innovate to rejuvenate market offerings, take risks to try out new and uncertain products, services, and markets, and be more proactive than competitors toward new marketplace opportunities (Covin and Slevin, 1991). This conceptual argument put forth by Covin and Slevin (1991) has received empirical support in the literature. Studies have found that those businesses that adopt a more entrepreneurial strategic orientation perform better (*e.g.*, Wiklund, 1999; Zahra, 1991; Zahra and Covin, 1995).

However, these findings are not uncontested. Conceptualizing the relationship between EO and performance, Lumpkin and Dess (1996) note the complexity of this relationship, suggesting that the performance implications of EO are context specific. That is, the strength of the relationship between EO and performance depends on the characteristics of the external environment as well as internal organizational characteristics. Therefore, the relationship between EO and performance may apparently be more complex than a simple main-effects-only relationship. The important question, then, is how to best capture the complexity in the EO-performance relationship. The dominant approach to date has been to use the universal effect approach, assuming that EO is universally beneficial, or to rely on contingency models that capture the two-way interaction between EO and a characteristic of the external environment or between EO and an internal organizational characteristic. Configurational models thus represent alternatives to the universal effect and contingency models used to date. The configurational approach argues that in organizations, certain elements of strategy, structure, process, and environment tend to cluster together to form configurations (Meyer *et al.*, 1993). Thus, the goal of the first part of this thesis was to identify and examine theoretical factors of EO that may promote business performance. The current

study also advances the literature by introducing agglomeration and network factors in understanding the EO-performance relationships, in which it may offer possible explanations for the inconsistencies reported in past literature. The above suggests that a configurational approach might provide an opportunity to gain a deeper understanding of the link between EO and firm performance. More specifically the first part of this thesis highlighted two conceptual areas:

a) relationships between risk taking, proactiveness, innovativeness, competitive aggressiveness and performance;
b) mechanisms of agglomeration and network to support performance.

Consistent with previous studies, the results showed in two regression analyses that proactiveness and competitive aggressiveness were significantly associated with performance. This result indicates that both proactiveness and competitive aggressiveness are important determinants for EO in determining its relations with performance. In terms of the relative importance of these two determinants of EO, competitive aggressiveness was a stronger predictor than proactiveness. With regard to the interaction effect of agglomeration, the results indicated that the relationship between risk taking and agglomeration was stronger among firms with low levels of agglomeration.

These results are in line with previous studies accounts for a negative relationship between risk-taking and performance, (Gebreegziabher and Tadesse, 2014; Jalali *et al.,* 2014; Segal *et al.,* 2005). The finding also demonstrated that the relationships between innovativeness and competitive aggressiveness were stronger among firms with high levels of agglomeration. In brief, agglomeration, risk taking, innovativeness and competitive aggressiveness are important factors in analyzing the EO-performance link. As mentioned earlier, there is no significant moderate effect of network. These observations imply that companies should attempt to agglomerate in order to promote performance improving innovativeness and competitive aggressiveness.

The need for the second part of the research is derived from the significant role played by e-service quality to achieve success or failure in any organization offering services online.

Web quality will increase the competition among the organizations, to attract the customers on the basis of the quality of service provided by the organization. Better e-service quality will enhance the relationship with customers and their satisfaction. So the

measurement of e-service quality is very important but it is a complex process due to the complex nature of services.

Literature predicts that there is a lack of universal definition of e-service quality. The e-service quality measures have great importance in achieving high customer base. This paper proposes a conceptual model for measuring e-service quality in the wine industry. Seven dimensions of web quality (i.e. usability, design, speed, information, contact, navigability and content) had been identified.

The results of this thesis may help to develop a proper scale to measure the e-service quality in wine industry, which may assist to maintain and improve the performance and effectiveness of e-service quality to retain customers. Globalization, privatization and liberalization have motivated for increased use of information technology, owing to its potential benefits like responsiveness, cost saving and better serviceability. Firms have realized that they can attract and gain customers by providing high quality of e - services (Li and Suomi, 2009). E-service quality is becoming very vital in success or failure of any business enterprise. Now firms are shifting their focus to e-service quality in place of traditional service quality in their complete transaction process. In this era of information technology, customers are also quite concerned about the e-service quality provided by the firms. They have started maximizing and minimizing the transactions from the firms based on e-service quality provided by them. With the increasing number of firms offering online services, this is quite difficult for the customers to select the most appropriate firm for the online transactions because the needs of the e-customers are diverse in nature; high quality of e-service has been increasingly recognized as one of the most critical factor contributing to the success of any business based on e-transactions (Zeithaml *et al.*, 2002). This paper proposes a conceptual model for measuring e-service quality (e-SQ) in Italian wine industry.

The results of the second part confirmed that the websites of the Friuli Venezia Giulia consortia can be considered of good e-quality and this is linked to perceived playfulness, customer satisfaction and loyalty intention, but there are many differences between consortia. Specifically the results of Friuli Annia show that only design has a positive impact on perceived playfulness and, in turn, on satisfaction and behavioral intention. In fact H1 is not supported because the results of the model show that there is a negative impact of usability on perceived playfulness.

The analytical results of Aquileia demonstrate that only usability affects customers' perceived playfulness and in turn, on satisfaction. Moreover, the results reveal

that the relationships between satisfaction and behavioral intention are not supported. Regarding the results of Colli Orientali del Friuli it is possible to say that design, speed, information, and contact have a positive impact on perceived playfulness and, in turn, on satisfaction and behavioral intention.

The Collio's results show that only speed, information and satisfaction have a positive impact on perceived playfulness and in turn on satisfaction that has a positive impact on behavioral intention.

Analyzing the results of Friuli Grave is possible to see that design, speed, information and content have all a positive impact on users' perceived playfulness (*i.e.* H3, H4, and H7 are supported) which in turn positively affects satisfaction and behavioral intention (*i.e.* H8 and H9 supported).

The results of Friuli Isonzo show that design, information positively affect perceived playfulness and in turn satisfaction and behavioral intention (hypothesis H8 and H9 supported).

Regarding Friuli Latisana, usability, design and content affect perceived playfulness and, in turn, satisfaction and behavioral intention.

Finally regarding Ramandolo, design, contact positively impact on perceived playfulness and in turn o satisfaction and behavioral intention.

This study confirms that two website quality dimensions (*i.e.* design and information) positively affect perceived playfulness and, in turn, would influence their satisfaction and behavioral intention.

The results also point out that Web quality, categorized into usability, design, speed, information, contact, navigability and content had a significant impact on playfulness, and satisfaction and consequently, that it encouraged website loyalty in the context of online wine retailing.

Therefore the present study provided a balanced and integrative framework for determining Web quality. As previous studies pointed out (Ahn *et al.,* 2007), perceived playfulness has been found to be important also in online wine retailing settings. It enhanced our knowledge of the effect of playfulness, which should help Web practitioners and researchers better understand user behavior in Web-based online retailing.

These findings confirm that 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[37] and B2B[38] 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.

The results confirmed that the websites of the Friuli Venezia Giulia consortia can be considered of good e-quality and this is linked to customer satisfaction, perceived playfulness and loyalty intention but there are a lot of differences between different consortia. Specifically taking into account all the nine consortia together we have seen that usability, information quality and contacts are the three items of e-quality that have the main positive influence on customers satisfaction, instead of the design that has a negative impact; when we consider customer loyalty as a dependent variable the main effects are presented by usability, the information and the processing-speed.

[37] B2C: Business to Consumer.
[38] B2B: Business to Business.

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Sitography

http://www.collio.it/

http://www.colliorientali.com/

http://www.docfriuligrave.com/

http://www.docfriulilatisana.com/

http://www.docfriuliannia.it/

http://www.federdocfvg.it/home_federdoc.php?n=10andl=it

http://eurispes.eu/

www.istat.it

http://www.lison-pramaggiore.it/

http://www.oiv.int/oiv/cms/index?lang=it

http://www.vinidocisonzo.it/

http://www.ud.camcom.it/

http://www.viniaquileia.it/

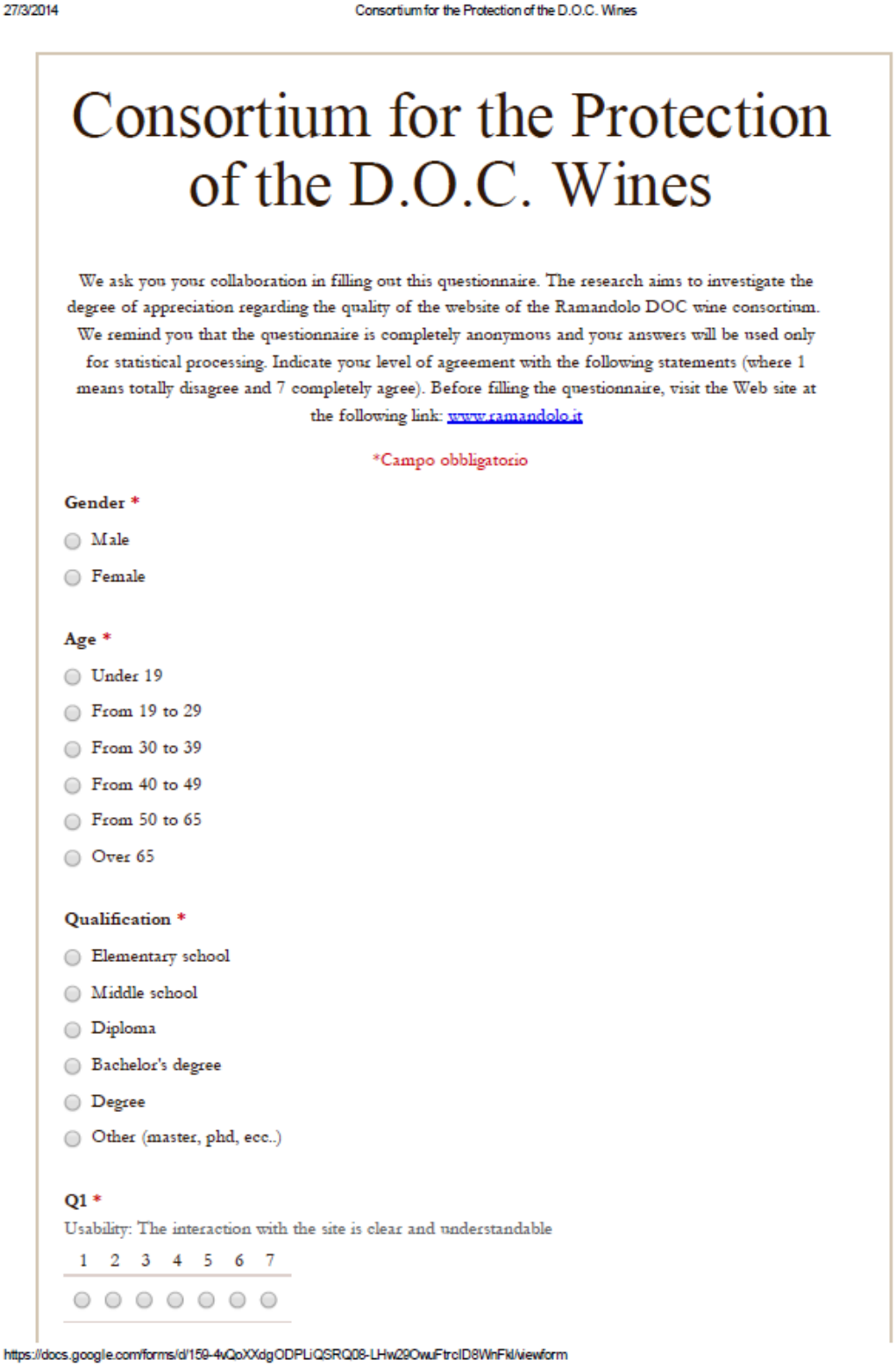
Figures

Tables

Appendix

Appendix 1

Questionnaire web quality (on line with Google drive)



27/3/2014 Consortium for the Protection of the D.O.C. Wines

Consortium for the Protection of the D.O.C. Wines

We ask you your collaboration in filling out this questionnaire. The research aims to investigate the degree of appreciation regarding the quality of the website of the Ramandolo DOC wine consortium. We remind you that the questionnaire is completely anonymous and your answers will be used only for statistical processing. Indicate your level of agreement with the following statements (where 1 means totally disagree and 7 completely agree). Before filling the questionnaire, visit the Web site at the following link: www.ramandolo.it

*Campo obbligatorio

Gender *

- Male
- Female

Age *

- Under 19
- From 19 to 29
- From 30 to 39
- From 40 to 49
- From 50 to 65
- Over 65

Qualification *

- Elementary school
- Middle school
- Diploma
- Bachelor's degree
- Degree
- Other (master, phd, ecc..)

Q1 *

Usability: The interaction with the site is clear and understandable

1 2 3 4 5 6 7

https://docs.google.com/forms/d/159-4vQoXXdgODPLiQSRQ08-LHw29OwuFtrcID8WhFkI/viewform 1/9

Q2 *

Usability: I find the site easy to navigate

1 2 3 4 5 6 7

Q3 *

Usability: The site is easy to use

1 2 3 4 5 6 7

Q4 *

Usability: The customer can browse without having to log in

1 2 3 4 5 6 7

Q5 *

Usability: The site offers features for non-Italian speakers

1 2 3 4 5 6 7

Q6 *

Usability: The sizing function for the characters of the text is clearly visible

1 2 3 4 5 6 7

Q7 *

Design: The color contrast is sufficient

1 2 3 4 5 6 7

Q8 *

Design: There is consistency between the design elements when you browse through the various pages of the site (colors fonts and sizes)

1 2 3 4 5 6 7

Q9 *

Design: The site stands out for its originality as compared to other similar sites

1 2 3 4 5 6 7

○ ○ ○ ○ ○ ○ ○

Q10 *

Design: The text of the site is easy to read

1 2 3 4 5 6 7

○ ○ ○ ○ ○ ○ ○

Q11 *

Design: The site is creative

1 2 3 4 5 6 7

○ ○ ○ ○ ○ ○ ○

Q12 *

Design: The pictures and graphics add to the appeal of the site

1 2 3 4 5 6 7

○ ○ ○ ○ ○ ○ ○

Q13 *

Design: The animation in this site enriches the content

1 2 3 4 5 6 7

○ ○ ○ ○ ○ ○ ○

Q14 *

Design: The site shows beautiful images of the products

1 2 3 4 5 6 7

○ ○ ○ ○ ○ ○ ○

Q15 *

Design: The site has an attractive appearance

1 2 3 4 5 6 7

○ ○ ○ ○ ○ ○ ○

Q16 *

Design: The design is suitable for the type of site

1 2 3 4 5 6 7

○ ○ ○ ○ ○ ○ ○

Q17 *

Design: The site conveys a sense of professionalism / competence

1 2 3 4 5 6 7

○ ○ ○ ○ ○ ○ ○

Q18 *

Design: The images of the site are easy to understand and interpret

1 2 3 4 5 6 7

○ ○ ○ ○ ○ ○ ○

Q19 *

Processing speed: It is easy access to the results of the research

1 2 3 4 5 6 7

○ ○ ○ ○ ○ ○ ○

Q20 *

Processing speed: The site loads pages quickly (1 or 2 seconds)

1 2 3 4 5 6 7

○ ○ ○ ○ ○ ○ ○

Q21 *

Processing speed: The site works correctly (there are no bugs)

1 2 3 4 5 6 7

○ ○ ○ ○ ○ ○ ○

Q22 *

Processing speed: The site does not hang (there is no lag time while navigating)

1 2 3 4 5 6 7

○ ○ ○ ○ ○ ○ ○

Q23 *

Processing speed: The home page of the site opens immediately

1 2 3 4 5 6 7

○ ○ ○ ○ ○ ○ ○

Q24 *

Satisfaction: The site provides the information for which it was made

1 2 3 4 5 6 7

Q25 *

Satisfaction: The site frequently updates the contents and information (news, etc..)

1 2 3 4 5 6 7

Q26 *

Perceived Playfulness:When interacting with the web portal, I am not aware of the time as it elapses.

1 2 3 4 5 6 7

Q27 *

Perceived Playfulness: When interacting with the web portal, I am not aware of distracting noise.

1 2 3 4 5 6 7

Q28 *

Perceived Playfulness: When interacting with the web portal, I often forget other commitments.

1 2 3 4 5 6 7

Q29 *

Quality of information: The information on this site is very well organized

1 2 3 4 5 6 7

Q30 *

Quality of information: The information you are looking for can be found easily

1 2 3 4 5 6 7

Q31 *

Quality of information: The site provides credible information

1 2 3 4 5 6 7

Q32 *

Quality of information: The site provides timely information

1 2 3 4 5 6 7

Q33 *

Quality of information: The website provides useful information

1 2 3 4 5 6 7

Q34 *

Quality of information: The website provides comprehensive information

1 2 3 4 5 6 7

Q35 *

Quality of information: The site provides information that is understandable for users of all levels

1 2 3 4 5 6 7

Q36 *

Quality of information: The website provides information at the right level of detail

1 2 3 4 5 6 7

Q37 *

Quality of information: The site presents information in an appropriate format

1 2 3 4 5 6 7

Q38 *

Contact: The site provides a phone number to reach the company's owner

1 2 3 4 5 6 7

Q39 *

Contact: The request to download the material is easy

1 2 3 4 5 6 7

Q40 *

Contact: The contact information is easy to locate and comprehensive

1 2 3 4 5 6 7

Q41 *

Contact: The site provides adequate support for users who do not speak Italian

1 2 3 4 5 6 7

Q42 *

Contact: The site offers the opportunity to speak to an operator if a problem arises

1 2 3 4 5 6 7

Q43 *

Loyalty intention: The probability of speaking positively of this site is high

1 2 3 4 5 6 7

Q44 *

Loyalty intention: The probability of recommending this site to someone is high

1 2 3 4 5 6 7

Q45 *

Loyalty intention: The probability of visiting this site in the future is high

1 2 3 4 5 6 7

Q46 *

Navigability: There is a search box on every page

1 2 3 4 5 6 7

Q47 *

Navigability: The site navigation is clear and non-repetitive

1 2 3 4 5 6 7

Q48 *

Navigability: The links are useful

1 2 3 4 5 6 7

Q49 *

Navigability: The links are clear, understandable and properly labeled

1 2 3 4 5 6 7

Q50 *

Navigability: The link back to the Home Page is understandable and is present on every page of the site

1 2 3 4 5 6 7

Q51 *

Navigability: The menu bars and other navigation elements are consistent from page to page

1 2 3 4 5 6 7

Q52 *

Navigability: The reference links (windows) Pop up is understandable

1 2 3 4 5 6 7

Q53 *

Navigability: The link back to the top is easily understood

1 2 3 4 5 6 7

Q54 *

Content: The purpose of the site is clearly spelled out

1 2 3 4 5 6 7

Q55 *

Content: The subjects covered are clear

1 2 3 4 5 6 7

Q56 *

Content: The links section is exhaustive

1 2 3 4 5 6 7

Q57 *

Content: The information and sources of the links are appropriate and accurate

1 2 3 4 5 6 7

Q58 *

Content: The size of the web page is appropriate

1 2 3 4 5 6 7

Invia

Non inviare mai le password tramite Moduli Google.

Appendix 2

Questionnaire for the evaluating the websites the quality with reference to the literature from which the questions were taken for the construction of the questionnaire

N.	CATEGORY	QUESTIONS	Barnes and Vidgen, (2002)	Akinci *et al.* (2010)	Barnes and Vidgen, (2012)	Parasuraman *et al.*, (2005)	Yoo *et al.* (2001)	Sigman and Boston (2013)	Abdinnour-Helm *et al.* (2005)	Natarajan *et al.* (2012)	Number of Citations
1	USABILITY	The interaction with the site is clear and understandable	X[39]		X				X		3
2		I find the site easy to navigate	X		X					X	3
3		The site is easy to use	X		X		X	X	X	X	6
4		The customer can browse without having to login						X			1
5		The site offer features for non-English speakers						X			1
6		The sizing function of the characters of the text is clearly visible						X			1
7	DESIGN	The color contrast is sufficient					X	X		X	3
8		There is consistency between the design elements when you browse through the various pages of the site (colors fonts and sizes)						X			1
9		The site stands out for its originality as compared to other similar sites						X			1
10		The site stands out for its originality as compared to						X			1

[39] The symbol X indicates the questions that have been taken in by each author.

		other similar sites									
11		The site is creative					X	X		X	3
12		The pictures and graphics add appeal to the site						X			1
13		The animation in this site enriches the content						X			1
14		The site shows beautiful images of the products					X				1
15		The site has an attractive appearance	X		X					X	3
16		The design is suitable for the type of site	X		X						2
17		The site conveys a sense of professionalism / competence	X		X						2
18		The images of the site are easy to understand and interpret						X			1
19	**SPEED**	Is easy access to the results of research information					X				1
20		The site loads pages quickly (1 or 2 seconds)		X		X	X			X	4
21		The site works correctly (there are no bugs)		X		X	X				2
22		The site does not hang (during the consultation never occur interruptions)		X		X		X			3
23		The home page of the site will open soon				X					1
24	**SATISFACTION**	The site provides the information for which it was made							X		1
25		The site frequently updates the contents and information (news, etc..)							X		1
26	**PLAYFULNESS**	The navigation of the site is a satisfying experience	X		X					X	2
27		The site navigation is a positive experience	X		X					X	2

28		The overall level of satisfaction resulting from the navigation of the site is great								X	1
29	**INFORMATION**	The information in this site are very well organized		X		X			X		3
30		The information you are looking for can be found easily					X			X	2
31		The site provides credible information	X								1
32		The site provides timely information	X		X				X		3
33		The website provides useful information	X								1
34		The website provides comprehensive information			X				X		2
35		The site provides information that is understandable for users of all levels	X		X			X			3
36		The website provides information at the right level of detail	X								1
37		The site presents information in an appropriate format	X								1
38	**CONTACT**	The site provides a phone number to reach the company (owner of site)				X					1
39		The request or download the material is easy						X			1
40		The contact information is easy to locate and comprehensive						X			1
41		The site provides adequate support for users who do not speak Italian						X			1
42		The site offers the opportunity to speak to an				X					1

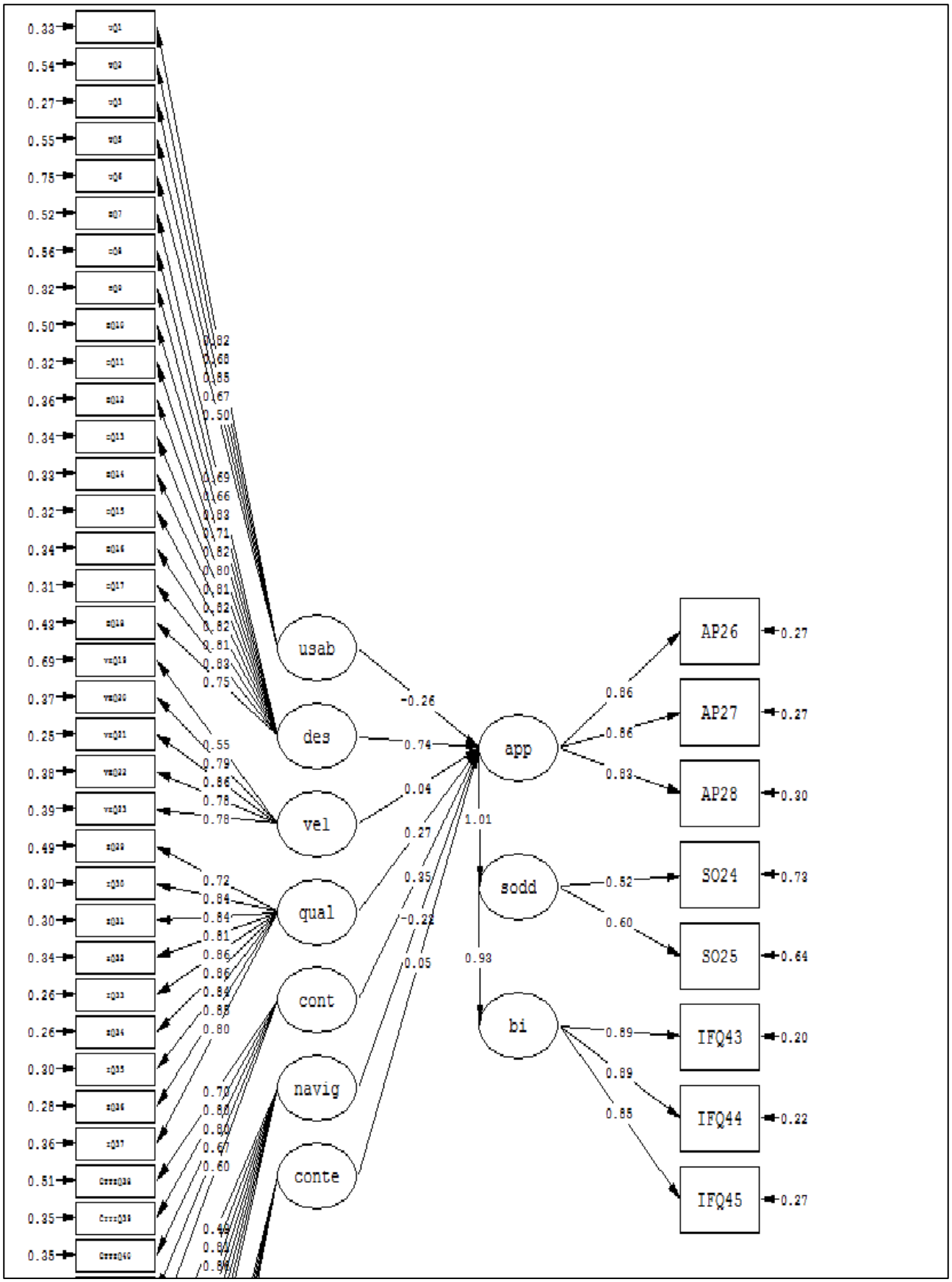
		operator if a problem arises									
43	**BEHAVIOURAL INTENT**	The probability to speak positively of this site is high									0
44		The probability of recommending this site to someone is high				X					1
45		The probability to see this site in the future is high									0
46	**NAVIGABILITY**	There is a search box on every page						X			1
47		The site navigation is clear and non-repetitive						X			1
48		The links are useful						X			1
49		The links are clear, understandable and properly labeled						X		X	2
50		Link back to the Home Page is understandable and is present on every page of the site						X			1
51		The menu bars and other navigation elements are consistent from page to page						X			1
52		The reference links (windows) Pop up is understandable						X			1
53		Link back to top is easily understandable						X			1
54	**CONTENT**	The purpose of the site are clearly spelled out						X			1
55		The subjects covered are clear						X			1
56		The useful links section are exhaustive						X			1
57		The information and sources of external links						X		X	2

		are appropriate and accurate									
58		The size of the web page is appropriate								X	1

Appendix 3

Output Lisrel program consortium Friuli Annia

Degrees of Freedom = 1509
Minimum Fit Function Chi-Square = 3729.290 (P = 0.0)
Normal Theory Weighted Least Squares Chi-Square = 5286.975 (P = 0.0)
Estimated Non-centrality Parameter (NCP) = 3777.975
90 Percent Confidence Interval for NCP = (3560.134 ; 4003.251)
Minimum Fit Function Value = 12.390
Population Discrepancy Function Value (F0) = 12.551
90 Percent Confidence Interval for F0 = (11.828 ; 13.300)
Root Mean Square Error of Approximation (RMSEA) = 0.0912
90 Percent Confidence Interval for RMSEA = (0.0885 ; 0.0939)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.000
Expected Cross-Validation Index (ECVI) = 18.522
90 Percent Confidence Interval for ECVI = (17.798 ; 19.270)
ECVI for Saturated Model = 10.983
ECVI for Independence Model = 364.713
Chi-Square for Independence Model with 1596 Degrees of Freedom = 109664.736
Independence AIC = 109778.736
Model AIC = 5574.975
Saturated AIC = 3306.000
Independence CAIC = 110047.230
Model CAIC = 6253.277
Saturated CAIC = 11092.336
Normed Fit Index (NFI) = 0.966
Non-Normed Fit Index (NNFI) = 0.978
Parsimony Normed Fit Index (PNFI) = 0.913
Comparative Fit Index (CFI) = 0.979
Incremental Fit Index (IFI) = 0.979
Relative Fit Index (RFI) = 0.964
Critical N (CN) = 133.347
Root Mean Square Residual (RMR) = 0.307
Standardized RMR = 0.0895
Goodness of Fit Index (GFI) = 0.619
Adjusted Goodness of Fit Index (AGFI) = 0.582
Parsimony Goodness of Fit Index (PGFI) = 0.565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0.89
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-0.26
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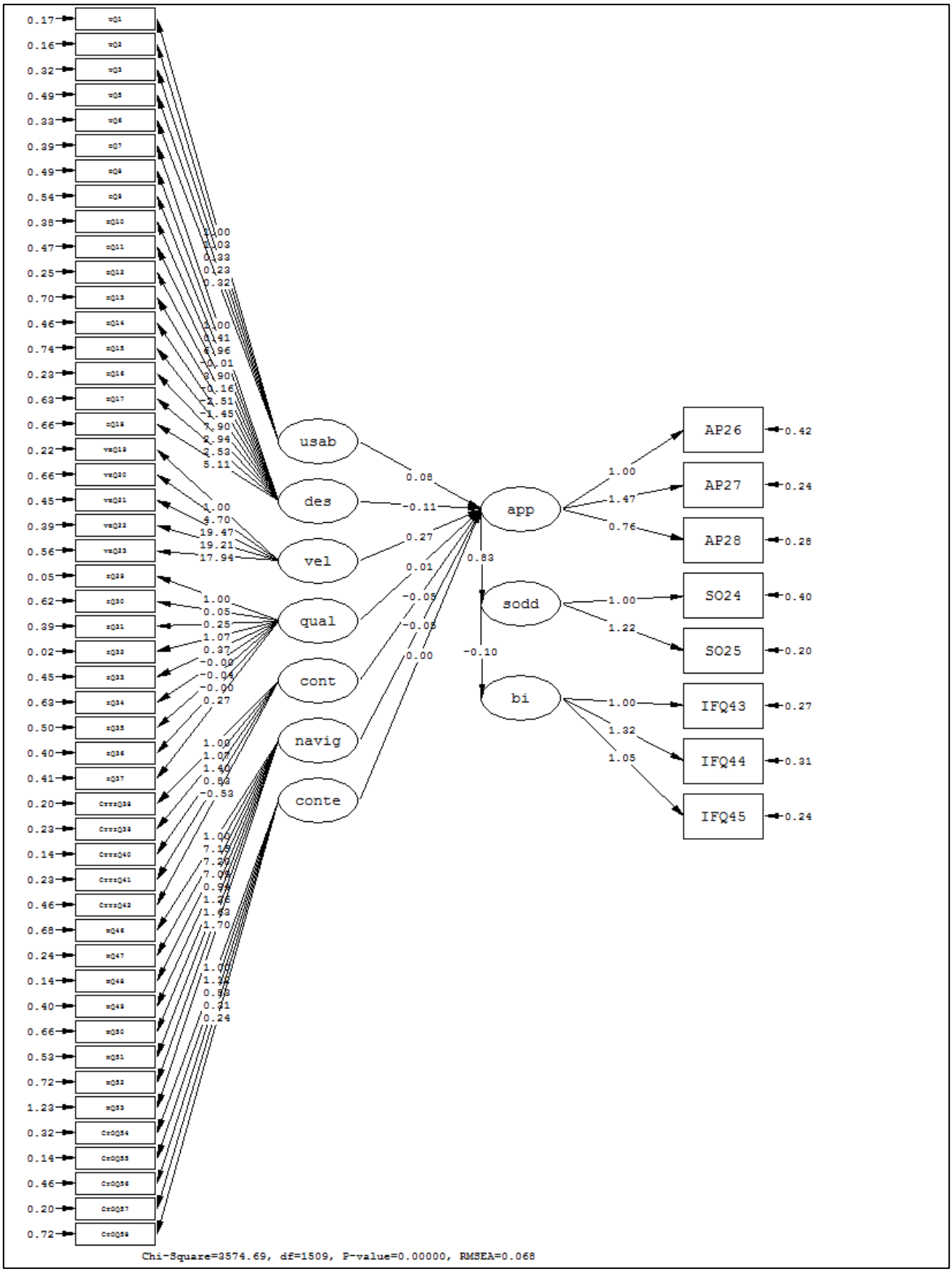
0.27
0.35
-0.22
0.05
1.01
0.98

Output Lisrel program consortium Friuli Aquileia

Degrees of Freedom = 1509
Minimum Fit Function Chi-Square = 3858.19 (P = 0.0)
Normal Theory Weighted Least Squares Chi-Square = 3574.69 (P = 0.0)
Chi-Square Difference with 0 Degree of Freedom = 296.35 (P = 1.00)
Estimated Non-centrality Parameter (NCP) = 2065.69
90 Percent Confidence Interval for NCP = (1894.74 ; 2244.25)
Minimum Fit Function Value = 12.90
Population Discrepancy Function Value (F0) = 6.91
90 Percent Confidence Interval for F0 = (6.34 ; 7.51)
Root Mean Square Error of Approximation (RMSEA) = 0.068
90 Percent Confidence Interval for RMSEA = (0.065 ; 0.071)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.00
Expected Cross-Validation Index (ECVI) = 12.92
90 Percent Confidence Interval for ECVI = (12.35 ; 13.52)
ECVI for Saturated Model = 11.06
ECVI for Independence Model = 23.49
Chi-Square for Independence Model with 1596 Degrees of Freedom = 6908.78
Independence AIC = 7022.78
Model AIC = 3862.69
Saturated AIC = 3306.00
Independence CAIC = 7290.89
Model CAIC = 4540.03
Saturated CAIC = 11081.35
Normed Fit Index (NFI) = 0.44
Non-Normed Fit Index (NNFI) = 0.53
Parsimony Normed Fit Index (PNFI) = 0.42
Comparative Fit Index (CFI) = 0.56
Incremental Fit Index (IFI) = 0.56
Relative Fit Index (RFI) = 0.41
Critical N (CN) = 128.08
Root Mean Square Residual (RMR) = 0.045
Standardized RMR = 0.083
Goodness of Fit Index (GFI) = 0.70
Adjusted Goodness of Fit Index (AGFI) = 0.68
Parsimony Goodness of Fit Index (PGFI) = 0.64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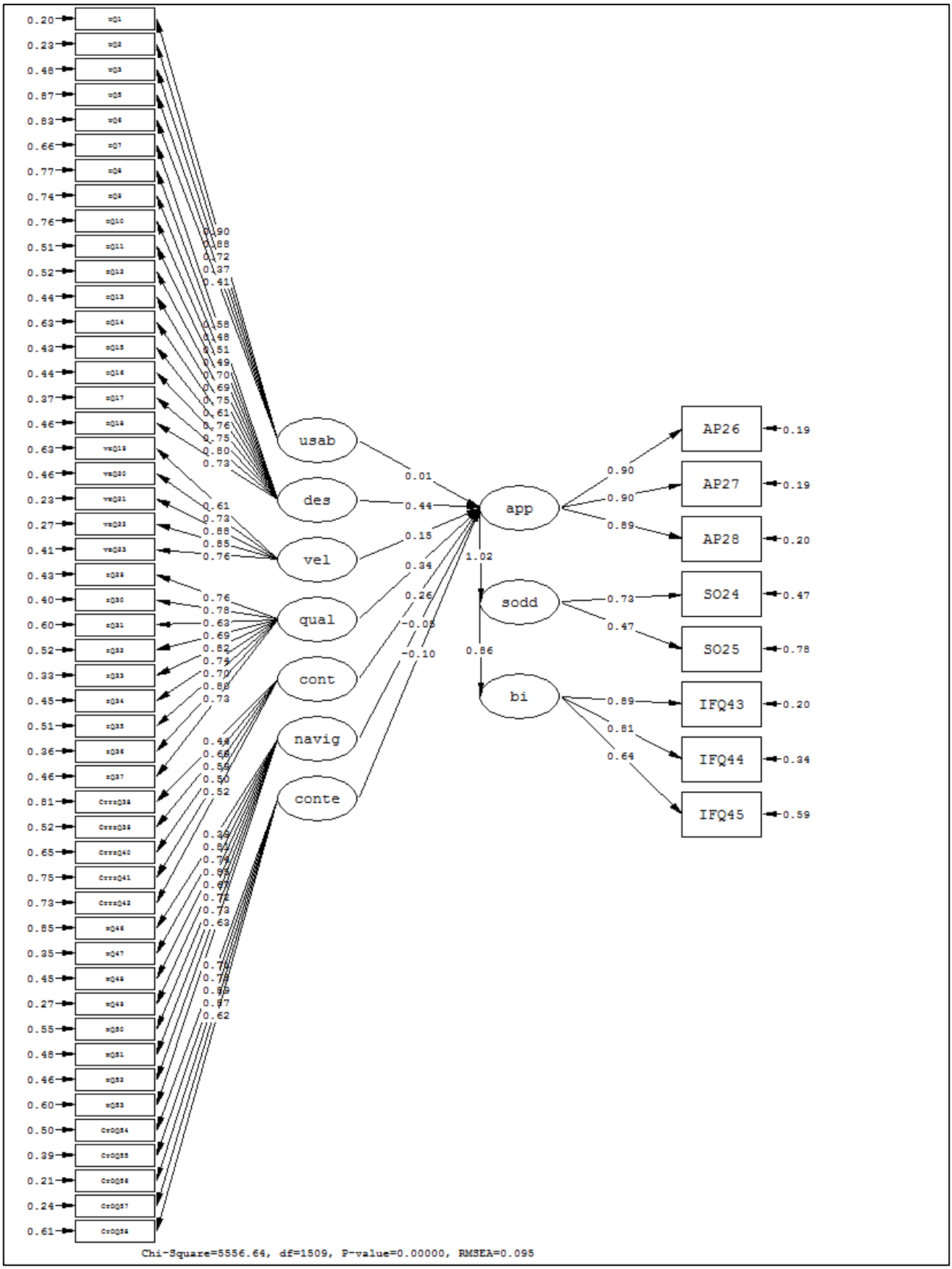
Chi-Square=3574.69, df=1509, P-value=0.00000, RMSEA=0.068

Output Lisrel program consortium Colli Orientali del Friuli

Degrees of Freedom = 1509
Minimum Fit Function Chi-Square = 5577.70 (P = 0.0)
Normal Theory Weighted Least Squares Chi-Square = 5556.64 (P = 0.0)
Chi-Square Difference with 0 Degree of Freedom = 39.13 (P = 1.00)
Estimated Non-centrality Parameter (NCP) = 4047.64
90 Percent Confidence Interval for NCP = (3823.29 ; 4279.41)
Minimum Fit Function Value = 18.65
Population Discrepancy Function Value (F0) = 13.54
90 Percent Confidence Interval for F0 = (12.79 ; 14.31)
Root Mean Square Error of Approximation (RMSEA) = 0.095
90 Percent Confidence Interval for RMSEA = (0.092 ; 0.097)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.00
Expected Cross-Validation Index (ECVI) = 19.55
90 Percent Confidence Interval for ECVI = (18.80 ; 20.32)
ECVI for Saturated Model = 11.06
ECVI for Independence Model = 255.84
Chi-Square for Independence Model with 1596 Degrees of Freedom = 76381.61
Independence AIC = 76495.61
Model AIC = 5844.64
Saturated AIC = 3306.00
Independence CAIC = 76763.73
Model CAIC = 6521.99
Saturated CAIC = 11081.35
Normed Fit Index (NFI) = 0.93
Non-Normed Fit Index (NNFI) = 0.94
Parsimony Normed Fit Index (PNFI) = 0.88
Comparative Fit Index (CFI) = 0.95
Incremental Fit Index (IFI) = 0.95
Relative Fit Index (RFI) = 0.92
Critical N (CN) = 88.90
Root Mean Square Residual (RMR) = 0.13
Standardized RMR = 0.076
Goodness of Fit Index (GFI) = 0.61
Adjusted Goodness of Fit Index (AGFI) = 0.57
Parsimony Goodness of Fit Index (PGFI) = 0.55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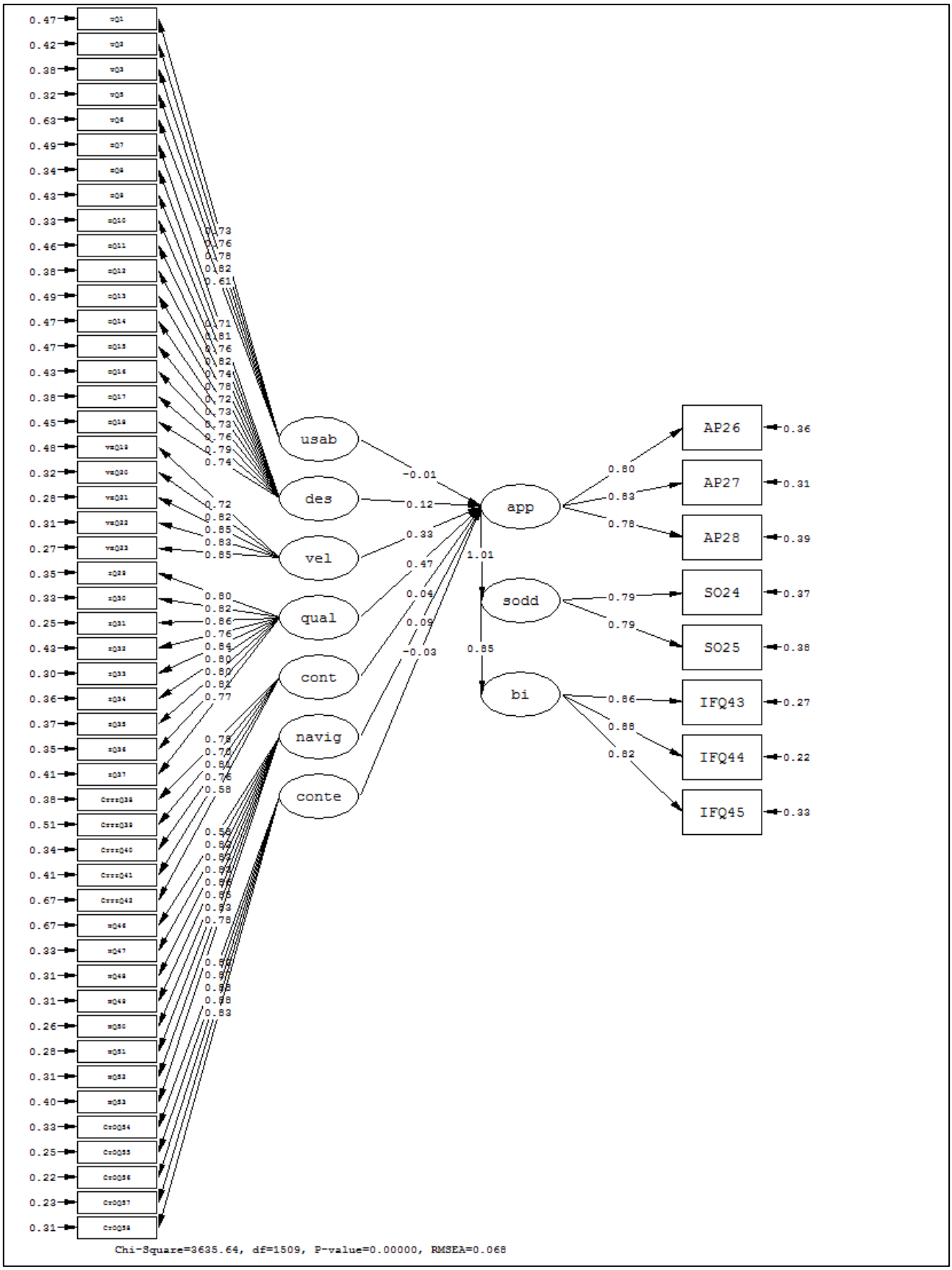
Chi-Square=5556.64, df=1509, P-value=0.00000, RMSEA=0.095

Output Lisrel program consortium Collio

Degrees of Freedom = 1509
Minimum Fit Function Chi-Square = 3340.112 (P = 0.0)
Normal Theory Weighted Least Squares Chi-Square = 3635.644 (P = 0.0)
Estimated Non-centrality Parameter (NCP) = 2126.644
90 Percent Confidence Interval for NCP = (1953.815 ; 2307.084)
Minimum Fit Function Value = 11.023
Population Discrepancy Function Value (F0) = 7.019
90 Percent Confidence Interval for F0 = (6.448 ; 7.614)
Root Mean Square Error of Approximation (RMSEA) = 0.0682
90 Percent Confidence Interval for RMSEA = (0.0654 ; 0.0710)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.000
Expected Cross-Validation Index (ECVI) = 12.949
90 Percent Confidence Interval for ECVI = (12.379 ; 13.545)
ECVI for Saturated Model = 10.911
ECVI for Independence Model = 445.580
Chi-Square for Independence Model with 1596 Degrees of Freedom = 134896.800
Independence AIC = 135010.800
Model AIC = 3923.644
Saturated AIC = 3306.000
Independence CAIC = 135279.671
Model CAIC = 4602.896
Saturated CAIC = 11103.247
Normed Fit Index (NFI) = 0.975
Non-Normed Fit Index (NNFI) = 0.985
Parsimony Normed Fit Index (PNFI) = 0.922
Comparative Fit Index (CFI) = 0.986
Incremental Fit Index (IFI) = 0.986
Relative Fit Index (RFI) = 0.974
Critical N (CN) = 149.749
Root Mean Square Residual (RMR) = 0.104
Standardized RMR = 0.0513
Goodness of Fit Index (GFI) = 0.704
Adjusted Goodness of Fit Index (AGFI) = 0.675
Parsimony Goodness of Fit Index (PGFI) = 0.642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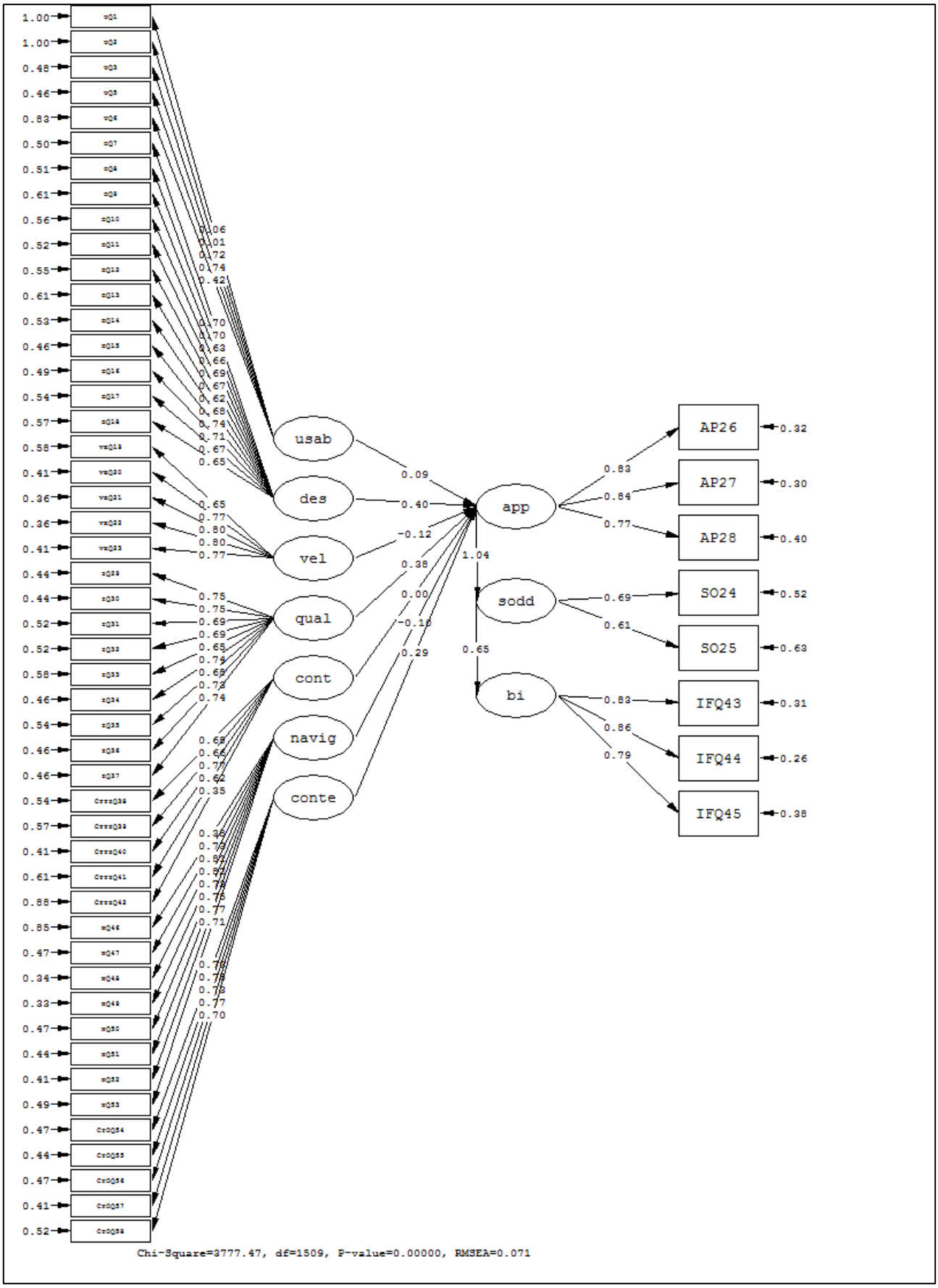
Chi-Square=3635.64, df=1509, P-value=0.00000, RMSEA=0.068

Output Lisrel program consortium Friuli Grave

Degrees of Freedom = 1509
Minimum Fit Function Chi-Square = 3150.02 (P = 0.0)
Normal Theory Weighted Least Squares Chi-Square = 3777.47 (P = 0.0)
Chi-Square Difference with 0 Degree of Freedom = 620.73 (P = 1.00)
Estimated Non-centrality Parameter (NCP) = 2268.47
90 Percent Confidence Interval for NCP = (2091.34 ; 2453.20)
Minimum Fit Function Value = 10.43
Population Discrepancy Function Value (F0) = 7.51
90 Percent Confidence Interval for F0 = (6.92 ; 8.12)
Root Mean Square Error of Approximation (RMSEA) = 0.071
90 Percent Confidence Interval for RMSEA = (0.068 ; 0.073)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.00
Expected Cross-Validation Index (ECVI) = 13.46
90 Percent Confidence Interval for ECVI = (12.88 ; 14.07)
ECVI for Saturated Model = 10.95
ECVI for Independence Model = 237.06
Chi-Square for Independence Model with 1596 Degrees of Freedom = 71479.12
Independence AIC = 71593.12
Model AIC = 4065.47
Saturated AIC = 3306.00
Independence CAIC = 71861.80
Model CAIC = 4744.25
Saturated CAIC = 11097.80
Normed Fit Index (NFI) = 0.96
Non-Normed Fit Index (NNFI) = 0.98
Parsimony Normed Fit Index (PNFI) = 0.90
Comparative Fit Index (CFI) = 0.98
Incremental Fit Index (IFI) = 0.98
Relative Fit Index (RFI) = 0.95
Critical N (CN) = 158.21
Root Mean Square Residual (RMR) = 0.14
Standardized RMR = 0.067
Goodness of Fit Index (GFI) = 0.69
Adjusted Goodness of Fit Index (AGFI) = 0.67
Parsimony Goodness of Fit Index (PGFI) = 0.63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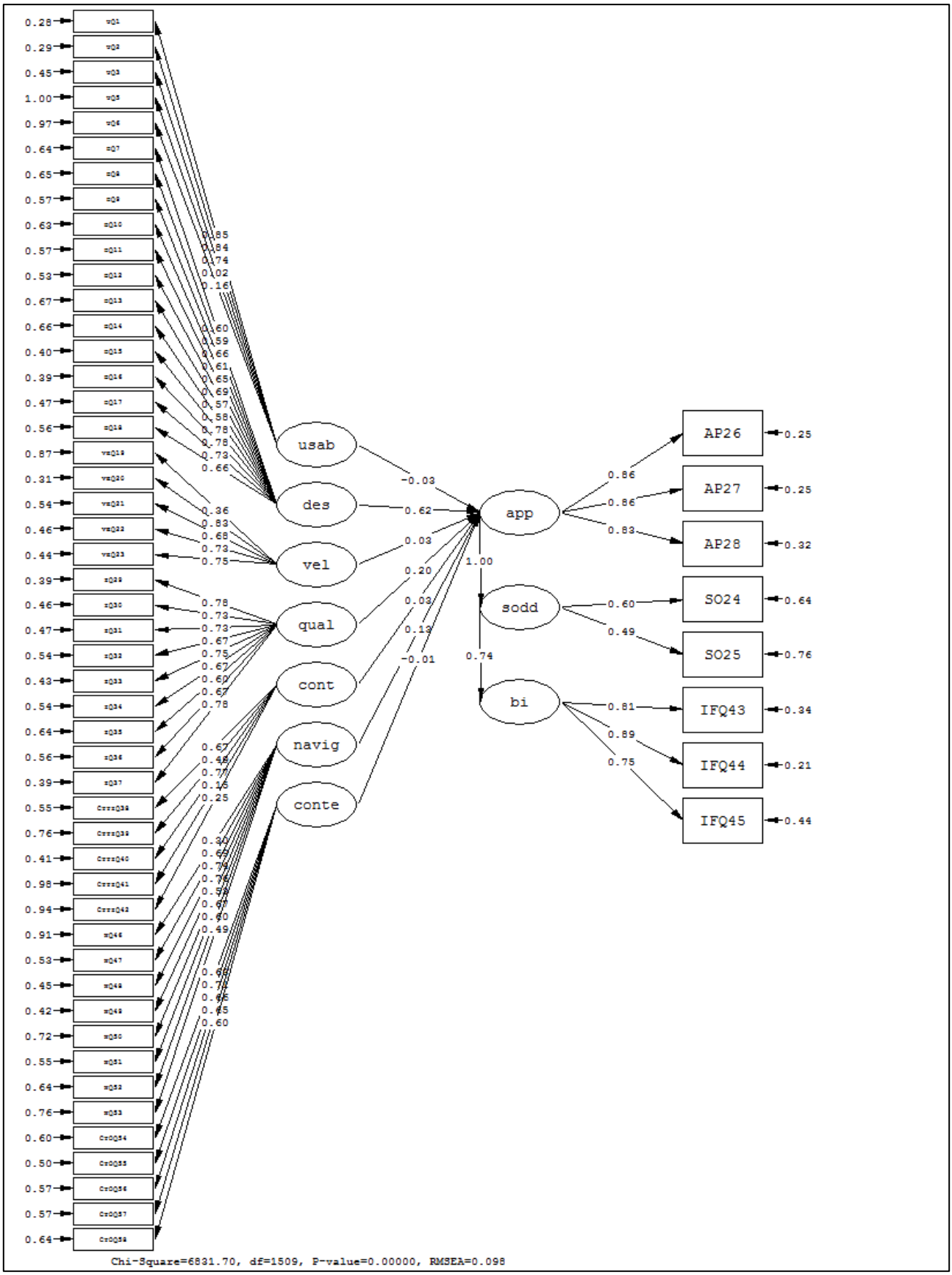
Chi-Square=3777.47, df=1509, P-value=0.00000, RMSEA=0.071

Output Lisrel program consortium Friuli Isonzo

Degrees of Freedom = 1509
Minimum Fit Function Chi-Square = 4844.250 (P = 0.0)
Normal Theory Weighted Least Squares Chi-Square = 6831.701 (P = 0.0)
Estimated Non-centrality Parameter (NCP) = 5322.701
90 Percent Confidence Interval for NCP = (5069.788 ; 5582.926)
Minimum Fit Function Value = 13.272
Population Discrepancy Function Value (F0) = 14.583
90 Percent Confidence Interval for F0 = (13.890 ; 15.296)
Root Mean Square Error of Approximation (RMSEA) = 0.0983
90 Percent Confidence Interval for RMSEA = (0.0959 ; 0.101)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.000
Expected Cross-Validation Index (ECVI) = 19.506
90 Percent Confidence Interval for ECVI = (18.813 ; 20.219)
ECVI for Saturated Model = 9.058
ECVI for Independence Model = 188.688
Chi-Square for Independence Model with 1596 Degrees of Freedom = 68757.072
Independence AIC = 68871.072
Model AIC = 7119.701
Saturated AIC = 3306.000
Independence CAIC = 69150.522
Model CAIC = 7825.680
Saturated CAIC = 11410.053
Normed Fit Index (NFI) = 0.930
Non-Normed Fit Index (NNFI) = 0.947
Parsimony Normed Fit Index (PNFI) = 0.879
Comparative Fit Index (CFI) = 0.950
Incremental Fit Index (IFI) = 0.950
Relative Fit Index (RFI) = 0.925
Critical N (CN) = 124.549
Root Mean Square Residual (RMR) = 0.237
Standardized RMR = 0.0918
Goodness of Fit Index (GFI) = 0.604
Adjusted Goodness of Fit Index (AGFI) = 0.566
Parsimony Goodness of Fit Index (PGFI) = 0.551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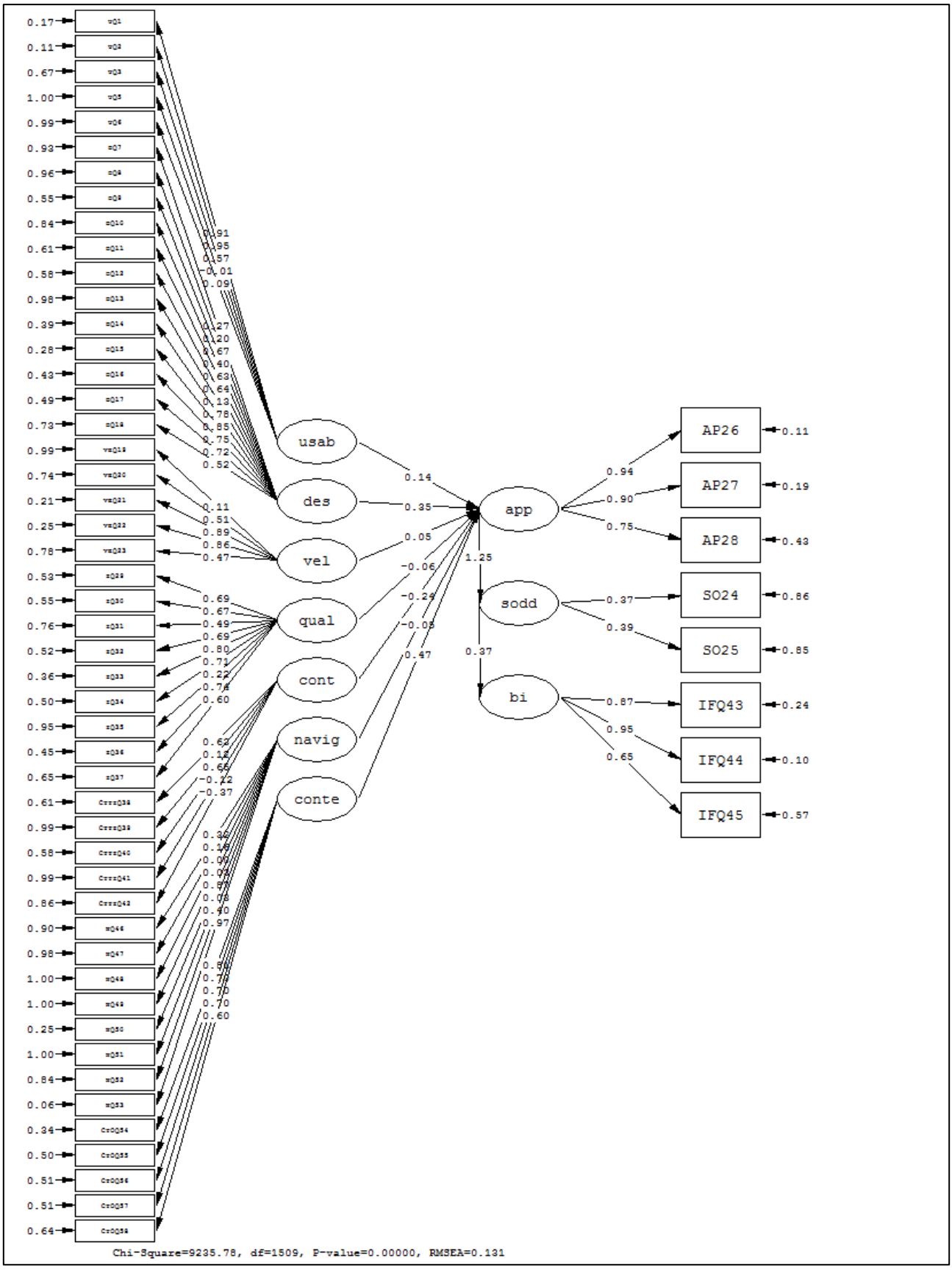
Chi-Square=6831.70, df=1509, P-value=0.00000, RMSEA=0.098

Output Lisrel program consortium Friuli Latisana

Degrees of Freedom = 1509
Minimum Fit Function Chi-Square = 6800.978 (P = 0.0)
Normal Theory Weighted Least Squares Chi-Square = 9235.782 (P = 0.0)
Estimated Non-centrality Parameter (NCP) = 7726.782
90 Percent Confidence Interval for NCP = (7427.248 ; 8033.486)
Minimum Fit Function Value = 22.746
Population Discrepancy Function Value (F0) = 25.842
90 Percent Confidence Interval for F0 = (24.840 ; 26.868)
Root Mean Square Error of Approximation (RMSEA) = 0.131
90 Percent Confidence Interval for RMSEA = (0.128 ; 0.133)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.000
Expected Cross-Validation Index (ECVI) = 31.852
90 Percent Confidence Interval for ECVI = (30.850 ; 32.878)
ECVI for Saturated Model = 11.057
ECVI for Independence Model = 101.749
Chi-Square for Independence Model with 1596 Degrees of Freedom = 30308.934
Independence AIC = 30422.934
Model AIC = 9523.782
Saturated AIC = 3306.000
Independence CAIC = 30691.049
Model CAIC = 10201.126
Saturated CAIC = 11081.352
Normed Fit Index (NFI) = 0.776
Non-Normed Fit Index (NNFI) = 0.805
Parsimony Normed Fit Index (PNFI) = 0.733
Comparative Fit Index (CFI) = 0.816
Incremental Fit Index (IFI) = 0.816
Relative Fit Index (RFI) = 0.763
Critical N (CN) = 73.090
Root Mean Square Residual (RMR) = 0.286
Standardized RMR = 0.145
Goodness of Fit Index (GFI) = 0.480
Adjusted Goodness of Fit Index (AGFI) = 0.430
Parsimony Goodness of Fit Index (PGFI) = 0.438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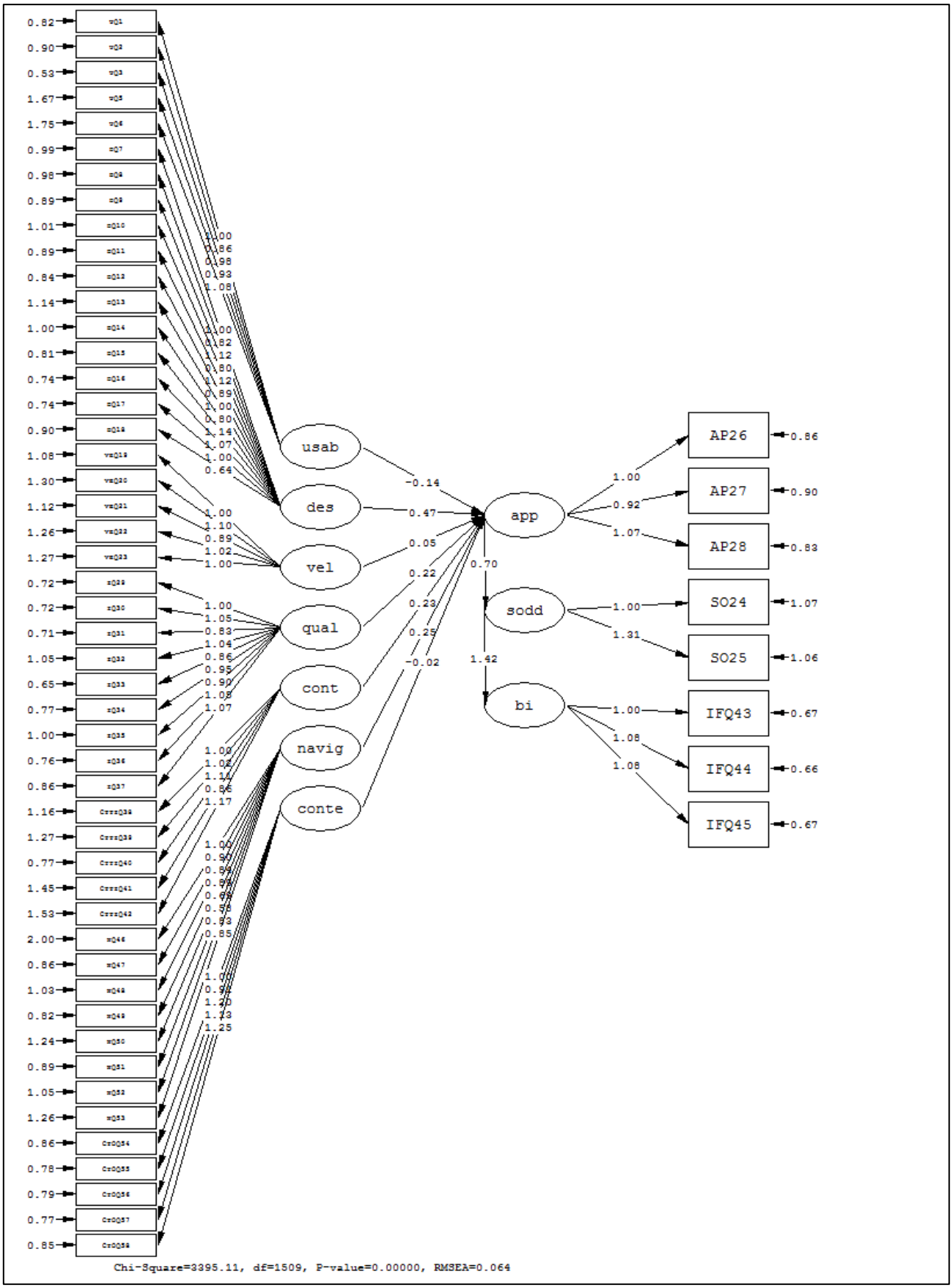
IFQ45
Chi-Square=9235.78, df=1509, P-value=0.00000, RMSEA=0.131

Output Lisrel program consortium Ramandolo

Degrees of Freedom = 1509
Minimum Fit Function Chi-Square = 2936.457 (P = 0.0)
Normal Theory Weighted Least Squares Chi-Square = 3395.111 (P = 0.0)
Estimated Non-centrality Parameter (NCP) = 1886.111
90 Percent Confidence Interval for NCP = (1720.842 ; 2059.034)
Minimum Fit Function Value = 9.691
Population Discrepancy Function Value (F0) = 6.225
90 Percent Confidence Interval for F0 = (5.679 ; 6.795)
Root Mean Square Error of Approximation (RMSEA) = 0.0642
90 Percent Confidence Interval for RMSEA = (0.0613 ; 0.0671)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.000
Expected Cross-Validation Index (ECVI) = 12.155
90 Percent Confidence Interval for ECVI = (11.610 ; 12.726)
ECVI for Saturated Model = 10.911
ECVI for Independence Model = 343.116
Chi-Square for Independence Model with 1596 Degrees of Freedom = 103850.132
Independence AIC = 103964.132
Model AIC = 3683.111
Saturated AIC = 3306.000
Independence CAIC = 104233.002
Model CAIC = 4362.363
Saturated CAIC = 11103.247
Normed Fit Index (NFI) = 0.972
Non-Normed Fit Index (NNFI) = 0.985
Parsimony Normed Fit Index (PNFI) = 0.919
Comparative Fit Index (CFI) = 0.986
Incremental Fit Index (IFI) = 0.986
Relative Fit Index (RFI) = 0.970
Critical N (CN) = 170.197
Root Mean Square Residual (RMR) = 0.108
Standardized RMR = 0.0509
Goodness of Fit Index (GFI) = 0.718
Adjusted Goodness of Fit Index (AGFI) = 0.691
Parsimony Goodness of Fit Index (PGFI) = 0.655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Chi-Square=3395.11, df=1509, P-value=0.00000, RMSEA=0.064

Appendix 4

The Miller/Covin and Slevin (1989) EO Scale

Risk-taking items		
In general, the top managers of my firm have...		
A strong proclivity for low-risk projects (with normal and certain rates of return)	1 2 3 4 5 6 7	A strong proclivity for high-risk projects (with chances of very high returns)
In general, the top managers of my firm believe that...		
Owing to the nature of the environment, it is best to explore it gradually via cautious, incremental behavior	1 2 3 4 5 6 7	Owing to the nature of the environment, bold, wide-ranging acts are necessary to achieve the firm's objectives
When confronted with decision-making situations involving uncertainty, my firm . . .		
Typically adopts a cautious, "wait-and-see" posture in order to minimize the probability of making costly decisions	1 2 3 4 5 6 7	Typically adopts a bold, aggressive posture in order to maximize the probability of exploiting potential opportunities
Proactiveness items		
In dealing with its competitors, my firm...		
Typically responds to actions which competitors initiate	1 2 3 4 5 6 7	Typically initiates actions to which competitors then respond
Is very seldom the first business to introduce new products/services, administrative techniques, operating technologies, etc.	1 2 3 4 5 6 7	Is very often the first business to introduce new products/services, administrative techniques, operating technologies, etc.
Typically seeks to avoid competitive clashes, preferring a "live-and-let-live" posture	1 2 3 4 5 6 7	Typically adopts a very competitive, "undo-the-competitors" posture
Innovativeness items		
In general, the top managers of my firm favor...		
A strong emphasis on the marketing of tried-and-true products or services	1 2 3 4 5 6 7	A strong emphasis on R&D, technological leadership, and innovations
How many new lines of products or services has your firm marketed in the past five years (or since its establishment)?		
No new lines of products or services	1 2 3 4 5 6 7	Very many new lines of products or services
Changes in product or service lines have been mostly of a minor nature	1 2 3 4 5 6 7	Changes in product or service lines have usually been quite dramatic

Source: The Measurement of Entrepreneurial Orientation (Covin and Wales 2012)

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