Sharing sources and protection mechanisms of knowledge creation processes in the new digital era. An empirical analysis of textile fashion industry of an Italian region.

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Abstract

Purpose - The results of this study (i) underline the difficulties that some areas had while dealing with innovation and all the problems –usually linked or independent - coming from sharing and protection mechanisms; (ii) analyze the knowledge production and spread courses during the digital technologies era. Creativity constantly renews itself according to single and collective factors, network factor and according to accessibility, transferability and appropriability factors; (iii) To test the convergence between owners and no-owners models in a field characterized by a medium technology and a high creative design contest.

Design/methodology/approach - The literature has emphasized the importance of preserving knowledge as a source of competitive advantage. This study, through a reasoned empirical investigation, wants to emphasize the strategic purposes and sources of internal and shared innovation processes and the role of protection mechanisms in the Italian fashion business industry.

Findings - The research findings provide (i) what strategic innovation purposes positively impact on knowledge creation processes; (ii) argue the relevance of internal innovation factors, such as R&S strategy, and collective innovation sources, in a creative network where a crucial role is played by suppliers and firms of other industries more than similar firms of the same industry; (ii) analyze the role of knowledge protection mechanisms with particular attention to the decreasing significance of patents (in textile fashion industry).

Research implications – policies and strategies influencing the knowledge creation process are suggested and mainly the future increasing weight of new digital technologies is made evident.

Originality/value – The paper provides empirical data on Italian regional textile industry and opinions towards innovation strategies development.

Keywords

Innovation sources, knowledge creation, textile fashion industry, digital technologies.

Theoretical framework

In recent years, many authors of literature and companies have focused on accessing knowledge through the web network in order to obtain economic advantages. This is a widely accepted methodology whereby new emerging technologies, such as basic digital network infrastructure, reduce the historical geographical and temporal limitations (Rifkin 2001). The different application experiences are now worldwide spread in order to manage the knowledge. They are able to carry on information selections, extractions and semi-automatic selections. New technologies are the main channels of transferring and sharing knowledge that support instrumental decision making frameworks (Gorry & Scott Morton 1989; Arnott & Pervan 2005). Firstly, they can be constantly contaminated by the not-codified contextual knowledge (tacit), generating de-contextualization and re-contextualization long and complex processes which are usually not linear. Secondly they can reduce the price of knowledge access, and at the same time the price of direct knowledge and consequently of innovation. More specifically, new digital technologies can enlarge the sources field (both inside and outside the company) during the knowledge selection process.

This process can help the spread of new knowledge (external or extramural) as for example inside the discussion groups (forum, chat) or the search engines, the directories and the company knowledge map. They can give the opportunity to directly know 'who knows what' inside an organization or inside a more complex environment (Wheeler et al. 2002). At the same time, it increases that knowledge, generating a contamination chain of the knowledge among the company and/or the network context (intramural). This membrane between extramural and intramural factors becomes a selective transducer of knowledge. It nourishes the extension of those competitive, application and/or partnership boundaries (sectoral and inter-sectoral boundaries) between the company and its direct or indirect suppliers. As a consequence the ability to learn won't be anymore only functional or systemic, but ecological as highly localized and at the same time open and managed by self-organization, usually bottom-up self-organization.

The textile and fashion industry has been the object of continuous structural and behavioral innovations linked to the ICT (Information Communication Technologies) or ecological scheme (Esposito *et al.* 2010). An example of ICT contributing towards the idea selection phase is the resource activity carried out by fashion designers while creating new collections (Bjorkman 2004; De Lucia *et al.* 2009). Commonly documented in literature (Abecassis-Modeas 2006), new trends, colors and textile information, traditionally studied through physical mediums such as reports, photos, color samples, videos, etc. are now studied via the 'web' (worldwide web). The web is now

not only a mere logistical channel but it is the "contaminator" of styles, tastes and new trends. The new technologies contribution can help the storage and the retrieval of knowledge too. Let's think to databases and others *knowledge repositories* where what's on memory can be utilized asynchronously by a number of subjects higher to that generating it. They generate different externalities connected with a continuous circular re-internalization of knowledge and by best practices. In order to implement the ideas for a new collection, the stylish team can utilized the suggestions recorded for the past collections, memorized in an *electronic data warehouse.* Drawings and photos can be quickly retrieved (Xu & Rickards 2007) and go under bundling and unbundling processes in order to explore hidden potentiality. It is then necessary an improving category of knowledge: a coupling between tacit and codified of it as a source and result of variety of both emergent context and atmosphere. The ICT can contribute to a better use of codified knowledge linked to the time of utility. The data warehouse can easily conduct a targeted and focused extraction according to the potential factors of (emergent) demand and supply also sustaining creative resources by sharing knowledge. Consequently, design, configuration and production will be part of a reduced space-time process with a creative contamination of knowledge resources. Such process won't be less efficient and will strongly focuses itself on a customization process. *Network and/or hyper network* or even *small world* interactions will try to amplify the space-time process and knowledge contamination extramuros. A part of literature (Alavi & Leiner 2001) identifies among the main ICT applications, the creation of a knowledge network (groupware, blog) as a support to the integration phase. An example of knowledge network based on digital technologies is the customer involvement process in the development activity of a new collection. This confirms the bottom-up and contamination from the above functions typical of the co-generation of a value above described. This means that the prototype creation process nourishes the creation of a sample as an explorative process to catching up emergent tastes and creative pushing up resources. The first drafts will be photographed and then adapted and modified in digital format. Digital samples will be via extranet evaluated by the clients who will pass a pre-order of the samples (interactive adaptation following an ecological knowledge acting on the interdependencies and "anticipating the future"). The components of the virtual samples pre-selected by the distributors will make up the final seasonal samples collection. It will be later sent to production. Such tools will fast the spread of information about the new collection, increase the earlier purchase orders and evaluate the sales forecast, passing from a backwardness logistic to a forwardness one. This will give the opportunity to creatively interpret the future already acting on the present, and not to derive the present from a more or less functional past, linked to a follower or imitation lag (short-termism hostages) function. Advantages deriving from this application are both the greater efficiency of the interpreting and configuration process of the new product development and the greater efficiency of the collection.

The new products are the result of the virtually select prototypes transformed into samples, saving on the production costs and cutting the creativeness costs (minimization of the no-knowledge costs).). The final collection will result from a variety of adjustments coming from the distributors' market experiences (Pilotti and Rullani: 2007; Ramírez Hurtado and Quattrociocchi: 2009).

Research hypothesis

In dynamic sectors, such as textile fashion industry, where fashion style tend to change continuously and fast to follow or predict the new customers needs, innovation capacity is surely a competitive advantage and a key success factor.

However the innovation capacity and intensity of textile firms is largely depending on management capacity to support knowledge creation, appropriation and transfer processes by defining the strategic purposes. Different strategic purposes, such as cost leadership, market penetration, quality differentiation, diversification or ethic responsibility (safety, environmental impact) influence the innovation direction (innovation areas) and intensity.

Hypothesis H1 - Different strategic purpose definition influence decision-making concerning innovation areas and consequently innovation capacity/intensity of firms.

Another important aspect concerning innovation capacity and innovation fields regards the source of knowledge/innovation. The general lack of financial resources of SMEs does not allow them, as opposed to large companies, to invest heavily in process research and development (R & D), their creativity and innovative capacity must then be sustained through processes of collaboration, cooperation and sharing of knowledge (Grant & Baden-Fuller 2004). In other words, the ability of SMEs to innovate is linked to the ability to exploit the positive externalities arising from the network of relationships to which the company belongs (Capaldo 2007), looking for integrative resources intra and extra muros.

In this context, patents may be a too much structured protection mechanism of knowledge creation and innovation processes for at least two reasons.

Firstly, in contrast to internal tendency of other context to generate innovation and patents, fashion industry requires moreover to create a knowledge network, where the implementation of information technologies, such as portals, forums, chat and all other sources of information revealing tastes and preferences, may play a crucial role to transfer and retransfer diffuse codified knowledge and to involve customers, suppliers and other firms in order to develop a collective and integrative innovation process, even if in different ways depending on implicated innovation area.

Hypothesis H2a - In textile fashion industry, the knowledge creation process exploits both, internal and environmental factors. So that internal R&S competences have to necessary combined to capacity to involve several actors by developing the benefits of an integrated and cooperative innovation network.

Therefore, the building of innovation networks based on digital technologies makes the exploitation of patents as source of open innovation (Chesborough 2003) difficult to apply and develop.

Hypothesis H2b: Patents are not always representative of an advantage over competitors, mainly in a very dynamic market where the innovation process by interaction is also more important.

Secondly, the bureaucratic costs of patents registration process are higher than real protection benefits firms could achieve exploiting them. Since in fashion industry great relevance is given to reputation on the market, a key success factor has become the brand affirmation and recognition. The brand registration is likely to be useless whether an effective marketing strategy does not lead to a strong brand recognition on the market, even exploiting the new digital opportunities.

Hypothesis H3: in textile fashion industry, registered brands are likely a protection mechanism more effective than patents.

Methodology

Sample selection process and survey description

The hypothesis of this paper has been formulated and elaborated on the basis of a database that collects the results of a sample survey of 162 companies. The choice of this sampling methodology is based on published literature (Aaker, Kumar and Day 1998) of business systems of textile industries and participants in the research project. The choice of the Campania region of Italy is predetermined as it is within the constraints of the original project and therefore cannot be modified. The selected enterprises and the Campania region are representative of the broader Italian fashion systems. According the project specifications, the sampling was conducted taking into account the following conditions: participating enterprises had to be a) SMEs, b) localized in the Campania region, c) be a high development potential, d) have a propensity to creativity. Every selected fashionable Italian SME has to result interested in developing knowledge and, therefore, involved in the mechanisms of protection and sharing of knowledge sources.

The collected sample includes some of the most important Italian fashion SMEs (Kiton, Marinella, Corvino and Original Marines) and can be considered as representative of the broader universe of

companies of textiles and clothing in the Campania region and more generally in the Italian fashion system.

Data were collected through a questionnaire to direct interview, conducted by university researchers group. The survey investigates the following aspects: a) firms' innovation objectives, a) sources of knowledge, b) developed innovation areas, d) the most common protection mechanisms of innovation in enterprises, e) benefits arising from the mechanisms of protection.

Research questionnaires was based on literature reviews on the topics investigated. First, items on innovation objectives and knowledge sources and innovation fields, which are largely argued by several studies such as Leiponen and Helfat (2009) or Laursen and Salter (2005), are elaborated from the Italian Innovation Survey (Community Innovation Survey, CIS), available on ISTAT website. Second, protection mechanism are also more consolidate in literature. They are usually classified in patents, copyright, trademarks and secrecy (Veugelers & Cassiman 1999; Cassiman & Veugelers 2006). Questions concerning protection mechanism are elaborate from the CIS questionnaire which follows (with modifications) the example of the Yale survey on appropriation of innovation benefits (see Levin et al. 1987).

Sample description

Descriptive statistics show that the "customers", whether industrial customers (69.75%) and consumers (88.89%), are the primary source of knowledge and innovation, as design, taste and trend. Customers will help the companies in anticipating needs, tastes, expectations of the market, and they, in general, represent the true reservoir of knowledge. In addition to customers, two groups of subjects generators of knowledge have been identified: "Fairs and magazines" (79.63%) and "industrial and commercial partners". They are considered true knowledge brokers, and carriers for that/interceptors or emerging trends. The second group of sources of knowledge (intramural activities, equipment suppliers, consultants and other companies) has less high frequencies. The surprise, however, can be found in the last group (patents acquired) which has a frequency much more modest. Summarizing, the source of knowledge doesn't derive from the ownership of patents or its relationship with research centers (universities and research centers) but it derives from the customer contact and knowledge broker.

Linked to the first question, the survey is the most important areas of knowledge where the company has intervened in the last four years. The survey results have identified two subgroups. A first group consisting of: a) new product design, b) use of new materials, c) search for new materials. A second group comprising: a)new production technologies, b) new methods of management. The innovation areas included in the first group have a frequency ranging from 76% to about 69%, denoting a great attention by at least two thirds of the sample. Another interesting

aspect is the first cluster showing a strong focus on innovation output, in terms of design and outputs in terms of materials used in the process. The second group presents frequencies much lower compared to the first group ones. By referring to characteristics of the processor management the data show that one out of two can affect these areas of innovation.

The third question (Goals of innovation) brought to the attention of the companies interviewed concerning the identification of the type of strategies: a) differentiation, b) cost leadership. Achievements such as "improve customer service" and "improve the quality of the product" can be traced to the benefit of their subjects differentially. Unlikely goals as "reducing costs", "improving the use of resources", "increase productivity" and "increase market share", are related to the search for a cost advantage.

The fourth issue brought to the attention of statistical sample (see table 4). It covers the central point of this work regarding the protection of knowledge. It tries to find techniques and methods of protection adopted by the companies interviewed. The data show that less than half of the companies adopt systems in order to safeguard their brands (53.09%). Frequency drops to just over one-sixth if we consider the Italian patent protection and even less (9.26%) if considering the EU patent protection. All this shows the sensitivity of enterprises to manage their key strategic image and reputation.

Note that the combination of data on enterprises that have obtained an Italian patent, with those who have earned a European or international patent shows that 12, of the 15 companies with European patent / international, are part of a subgroup of 28 companies who claimed to have obtained an Italian patent in the last 4 years. This shows that, among 162 companies, only 31 companies have undertaken a strategy of patent protection of which 16 have achieved only the Italian patent, 12 were activated in both Italian and European level and /or international level, and only 3 had an European /international patent. Correlating to this, another interesting evidence emerges. Overall, firms utilizing trademarks and / or patents are 92. Regarding the 31 firms with patent, only 6 companies have filed patents and 25 companies (representing 15.43% of the sample) have also registered their brand (ie, falling between the 86 companies that have registered the trademark), denoting an integrated approach to Government of knowledge. In addition, 25 firms are distributed fairly evenly among the different classes of turnover. Part of the sample are 8 companies operating in the so-called "market of knowledge", or where transactions take place relating to IPRs. These 8 companies are engaged in licensing agreements from which derive royalties. Among them, 2 companies have also given rise to assignments of patents. Among these 8 companies, 4 recognize the state to protect IPRs advantage over competitors, the other 4, however, do not recognize this benefit. By crossing these data with those of the previous observation (security mechanisms, see table 4) we obtained valuable information about the strategic behavior of firms in terms of opening/

closing of the strategy of knowledge governance. For what concern the utilization of such security mechanisms and how these mechanisms fit together, there will be a "wholly proprietary system" and a "wholly open system" strategies versus "a partially open" one. The sample firms constituting the IPR's are all over 92; among them 8 (70% of 92) are those that operate in the knowledge exchange patented world. This means that 84 firms utilize mechanisms of IPR's, (equal to 91.3% of 92). They adopt strategies of property retention, pointing to a markedly in-house exploitation of knowledge, only 8,7% of them adopt strategies of semi open knowledge, opting for sale of licenses.

Regression analysis and result

In this session, the statistical significance of data is assessed by using logistic regression techniques. Firstly, an ordered logistic regression model[1] (model 1) is implemented in order to test the impact of innovation sources on the innovation propensity of textile firms. The innovation intensity (dependent variable) is built by summarizing the firm's developed innovation areas so that it results to be characterized by six ordered levels: none, very low, low, medium, good, high. Secondly, in model from 2 to 6, traditional logit regression models, based on dichotomic dependent variable, are defined. Each innovation area (new materials research, new materials application, new design of product, new productive technologies and new management methods) is coded as a binary variable, 0 being no exploited and 1 being exploited in the last four years to improve firm's products and services or organizational and managerial processes. The types of models and the explained dependent variables are applied to both analysis reported in *Table 1* and *2*.

In *Table 1*, data show as business strategic goals are related to innovation process of firms. It has already been argued as different goals concern different type of business strategies and consequently different marketing approaches: on one hand, some items concerning strategies such as cost leadership (costs reduction, efficiency, increasing productivity and flexibility) and differentiation (improvement of product or services quality and range) are evident, on other hand, some items relate to diversification (entering in new markets) or ethic responsibility (safety, environmental impact).

Findings concerning regression model 1 suggest the reducing cost goal is not able to push innovation process. Firms intending reduce cost are more likely to look for cheaper suppliers or moving production process in low-cost countries dependent by dominant price competitiveness.

1 The ordered logistic regression is a case of multinomial logit models in which dependent variable results an ordered categorical variable. With an ordered response, it is often easier to work with the cumulative probabilities. The cumulative probabilities are increasing and invariant to combining adjacent categories.

Differently, the increase of productivity and flexibility, the improvement of product quality, the entering in new markets and the adjustment for sector requirements positively impact on the innovation range of textile firms and by quality of relationships intra and extra-muros.

Looking to each innovation area (models from 2 to 6), the increase of productive flexibility is strong related to innovation focusing on new materials application and on product design. Then, stimulating for product design and new management methods areas are the goals pointing to the increase of market quote, the entering in new markets and the adjustments due to sector regulations. Finally, the more statistical significant goal for innovation related to productive technologies results the improvement of product quality.

Confirming *H1*, the strategic purposes impact differently on the choice of innovation field and that obviously can influence, for example, the way to use digital technologies to develop own business.

Then, in *Table 2*, the most statistically significant sources of innovation result internal R&S, firms belonging other industries (no textile industry), research centers and innovative suppliers.

Firstly, internal R&S is expected finding. In literature R&S is likely considered the main innovation factor and it is usually linked to firm size and availability of resources. Secondly, the relationship with not textile firms in the cluster are more important than textile industry ones. That confirms Asheim, Boschma and Cooke's (2011) thinking about the concept of "related variety". Authors sustain in fact the economic importance of bringing together different but complementary pieces of knowledge and argue an excessive regional specialization (such as only local textile firms) might involve too much cognitive proximity, while neither regional diversity (firms belonging to excessive different industries) might involve a too large cognitive distance. What is better is a regional specialization in technologically related sectors which induces major interactive learning and regional innovation (Asheim *et al*. 2011). Thirdly, the more innovative and evolutive are the supplier partners, the more effective and productive is the cooperation and the innovation process. Fourthly, an high degree of innovation requires to involve research centers. Institutional, regional and local centers and universities can become a success factor in the process of creation and transfer of knowledge, mainly whether enterprises have no enough resources to develop an effective internal R&S. Therefore, hypothesis *H2a* about the relevance in innovation and creation process of both internal and external sources is confirmed.

Finally, the low weight and the statistical insignificance of patents need to be underlined. Patents cannot always be representative of innovation advantages (that confirms hypothesis *H2b* of this research study). Their employment and exploitation do likely depend on firms size and industry structure.

In contrast to this findings, other spread sources of innovation, such as fairs and reviews, customers, firms of textile cluster, suppliers of technologies and consultant, don't seem to impact on the involvement of firms in innovation processes.

However, if we take under consideration the inclination to improve and develop each innovation area, one by one, and for everyone we applied a logistic binomial regression model (models from 2 to 6), we can argue the following conclusions. In general, internal R&S is again confirmed the most important innovation source, transversally to each innovation area. In particular, the research of new materials requires links to evolutive and innovative suppliers; the application of new materials involve both evolutive suppliers and machine suppliers; the development of product design focuses mainly on internal R&S; the improvement of production technologies does positively depend on firms of other industries, research centers, machine suppliers and R&S but results negatively affected by fairs, reviews and private consultants; at contrary, fairs and review are significant to enhance new management methods while less crucial become the involvement of machine suppliers. In the last model, very important is the role of research centers and innovative suppliers, too.

In conclusion, a tetratomic correlation matrix (which is an appropriate statistical technique to study the link between dichotomic variables) is used to assess whether the use of innovation security mechanism is positively related to economic advantages (*Table 3*). The findings show firms don't consider the chance to earn by transferring patents but tend to use them as protection mechanism and to reduce imitative products. However the brand registration is retained the best protection mechanism in textile industry and that further validates hypothesis *H3*.

Discussion

What significantly impressed was the study of mechanisms of appropriation, protection and development for innovations and knowledge in a mature industry like fashion. The brand becomes, therefore, the mechanism by which a company is able to steal the fashion of a widespread knowledge without an owner where brand is a sort of network to attract better partners in the context.

The mechanisms of enhancement and protection of knowledge are placed along a continuum between wholly proprietary and wholly open system with a continuous matching between tacit and codified knowledge in a large context of eco-systems by networks, hyper – networks and ecologies intra/extra muros.

The main advantage of using a fully proprietary strategy is to maintain a "control" of the source of knowledge often considered intra-muros resources only. The company can also influence the evolution of knowledge of its products, such as the spread of them around the industrial market.

When utilizing wholly open eco-system knowledge is not always protected and can be easily acquired from other operators (Mann 2005).

	Model 1 (1)	*Model 2*	*Model 3*	*Model 4*
	Innovation intensity	*New materials research*	*New materials application*	*New design of product*
	clusterdepending (2)			
(Intercept)		-0,9323 (0,83)	0,27277 (0,88)	-0,54951 (0,88)
Reducing the cost	-0,54616	-0,9886 (0,68)	-2,0504 (0,83)*	-1,09694 (0,78)

	(0,27)*			
Increasing productivity	0,562534(0,24)*	0,5394 (0,52)	0,7812 (0,54)	0,64739 (0,57)
Increasing productive flexibility	0,678366(0,22)**	0,4947 (0,49)	1,61226 (0,51)**	1,16017 (0,55)*
Increasing productive efficiency	-0,256211(0,29)	0,3758 (0,61)	-0,70347 (0,64)	-0,56477 (0,67)
Increasing market quote	0,262199(0	0,3833 (0,55)	0,22983 (0,59)	1,6222 (0,59)**

	,24)			
Improving the goods range	-0,27696(0,19)	0,6233 (0,42)	-0,24837 (0,47)	-0,71237 (0,51)
Improving the service to customers	0,28539(0,26)	-0,1244 (0,57)	1,0227 (0,58).	0,11647 (0,63)
Improving product quality	0,58891(0,25)*	0,7311 (0,52)	0,44597 (0,54)	0,47859 (0,57)
Entering new markets	0,55935(0,24)*	0,5963 (0,51)	0,5643 (0,56)	1,23621 (0,56)*

Adapting to competition	-0,2284 (0,20)	-0,6271 (0,49)	-0,16434 (0,49)	-0,7552 (0,56)
Increasing safety	-0,1285 (0,28)	-0,2146 (0,63)	0,03177 (0,68)	-0,13364 (0,72)
Adjustament to environmental regulations	0,0648 (0,42)	-0,3899 (0,86)	-0,30193 (0,94)	-0,92315 (1,02)
Adjustment to sector regulations	0,7634 (0,30)*	0,3347 (0,65)	0,1985 (0,71)	1,60545 (0,80)*
Improving environmental sustainability	-0,2	0,9081 (0,80)	0,16677 (0,89)	-0,02355 (0,99)

	7695(0,40)			
Residual deviance	478,67000	169,14	154,3	139,3
AIC	516,67000	199,14	184,3	169,3
Pseudo R2 (ML)	0,33100	0,175	0,196	0,206
Pseudo R2 (CU)	0,34300	0,246	0,283	0,309
				Signif. codes
				(1) Model 1 is an ordered logistic regression model; Models 2,3,4,5
				(2) none|very low -0,485 (0,38) ; very low|low 0,222 (0,37) ; low|middle 0,8637 (0,37) ; middle|good 1*

Table n.1 – Logit regression models by analyzing innovation goals with respect to innovation areas.

	Model 1 [(1)]	*Model 2*	*Model 3*	*Model 4*	
	Innovation intensity	*New materials research*	*New materials application*	*New design of product*	*Ne te*
(Intercept)	cluster depending [(2)]	-0,5807 (0,68)	-1,0296 (0,71)	-0,8343 (0,73)	
Fairs & magazines	0,0011 (0,21)	-0,1006 (0,46)	0,2927 (0,48)	0,1729 (0,48)	-1
Suppliers of technologies	0,1141 (0,17)	0,1988 (0,38)	0,8956 (0,41)*	-0,2464 (0,43)	
Firms textile	0,1809 (0,18)	0,3633 (0,42)	0,0132 (0,43)	-0,1212 (0,45)	

Firms other industries	0,972 (0,36)*	1,4818 (1,10)	1,0235 (1,10)	1,2629 (1,14)	
Customers	0,0613 (0,27)	-0,1567 (0,62)	0,1102 (0,62)	0,5264 (0,65)	
Suppliers evolutive	0,6062 (0,20)**	0,8249 (0,41)*	0,9232 (0,42)*	0,8791 (0,45).	
Patents	0,163 (0,24)	0,4893 (0,58)	-0,2161 (0,58)	0,6041 (0,65)	
Research centres	0,795 (0,33)*	0,9449 (0,83)	0,3496 (0,75)	0,4014 (0,83)	
Scientific Parks	-0,497 (0,48)	-0,2838 (1,36)	1,5638 (1,15)	-1,647 (1,18)	
Private consulents	-0,1949 (0,19)	0,2064 (0,41)	0,1541 (0,44)	0,3189 (0,47)	
Internal R&S	0,8485 (0,19)***	0,9075 (0,39)*	0,9722 (0,40)*	1,4416 (0,43)**	
Residual deviance	486,2148	173,89	157,77	149,66	
AIC	518,2148	197,89	181,77	173,66	
Pseudo R2 (ML)	0,2993	0,15	0,177	0,152	
Pseudo R2 (CU)	0,3101	0,211	0,257	0,23	
Signif. codes:					
([1]) Model 1 is an ordered logistic regression model; Models 2,3,4,5 an					
([2]) none|very low -0,679 (0,34) ; very low|low 0,0145 (0,32) ; low|medium 0,5961 (0,32) ; medium|good 1,2066					

Table n.2 – Logit regression models by analyzing innovation sources with respect to innovation areas.

tetrachoric correlation	Earning from patents transfer	Earning from licencing	imitative products	protection mechanisms
Italian Patents	0,130	0,360	0,510	0,480
EU Patents	0,086	0,510	0,500	0,360
Purchase or use of licence	-	0,470	0,310	0,540
Registered brands	-	0,290	0,820	0,750
Secretary agreement	-	0,280	0,340	0,730

Table n.3 – Tetrachoric correlation matrix between security mechanism and economics advantages

The costs and difficulties to exploit protection mechanism based on patents, appealing mainly to brand registration, on one hand, and the increasing necessity to develop innovation networks involving customers, suppliers, other industry and not firms able to fast predict the changes in customer needs, on the other one, will make policies in order to promote a more rapid market penetration very interesting. In empirical strategies the governance does not become polarized to extremes, but it is placed in an intermediate situation, even if momentary.

Textile companies seem to be unwilling to protect their knowledge with patents. This process, on the contrary to the literature, is directly related to the mechanisms of knowledge protection adopted in mature industries, like fashion ones or in sectors with high growth such as the software industry. Such an account provides an opportunity for a more general consideration of the "System Italy".

Unfortunately, the Italian system is affected by a significant gap compared to more advanced economies for a less advanced coupling between tacit and codified knowledge. The reasons are manifold. The first reason is connected to the Italian industrial system, mainly characterized by micro and small enterprises, the second one is related to the lack of consideration by management for IPRs (intellectual property rights) and their potential as tools for strategic government of the resource (Gambardella et al. 2007). We must consider too that Italy is characterized by a strong innovation process, very weak in product innovation. However, this aspect deserves further examination of the data to be interpreted. Even though Italy is in line for patent ability, it cannot be considered as a country with no capacity for creativeness and innovation, but rather a country considered to be highly creative. Economically speaking, innovation is not based on research and development but on process innovation and aesthetic innovation. In Italy, the innovation process is made possible by the proximity of the territorial districts of capital goods producers. The ability of the districts to generate design, anticipating tastes and preferences is based on the combined capacity of hundreds of companies. This ability is dictated by tastes and fashions, by cultural changes, even multi-ethnic, and by the development of digital technologies and solutions that offer unimagined opportunities, creating a kind of "socialization of knowledge" (social networks, forums, ect.). According to an always increasing market thought, knowledge becomes a collective good giving power to individual companies. Each company enhances the level of innovation within the limits of a "short product cycles," easily imitated by other companies. The utilization of same tendency creates value for all the companies participating the creation of that knowledge. Obviously the speed of "interpretation and enhancement" of knowledge can help companies in differentiating into leaders and followers but anyway without an eco-system approach of innovation leaved to a single or limited isolated group of leaders often hostages of local culture.

Conclusions and future research

Based on these observations and statistical considerations, the implementation of information technologies, such as portals, forums, chat and all other sources of information revealing tastes and preferences, may play a crucial role to transfer and retransfer diffuse codified knowledge in the eco-system but with a multi-focused recontamination of tacit one. Based on such research project, a portal dedicated to fashion companies was created in order to help them in managing collection areas and organizing information. The portal provides direct management of a questionnaire and /or the investigation carried out in Second Life, with the aim of testing the interest on a particular collection or the interest on a model or a color or a fabric. These features may represent a strategic factor to achieve competitiveness in the fashion field. As a matter of fact the activity of fashion

design is the main fundamental key for fashion industries. It needs to be continually supported by the identification of new fashion trends and consumer needs.

At the moment there are no available data about this technology of collecting and "socializing" the knowledge, since it is being tested. It certainly seems interesting to learn how businesses and consumers will populate the portal in the future as a leverage to sustain better repositioning of coupling between tacit and codified knowledge of a connected eco-system as an emergent dynamic ecology.

Reference

Aaker D.A., Kumar V., Day G.D., (1998), *Marketing Research*, 6 ed. Wiley, New York.

Abecassis-Modeas C., (2006), Integrating design and retail in the clothing value chain. An empirical study of the organization of design, *International Journal of Opertations & Production Management*, 26, 4: 412-428.

Alavi M., Leidner D.E., (2001), Review: Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues, *MIS Quarterly*, (25:1), March.

Arnott D., Pervan G., (2005), A critical analysis of decision support systems research, *Journal of Information Technology*, 20: 67-87.

Asheim B., Boschma, R., Cooke, P., (2011). Constructing Regional Advantage: Platform Policies based on Related Variety and Differentiated Knowledge Bases, *Regional Studies*, 45, 7: 893-904.

Bjorkman H., (2009), Design Dialogue Groups as source of Innovation: Factors behind Group Creativity, *Creative and Innovation Management*, 13, 2: 97-108.

Capaldo, A., (2007), Network Structure and Innovation: The Leveraging of a Dual Network as a Distinctive Relational Capability, *Strategic Management Journal*, 28 (March), 585–608.

Cassiman, B. & Veugelers, R., 2006. In search of complementarity in innovation strategy: Internal R&D and external knowledge acquisition. *Management science*, 52(1), pagg.68–82.

Chesbrough, H. (2003), The Era of Open Innovation, *Sloan Management Review*, 44, 3: 35-41.

De Lucia A., Francese R., Passero I., Tortora G., (2009), TA CAMP Life: Integrating a Web and a Second Life Based Virtual Exhibition, *Proceedings of the 15th International Conference on Distributed Multimedia Systems,* Redwood City, USA.

Esposito, G.F., Girardi, U. & Quattrociocchi, B., (2010), Catena del valore e ciclo di vita dell'impresa, una analisi del terziario nelle dinamiche territoriali: i risultati di una verifica empirica. *Esperienze d'Impresa: Dipartimento di Studi e Ricerche Aziendali, Università di Salerno*, (2).

Gambardella A., Giuri P., Luzzi A., (2007), "The market for patents in Europe", *Research Policy*, 36, 8, October, 1-37.

Grant R.M., Baden-Fuller, (2004), A knowledge accessing theory of strategic alliances, *Journal of Management Studies*, vol.41.

Gorry G.A., Scott Morton M.S., (1989), A framework for management information systems, *Sloan Management Review* 13, 1: 49-61.

Laursen, K. & Salter, A., 2005. Open for innovation: the role of openness in explaining innovation performance among UK manufacturing firms. *Strategic Management Journal*, 27(2), pagg.131–150.

Leiponen, A. & Helfat, C.E., 2009. Innovation objectives, knowledge sources, and the benefits of breadth. *Strategic Management Journal*, 31(2), pagg.224–236.

Levin, R.C. et al., 1987. Appropriating the returns from industrial research and development. *Brookings papers on economic activity*, 1987(3), pagg.783–831.

Mann R., J., (2005), Do Patents Facilitate Financing in the Software Industry?, *Texas Law Review*, 83, 4: 961-1030.

Pilotti L., Rullani E., (2007), Corporate governance e società della conoscenza. Tra teoria e prassi, *Sinergie*, 73-74: 43-86.

Ramírez Hurtado J.M., Quattrociocchi B., (2009), An Update of the Franchisee Motivations: a Study in Spain, in *Journal of Applied Economic Sciences (JAES)* IV, 2 8: 210-220.

Rifkin J.W., (2001), Reproducing Knowledge: Replication without Imitation at moderate Complexity, *Organization Science*, 12: 274-293.

Veugelers, R. & Cassiman, B., 1999. Make and buy in innovation strategies: evidence from Belgian manufacturing firms. *Research policy*, 28(1): 63–80.

Wheeler, S., Waite, S. and Bromfield, C., (2002), Promoting creative thinking through the use of ICT. *Journal of Computer Assisted Learning*, 18: 367-378.

Xu F., Rickards T., (2007), Creative management: A predicted development from research into creativity and management, *Creative and Innovation Management*, 16, 3: 216-228.