SOUTH EAST EUROPE
Transnational Cooperation Programme

INNO-FOOD SEE

Setting up the innovation support mechanisms and increasing awareness on the potential of Food Innovation and RTD in the South- East Europe area

Project Code: SEE/B/0028/1.3/X

WORK PACKAGE 3: ANALYSIS OF POLICIES AND STRATEGIES FOR FOOD INNOVATION

D3.2b- Technology Audits for the Agrofood SMEs

Version: 1.0
Date: 10/09/2012
Pages: 35
Author:
Partner:

For further information please contact:
Email:

Dissemination Level:

Partner	Official name (in English)	Abbreviation	Country
LP	Centre for Research and Technology Hellas- Institute of Applied Biosciences	EKETA- IAB	Greece
ERDF PP1	Federation of Industries of Northern Greece	FING	Greece
ERDF PP2	National Research Council- Institute of Sciences of Food Production	CNR/ISPA	Italy
ERDF PP3	Agricultural University of Plovdiv	AUP	Bulgaria
ERDF PP4	Pazardzhik Regional Administration	OAP	Bulgaria
ERDF PP5	National Institute of Research & Development for Food Bioresources	IBA	Romania
ERDF PP6	Constanta Chamber of Commerce, Industry, Shipping And Agriculture	CCINA	Romania
ERDF PP7	Development Agency of Idrija and Cerkno	ICRA	Slovenia
ERDF PP8	European Food Chain Parliament-Foodlawment	EEPF	Hungary
10% PP1	Odessa National Academy of Food Technologies	ONAFT	Ukraine
10% PP2	Chamber of Commerce and Industry of the Republic of Moldova	CCIRM	Republic of Moldova
10% PP3	Institute for Food Technology	FINS	Serbia

Contents:

Abstract:
The report presents the results of the technology audits of the Agrofood SMEs of the participating regions.

Project Document Information

Project acronym:	Inno- Food SEE
Project full title:	Setting up the innovation support mechanisms and increasing awareness on the potential of Food Innovation and RTD in the South- East Europe area
Project Code:	SEE/B/0028/1.3/X
Project start date:	1st April 2011
Project duration:	30 months
Deliverable number:	D3.2b
Deliverable title:	Technology audits for the Agrofood SMEs
Due period of deliverable:	
Actual submission period:	September 10, 2012
Authors:	Nunzia Cito, Angelo Visconti, Paola Lavermicocca
Editors:	
Reviewers:	
Work Package no.:	3
Work Package title:	**ANALYSIS OF POLICIES AND STRATEGIES FOR FOOD INNOVATION**
Work Package leader:	FING
Work Package participants:	
Nature:	
Version:	
Draft/Final:	
No of pages (including cover):	35
Keywords:	

List of Acronyms and Abbreviations

Acronym/abbreviation	Resolution

Table of Contents

EXECUTIVE SUMMARY

(to be compiled by FING when all reports are available)

1. INTRODUCTION, SCOPE AND METHODOLOGY

(to be compiled by FING)

2. REGION OF APULIA

2.1 SHORT PROFILE OF THE REGION, THE AGRICULTURAL PRODUCTION AND THE FOOD INDUSTRY

The region of Apulia is the Italian south-eastern most region, with a territorial extension of 19.366 km^2, bordered by both the Adriatic and Ionian Seas, giving it one of the longest coastlines of any region in Italy, extending for about 800 km. The region is widely accessible by the sea and it seems a natural equipped wharf of the European community stretching over the Mediterranean that from centuries is in fruitful geographical economic cultural and religious relations with the Balkan area, the Middle-East, Northern Africa and East Europe.

The Apulia is a **Region of Convergence**, representing the most dynamic region in the South Italy, having a moderate ratio of development compared to other EU regions. The Apulia has a population of **4,076,546** inhabitants, generating a **GDP** of about 68.9 million (in 2009).

The per capita GDP is about the 66% of the national average and represents about 72% of the EU27 average. Apulia manages for the period 2007-2013 about 2,7 M€ of the FESR programme and 640 K€ of the FSE programme plus other funds coming from interregional and national programmes.

In the recent period, while the **GDP** in the South over the previous year grew by 0.2% (in north-central than 1.7%), in Apulia it decreased in 2010 of 0,2% to **16,932** euros per capita. The situation is not good even if one looks at annual average 2000-2010: Apulia, which was to be the motor production of southern mainland, has recorded a minus 0.3%. For the second consecutive year, therefore, the Apulian economy has performed the best performance in the South. In 2009 the GDP of Apulia fell by 2.3% compared to 4.6% of South Italy (SVIMEZ Annual report 2010).

Agriculture in Apulia is largely modern and intensive, allowing the region to be at the first places in Italy for the production of many products, like “hard” grain and tomatoes in the Foggia province, besides table grapes and oil, with around 50 millions olive trees. Also important is the production of salad, artichokes, fennel, cabbage, celery and oats. In specific areas fruit cultivation is also relevant, like peaches and kiwi. The primary sector, equal to 5%, produces considerable quantities of valuable produce as wheat, olives, fruit and vegetable, beets, milk, flowers, tobacco and, in some areas of the Salento, medicinal herbs that give rise to an intense activity of food processing and agroindustry one. These industries are distributed in various territorial points and often represent local branches of large industries from the North of Italy.

The **agrofood sector** represents one of the key economic sector of the region, with a multi variety of products, including the fermented ones (i.e. bakery products, fermented cheese).

The main agro-food chains present in Apulia are:

- Dairy products;
- wheat and bakery;

- meat products;
- olive oil;
- grapes and wine;
- vegetable and fruits (olive, almonds, figs), and livestock (sheep, pigs, cattle and goats).

In addition to the traditional sectors of wine and oil, also the mill industry and pasta production have a big role in the sector, also being Italian leader in the heavy wheat production (21 % of national total, Istat 2011), while the Apulia is the third Italian region for the pasta production. Significant roles are covered also in the diary industry, coffee and meat transformation (Bank of Italy 2011).

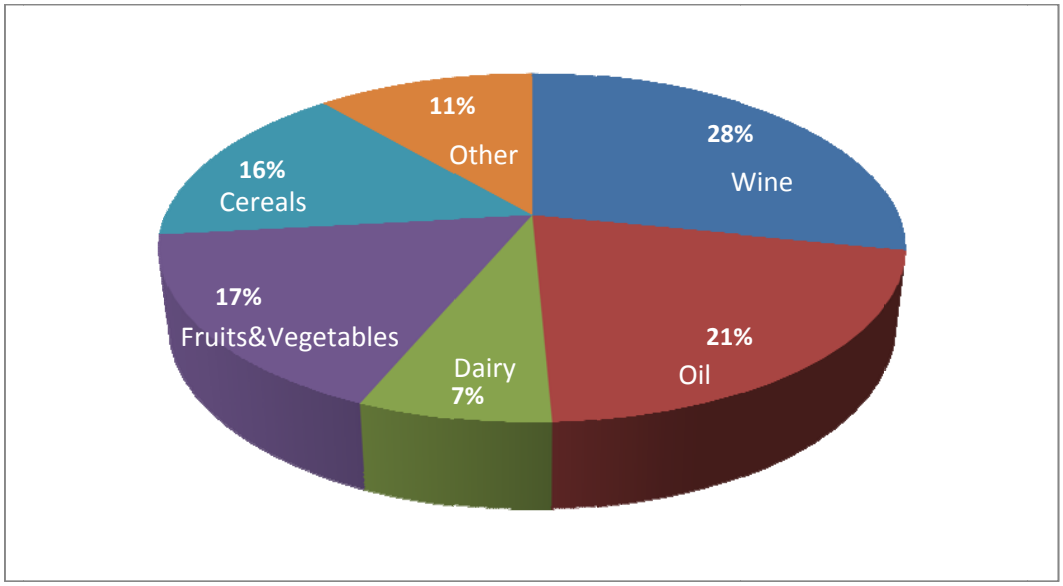
2.2 PROFILED AGROFOOD SMES

The list of Apulian agrofood SMEs answering to the Technology audits is indicated in the following table:

Full official name of company	Productive sectors the company is active in
Azienda Agricola "Conti Zecca"	*Grapes and wine*
Azienda Agricola Spagnoletti Zeuli	*Grapes and wine - Olive oil*
Azienda Agricola Valle dell'Asso	*Grapes and wine*
Cantina Coop. Salice Salentino s.c.a.	*Grapes and wine*
Cantina "Crifo"	*Grapes and wine*
Cantina Sociale di Barletta	*Grapes and wine - Olive oil*
Cantina Sociale di San Severo	*Grapes and wine*
Cantine della Bardulia	*Grapes and wine - Olive oil*
Cantine Due Palme	*Grapes and wine*
Cantolio s.c.a.	*Grapes and wine*
Castello Monaci s.r.l.	*Grapes and wine*
San Martino s.r.l.	*Grapes and wine*
Soc. Coop. "Terra Maiorum"	*Grapes and wine*
Terra Apuliae s.c.r.l.	*Grapes and wine*
Tormaresca s.a.a.r.l.	*Grapes and wine - Olive oil*
Torrevento s.r.l.	*Grapes and wine*
Vigne di Rasciatano s.r.l.	*Grapes and wine*
Vinicola Cantele	*Grapes and wine*
Vinicola Rivera s.p.a.	*Grapes and wine*
Grapes and wine Ventura s.r.l.	*Grapes and wine*
Agrinatura s.r.l.	*Olive oil - Vegetable and fruits (Bio products)*
Antico Frantoio Ametta	*Olive oil*
COVAN	*Olive oil*
Frantoio Galantino s.n.c.	*Olive oil*
La Bella di Cerignola s.c.a.	*Olive oil – Table olives*
Masseria Cusmai s.a.s.	*Olive oil - Vegetable and fruits*
Oleificio Cima di Bitonto s.c.a.r.l.	*Olive oil*
Oleificio Goccia di Sole s.a.r.l.	*Olive oil*
Oliveti d'Italia	*Olive oil*
Paparella Salvatore e F.sco s.n.c.	*Olive oil*
Tenuta Rasciatano s.r.l.	*Olive oil*
Ciemme Alimentari s.r.l.	*Cereals*
Divella s.p.a.	*Cereals*
Fiore di Puglia S.p.a.	*Cereals*
Il Pastaio Maffei s.n.c.	*Cereals*
Laboratorio Dolciario Ester	*Cereals*
Molini Tandoi s.p.a.	*Cereals – Animal breedings animal feed stuffs*
Molino Andriani s.r.l.	*Cereals*
Molino Loiudice s.a.s.	*Cereals - Animal feedstuffs*
Pastificio La Contadina s.a.s.	*Cereals*
Pastificio Riscossa s.p.a.	*Cereals*
Valle Fiorita Catering s.r.l.	*Cereals*
Assodaunia s.c.a.r.l.	*Vegetable and fruits*
Cantatore Antonio&Figli s.r.l.	*Vegetable and fruits - Table grape*

Full official name of company	Productive sectors the company is active in
Dimonte Ruggiero&C s.a.s.	*Vegetable and fruits - Table grape*
Farris s.r.l.	*Vegetable and fruits*
Futuragri s.c.a.r.l.	*Vegetable and fruits*
Giardinetto s.c.a.r.l.	*Vegetable and fruits*
La Preferita O.P. Pugliese	*Vegetable and fruits*
Perché ci credo s.a.s.	*Vegetable and fruits*
PR.ALI.NA. s.r.l.	*Vegetable and fruits - Sauces and dressings*
Caseificio Andriese s.r.l.	*Dairy products*
Centro Latte Stasi s.r.l.	*Dairy products*
Cooperativa Allevatori Putignano	*Dairy products*
Delizia s.p.a.	*Dairy products*
Fattoria Chiarappa	*Dairy products*
Siciliani s.p.a.	*Animal feedstuffs and breedings*
Torrefazione Caffè Battista s.r.l.	*Coffee*
Innovative Solution s.r.l.	*Quality Control – Audit and Certification*
Integra s.r.l.	*Traceability services for agrofood sector*
M.G. di Narducci Lucia	*Industry Plants – development and trade*
Matrix s.p.a.	*Research and development services*
STC s.r.l.	*Engineering services*
TERA s.r.l.	*Innovative products consulting*

The total number of enterprises involved in this technical survey has been **63**, representing the main food chains developed in the Apulian region, as shown in the Graph below.



Graph 1: Companies by food chains

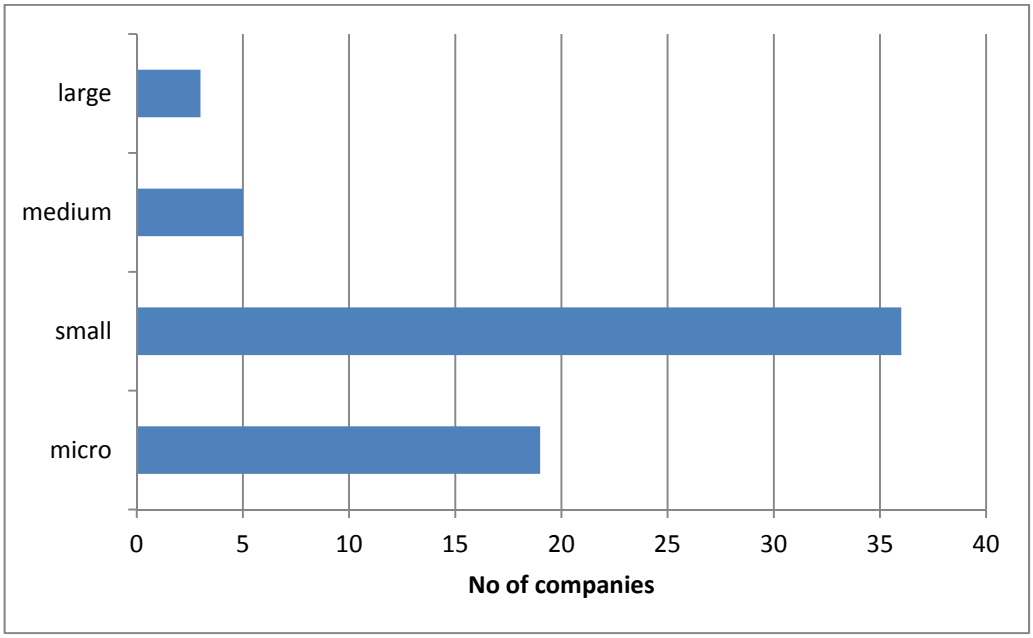
It should be underlined that about 300 SMEs have been contacted, introducing the project and the scope of the questionnaire by an official letter and questionnaire. Many of

these enterprises were contacted or involved in other projects and gave often their cooperation again. In this case, the most of 63 SMEs answering to the audit have been directly interviewed by experts and introduced in the main concerns.

2.3 KEY INFORMATION FROM THE TECHNOLOGY AUDITS

2.3.1 SECTION A - COMPANY GENERAL INFORMATION

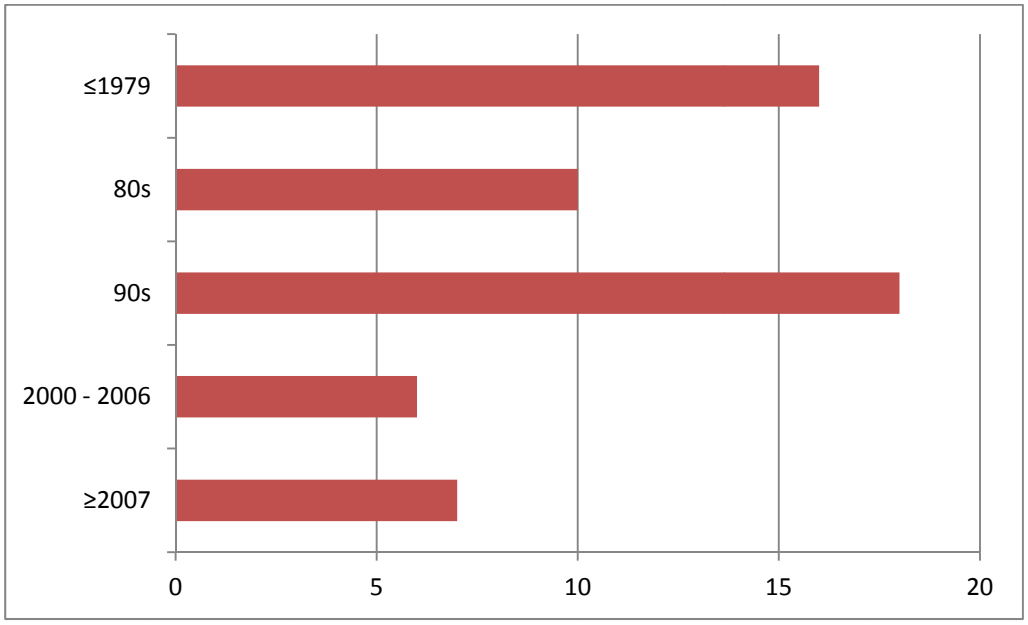
The companies participating at the InnoFood Technology audits well represent the Apulian agrofood sector, that is mainly composed by small enterprises and family management driven enterprises, better known and classified as micro-enterprises.



Graph 2: Companies by dimension
(Regulamentation CE n°70/2001)

Regarding the establishment year, the majority of companies were created starting from 80s and 90s, performing a process of industrialization of agriculture, by transformation and creation of final products for national and international markets.

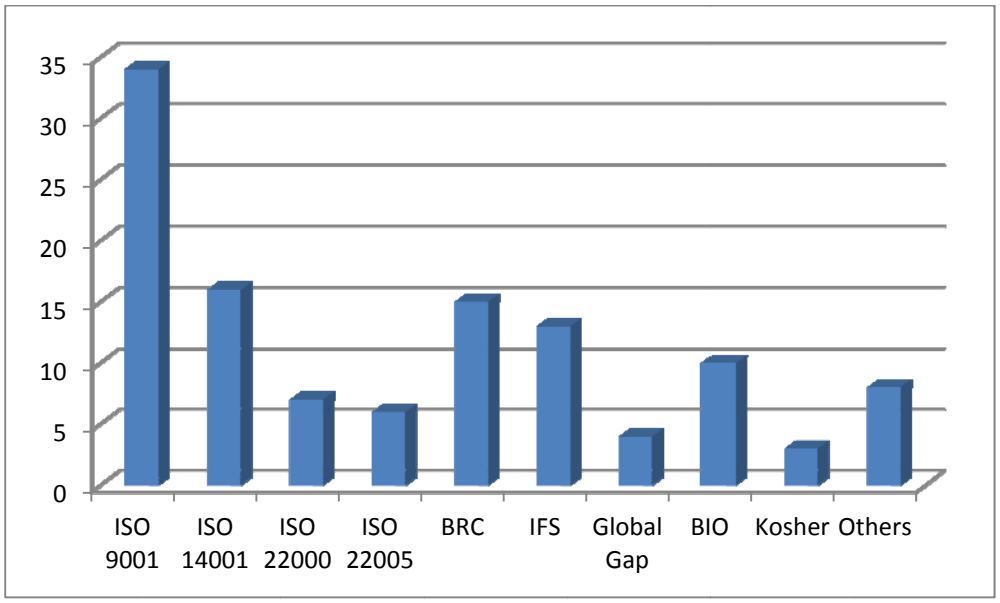
16 companies (25% of the total interviewed) were established more than 30 years ago, the ancient one is the Frantoio Galantino of 1925. This data is a bit representative of traditional sector in this region.



Graph 3: Companies ordered by year of establishment

All the manufacturing industries having an internal food processing cycle are certified according to HACCP system, while those companies focused on research and services are not provided with this type of certification.

In the graph below the main relevant quality certificates released by third parties organizations reached by companies are indicated, excluding the HACCP ones, that are present in the totality of firms as before explained.



Graph 4: Quality certifications owned by interviewed enterprises

Regarding the customers profile of agrofood enterprises (question A7), the interviewers give major value to “small/medium enterprises” or to “large enterprise”, while minor percentages are addressed to the remaining typologies, such as retailers and consumers.

In this analysis another aspect considered is related to the position/localization of customers targeted by Apulian producers. The major share of sales is represented by national channels, while a consistent representative percentage of products sales is at local/regional level, while low sales are addressed abroad. This general phenomenon could be a direct consequence of the previous consideration regarding the enterprises small dimensions, that do not really allow the growth towards skilled organizations able to develop an international trade. Anyway, in Apulia some significant enterprises fortunately grew in the past years, developing international markets: Farris srl sales are addressed to European Union countries for 65%, San Martino srl for 75%, two other enterprises have extra-UE customers, mainly in USA and Canada, for more than 60% of their total sales.

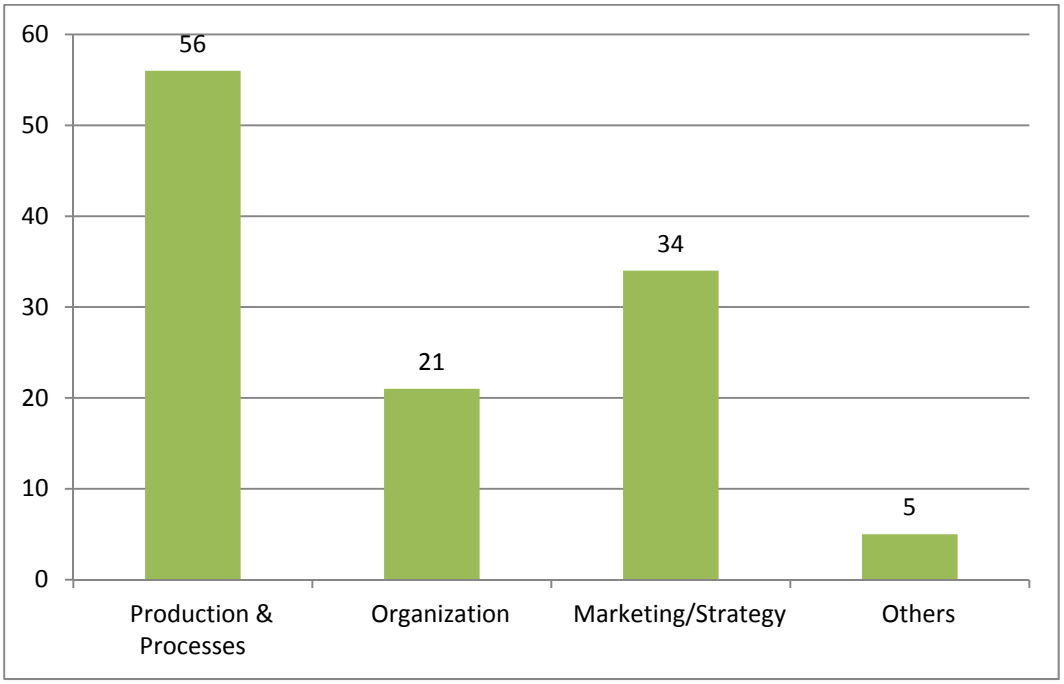
2.3.2 SECTION B - INNOVATION STRATEGY

The second section of the Technological audit aims to investigate the effort and actions to apply an innovation strategy in the agrofood enterprises.

The main part of the interviewed companies declare to have a mission/vision including some reference to innovation (60 yes, only 3 No), while 9 companies declare not to have concrete objectives for their innovation.

These answers seem almost contradictory in front of others inserted in the questionnaire regarding real operating innovation.

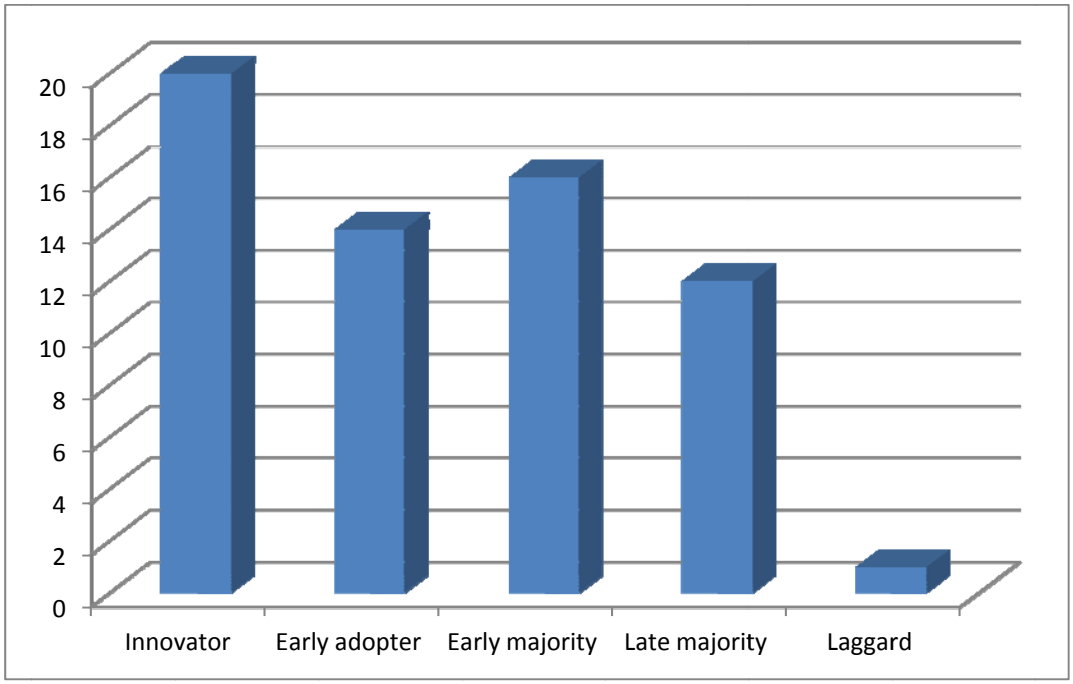
The main areas in which the companies tried to seek innovation in the past five years result mainly Production & Processes, Marketing/Strategy, followed by Organization area, as shown in the Graph 5.



Graph 5: Areas investigated for Innovation in the past 5 years

The innovation strategy followed by the major part of enterprises result the "*innovator*" one, [Characterised as being risk takers: venturesome with substantial financial resources, ability to cope with a high degree of uncertainty, eager to try new ideas, willing to accept an occasional setback or loss], followed by *Early majority*.

Considering all the answers, it can be said that these companies seem attracted by innovative behavior, even if the majority of them express some perplexity in answering to this question, not immediately understood. Anyway all the interviewed tried to give a more realistic answer considering their own strategy. Really this upcoming general positive approach towards innovation at this point of the questionnaire could not be considered as a real and concrete strategy pursued, as demonstrated by the further detailed questions about innovation itself.



Graph 6: Innovation strategy pursued according the innovation categories as defined by Everett M. Rogers

In the next question, the companies confirm having an innovative spirit, mainly declaring that their products and processes are in average innovative in comparison with the state of the art and also with their main competitor, as shown in the following graphs (7-8).

innovative

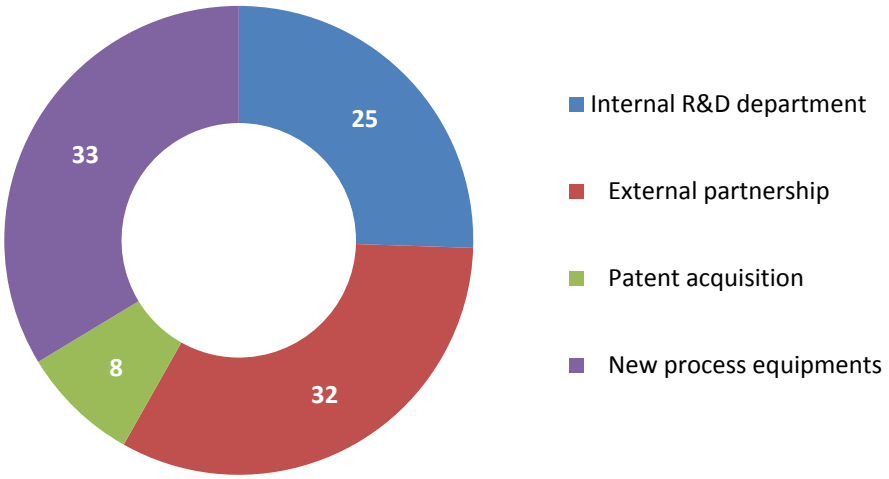
ıative

innovative

Graph 7: Comparison with the state of the art - Graph 8:Comparison with main competitor

The main sources used by companies for innovation are shown in the graph 9, indicating that companies are focused on new process equipments (33), aiming at a continuous process improvement, also mainly using external partnership to implement innovation (32), while patent as driver of innovation results very low.

It should be noticed that many wine producers declared to have an internal R&S department, really referring to the internal laboratory used by enologist and lab team to carry on analysis on wines during the production year.

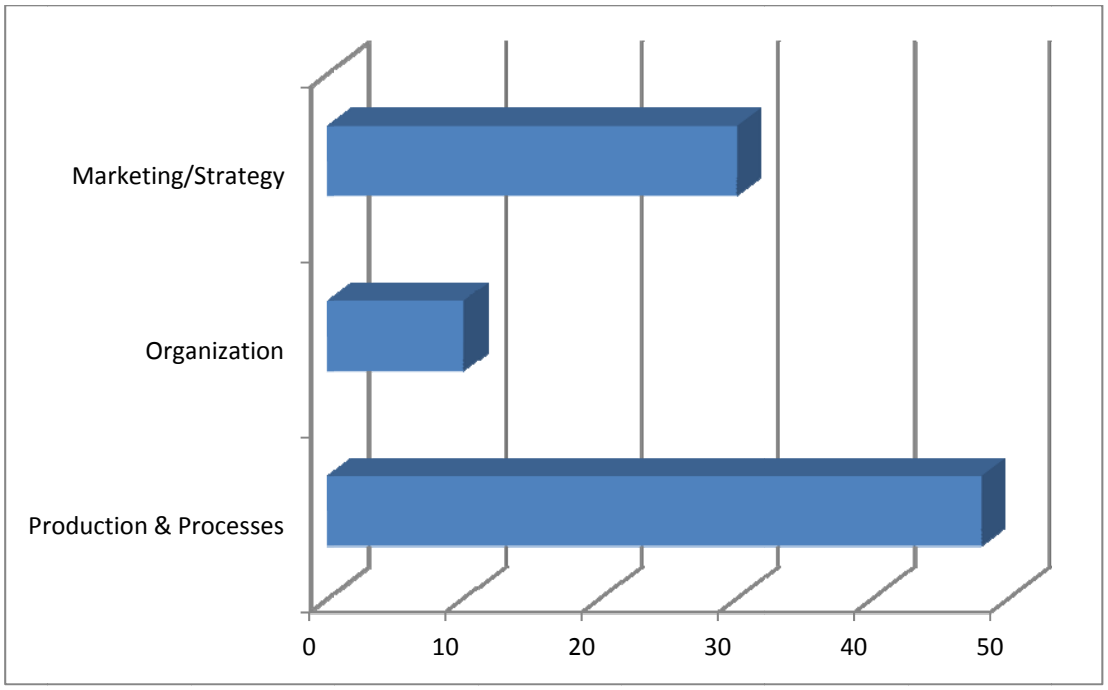


Graph 9: Main sources of innovation

Regarding the innovation management and organization, when innovation activities are organised *internally* in company, 45 enterprises think that the responsibility is embedded within the organization while only 6 declare that the responsibility represents an additional task, not continuously foreseen in the organisational structure. In case of innovation activities *externally* organized, the main kinds of collaboration used are represented by cooperation with research centres/universities (29 answers), cooperation with consulting companies (22 answers) and cooperation with other enterprises of the same sector (10 answers)

This cooperation deploys at national (29) and regional level (24), and rarely at international level (4). In this case some enterprises gave more than one answers, being possible to act with different kinds of cooperation.

This section ends investigating the interest to innovate or purchase innovation and research results in the future in certain areas of activity. Almost all the interviewed expressed a positive interest towards innovation by purchasing research results or carrying on innovation. Only one enterprise answered negatively. The main attractive areas result processing and production, followed by marketing/strategy.



Graph 10: Areas of interest for innovation in the future

2.3.3 SECTION C - COMMITMENT TO TECHNOLOGY

In this section entrepreneurs and/or managers have been asked to express and describe their production processes, the key technologies applied in their processing cycle, the knowledge level inside their organization, last the new products and processes. It should be noticed that this part of interview appeared a little bit difficult and some people felt scared about this matter, giving fair or brief reply, with a low level of detail, trying to be quite approximate and in some case not answering at all.

Nevertheless these difficulties, we can resume a framework of technologies applied by these sample of Apulian companies in the different food chains.

The following considerations could be made regarding the technological perspective by food chains:

- The **safety assurance** is important in all the food chain analyzes, but the need is very high and critical for the food conserve sector as well as in that of vegetables transformation (especially in the production of fresh cut). In these sector, as and in milk-based products too, request for time saving services or for increasing shelf-life duration are numerous.

- The attention to **quality features**, like taste, odor, color, texture and all other sensory aspects has always been primary in the food industry. In Apulia it is particularly strong in the wine industry as well as in the dairy industry. In these compartments is more evident the consumer's ability to recognize differences in the products related to sensory attributes, arising a more sophisticated market demand.

- The attention to **water and energy saving** problems is rather generalized and motivated by the growing impact of these items on production costs.

- The request for interventions to reduce the **waste disposal** costs or to enhance the by-products is widespread especially in the oil.

- The link between **diet and health** is becoming more and more central role also in the market choices. In Apulia the needs to improve the food supply with light products or functional foods are growing especially in the cereals and milk – dairy products. In the milling industry,(high advanced sector, characterized by local presence of large firms and plants, and some small and medium-sized enterprises too) new technologies using raw materials and/or producing ingredients, are very important, especially with reference to functional foods. The application of innovative techniques that could modify manufacturing processes preserving the most nutrients, could give a further innovative boost to food sector.

- In the field of **fruit and vegetables** and conserve the primary interest is to foster a sort of technological upgrading: stabilization technologies significantly reducing the thermal damage, such as high pressure and microwave applications, could enable significant growth for the largest industrial firms . Moreover, other technological needs are represented by energy consumption rationalization connected with the need of

effective cold chain maintaining, innovative packaging, production of optical sorters or machines better allowing the production control processes.

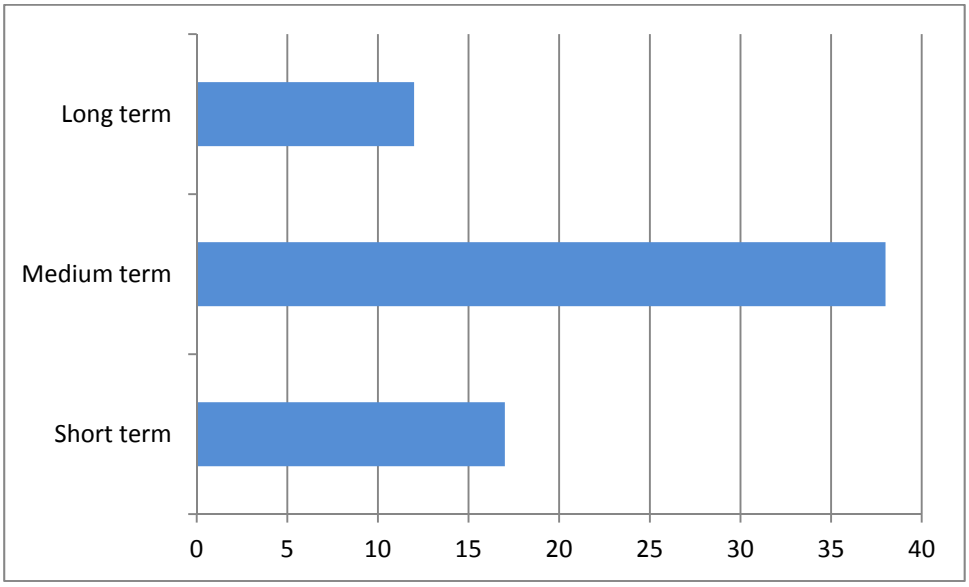
- In the **wine industry** are highlighted problems that could be largely solved by adaptation and/or modernization of facilities: very important for this purpose are also the development of innovative procedures aimed at enhancing autochthonous wine species and experimentation in biotechnology, such as selection of yeasts and lactic acid bacteria as fermentation starter and enzymes as processing aids, to the benefit of both health and sensory quality.

- The **oil industry** seems to have good level of technology even in small companies, with the exception, for the latter, in automating need in the bottling process.

The second part of this section aims to know the effort and its entity, in terms of **economic and financial resources as well as human resources addressed to Research**, **Development and Innovation** in the past and the future by companies. Unfortunately the 16% of interviewed did not give any answer, being scared to make public their own economic data, while the majority of companies omitted the data on financial expenses about R&S. About 10% of the sample (12 companies) clearly declared that no internal financial and human resources committed to research and innovation.

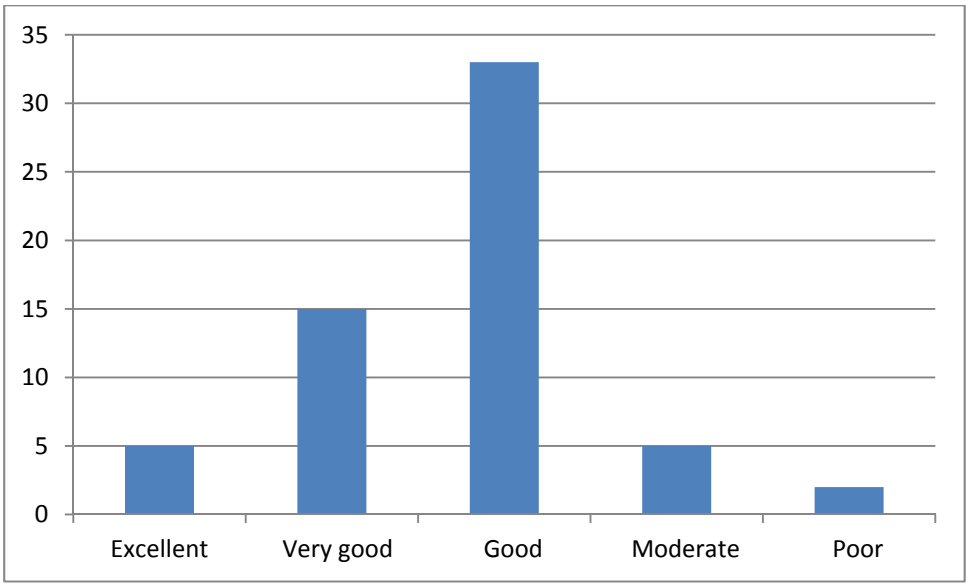
Regarding the **economic resources for R&D**, the 46% of companies declared that these are less than 5% of annual income and the human resources engaged in research activities are really low counting few units. Only in 12 cases the financial resources represent more than 5% of total annual income, but these data are influenced by the consistent quota (more than 50% annual income) addressed by technological firms, that naturally found the core business on innovation.

The **strategic planning timeframe** results to be at medium and short term, really low at long term, as shown in Graph 11. We can assume this positive information, considering the current economic scenario of crisis, in which the short term horizon appears the principal one.



Graph 11: Strategic planning timeframe

The **ratio of technology expertise knowledge to the appropriateness of strategic decisions** applied in the companies is shown in the graph 12 and it seems in correlation with the companies dimension. It can be affirmed that the "excellent or very good" ratio has been expressed by those companies having a consistent dimension (medium/large), while the "moderate and poor" came out mainly by micro and small enterprises.

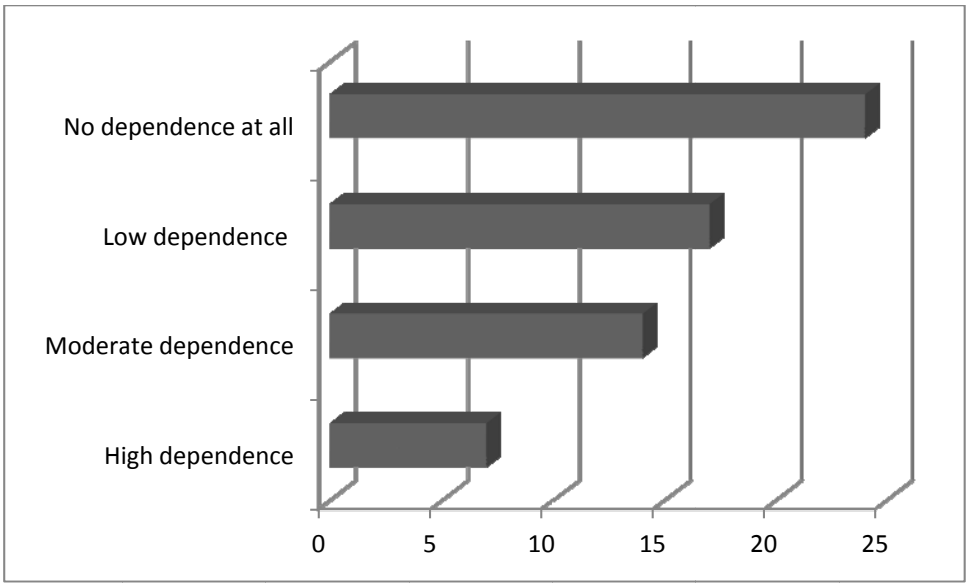


Graph 12: Ratio of technology expertise knowledge to the appropriateness of strategic decisions

Another aspect of relationship between companies and innovation players is investigated in this section, where details (description and names) of *existing R&D partners* (other companies, competitors, subcontractors, customers, research centres, universities) are asked, to really know the existing and concrete partnership in the innovation process. In Apulia this link with these body seems to be weak or not directly related to strong and permanent relationships, and it is related to research centers, University of Bari and Foggia, consulting companies. It should be noted that the "research partners" as indicated and involved in this process are mainly referred to those local laboratories of analysis normally cooperating for quality control of raw materials during the production process. It's clear that theses labs could not be intended as research centers, anyway this information shows a weak link with external expertise oriented to research in some way.

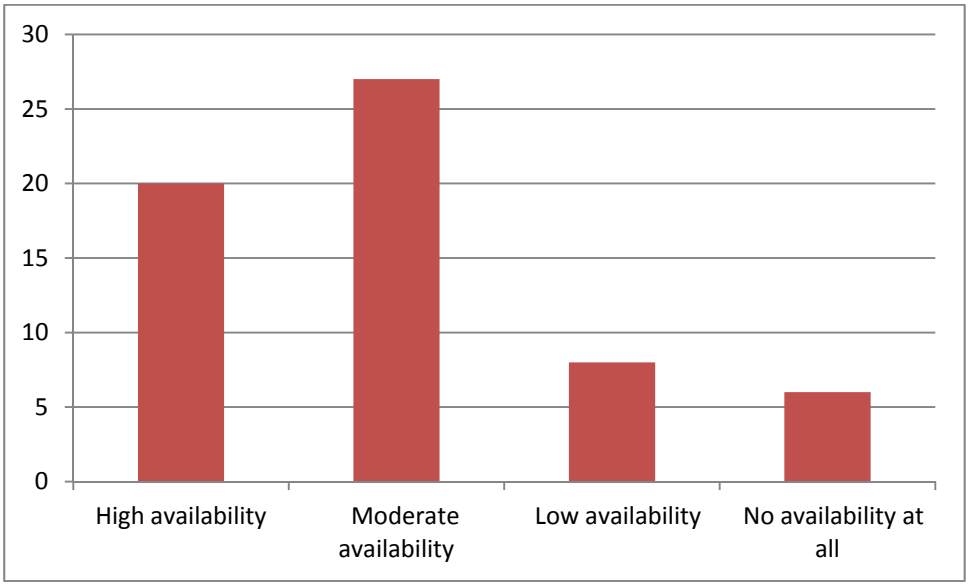
Another key indicator of research level in agrofood companies could be expressed by the **level of the company's dependence on external technical personnel** related to the sector.

The Graph 13 shows the soundness of this link, appearing very weak and low, indicating that the enterprises are not really oriented to hire external resources with technological skills and expertise, probably due to additional expenses and incurring problems afflicting their organization.



Graph 13: Level of the company's dependence on external technical personnel

This trend is confirmed by results obtained by the next question asking the level and availability of *skilled labour* in companies needed to make technology innovation, focusing on internal Research and Development activities. In this case the majority of firms expressed a positive situation in terms of skills present in their organization, stating a high and moderate availability.



Graph 14: Level and availability of skilled labour in companies

Regarding the technological barriers, few enterprises declare that the technological level in the agrofood sector represents a key factor to be considered as a significant barrier: 46 enterprises think that no technological barriers exist to enter in their market, in opposition to 11 contrary answers. Anyway, many interviewed firms recognize that the **core technologies** should be considered very important for a future diversification in terms of market or products (36 answers), while 22 firms expressed a negative answer.

In conclusion, we can assume that these results are representative of the regional scenario of agrofood sector, taking into consideration that the sector and the market are mainly focused on handcraft tradition and quality of raw materials, more than on competition based on a continuous product and market diversification and research and technology investments.

2.3.4 SECTION D - INNOVATION & TECHNOLOGY PROJECTS

This part of the questionnaire aims to know in detail which kind of projects are being carried out by Apulian agrofood enterprises, but also in this case the interviewed companies' representatives have been not completely sound and complete about particulars.

Some f

Some companies preferred not to answer or to give appoximate information and explanations about their projects: these data are referred to those enterprises which presented at the beginning of interview their own involvement in innovation projects, but when asked to give more details such as project name, objectives, budget, team of resources, research theme and activities) they have been almost superficial.

Anyway, 26 enterprises have been involved in while more than half of sample (35) no and the scenario seems to be more comfortable considering information about the **innovation technology projects** carried out in the **past 5 years** (question D1).

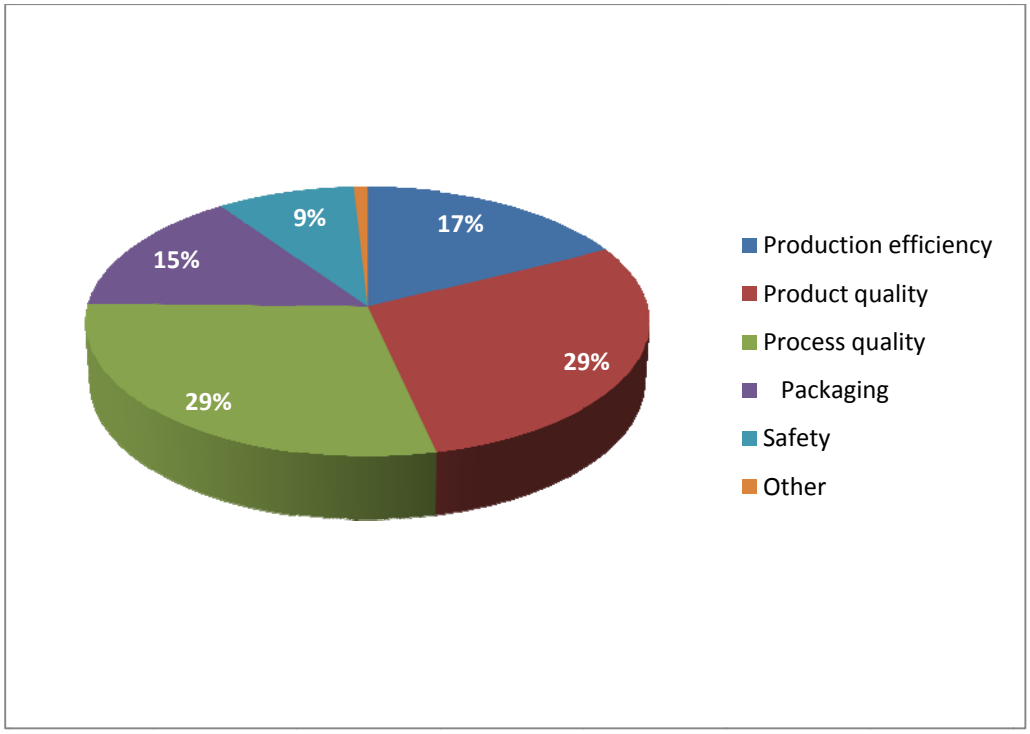
Even if a quantitative resume could not be exhaustive, because of the obvious differentiation of projects, it can be stated that 13 projects were addressed to develop and obtain a new technology and other 13 to develop a new product. The average duration of the projects is about 18 months, shifting from one to three years. In the 73% of cases (19) the agrofood enterprises requested external expertise, represented mainly by regional and national consultants and experts. In total, the projects respected the initial requirements reaching their goals and obtaining good outputs and results, with a good level of satisfaction expressed by enterprises and their partners. Only an exception was found about the effectiveness of the projects, specifically an enterprise obtained weak results and not consistent with the financial effort.

Having a look to the current year, on the other side, 20 enterprises affirmed to be actually involved in technology innovation projects, while 39 are not involved in. The recent ongoing projects have an average duration of 18 months, 6 projects aimed to develop a new technology, 11 addressed to develop a new project, in cooperation with national and regional external consultants in 11 cases.

In general, it can be observed that the larger and more important companies result innovation-friendly, and ready to invest their resources in innovation projects. Anyway, also some positive exceptions were found in this survey, represented by few small enterprises which are being involved in this kind of project too (i.e. La Bella di Cerignola and Fiore di Puglia Spa).

The innovation seems to attract the agrofood enterprises: when asked if interested in promoting an innovation project in the short to medium term (question D3): while only 9 declared to be not interested, about 75% of enterprises expressed their positive approach (47), mainly declaring to eventually request an external specialized support (31 yes, only 16 no), represented by a technical/professional support or by a technical partnership able to share

financial and economic efforts. The projects objectives to be addressed are represented as follows in the graph below, with particular attention to process and product quality (equally 29%).



Graph 15: New projects objectives to be addressed

More than half of companies (57%) declared not to have a precise idea for the development of an innovation project, while 16 of them affirmed to have a new one, but without any specification and details about the contents of their idea.

Two **main obstacles** were seen by companies in participating at innovation projects (D5): the economic effort and the bureaucracy. The first one is related to a deficit situation of the overall economic scenario, while the second one is related to very expensive bureaucratic procedures and practices to be followed to access to national and regional funds sustaining the innovation, both in preliminary phase (proposal preparation and submission) and in administrative and monitoring one (statement accounts and audits). The overall economic situation doesn't allow to address directly funds to R&D, and other economic factors, such as prices growth of many raw materials and public fund scarcity for research.

2.3.5 SECTION E - POLITICAL CONTEXT

This section is focused on the **running political initiatives** and actions supporting the agrofood enterprises, aiming also to have a summary opininon about the efforts by participant companies.

The existing policies were considered *favourable* for this sector and supportive for being successfully operative in Apulia by 31 companies in comparison with remaining 27, expressing on the contrary a negative opinion (question E1).

According to 36 companies, in Apulian region the incentives for agrofood sector exist, while for other 17 ones do not exist. This information is quite contradictory, expressing the different perception or information by users about policies. Thus admitting to be aware of running incentives and policies, the majority of these enterprises (58%, 21) underline that the current measures are not really *particularly efficient* for motivating research and innovation activities in companies, while only 12 consider them efficient. It could be observed that, regarding this first part of section, answers resulted often different: many companies consider favourable the existing policies to operate in agrofood sector in Apulian but are not aware about incentives. Many other companies know the incentives expressing contemporarily a general negative opinion about the effectiveness of policies at European, national and regional level.

In conclusion, a *massive financial actions/support* as well as a *bureaucracy simplification* were expected for the future as of measure/ incentives from political side for the agrofood sector.

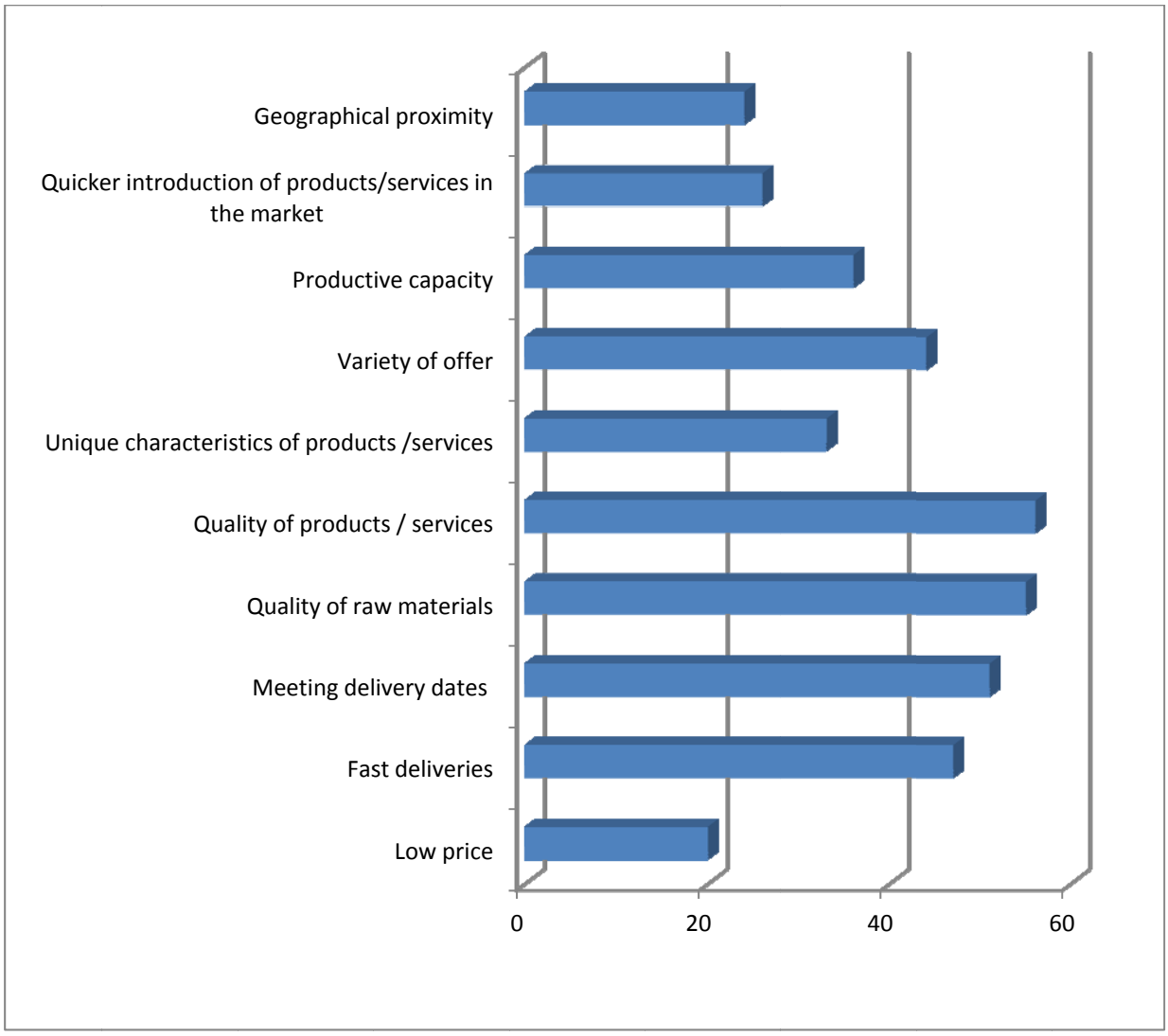
2.4 PRELIMINARY SWOT RESULTS

The preliminary results of SWOT analysis are presented in the table below, listing the first 5 factors per each area indicated by companies and No of answers received. It should be noted that for this section it was allowed to give more than answer.

Strengths	***Weaknesses***
1. Product & Process quality (51) 2. Adoption of highly innovative technologies (26) 3. Market position (23) 4. Product diversification (23) 5. Highly skilled personnel (23)	1. Low financial capacity (32) 2. No dedicated R&D Unit (18) 3. Poor networking with public actors (univ., research centres) (17) 4. Lack of time (15) 5. Poor networking with private actors (SMEs, large companies) (12)
Opportunities	**Threats**
1. Increasing export trends (40) 2. Availability of R&D funds for research and innovation (33) 3. Strong regional/national product identity (31) 4. Networking possibilities (associations, technologic platforms) (21) 5. Existing RTD & innovation programmes tailored to the sector (18)	1. Bureaucracy / Regulation barriers (36) 2. No political long-term commitment to the sector (33) 3. Scarce funding resources for R&D available (29) 4. Expensive IPR (28) 5. Insufficient incentives addressed to the sector (24)

First of all, the interviewers were asked to indicate a list of potential factors influencing the strategic positioning of agrofood companies. These expressed different preferences, really saying that the highly important factors are represented by quality of products and/or services, as well as quality of raw materials. Issues related to logistic process are very important too,

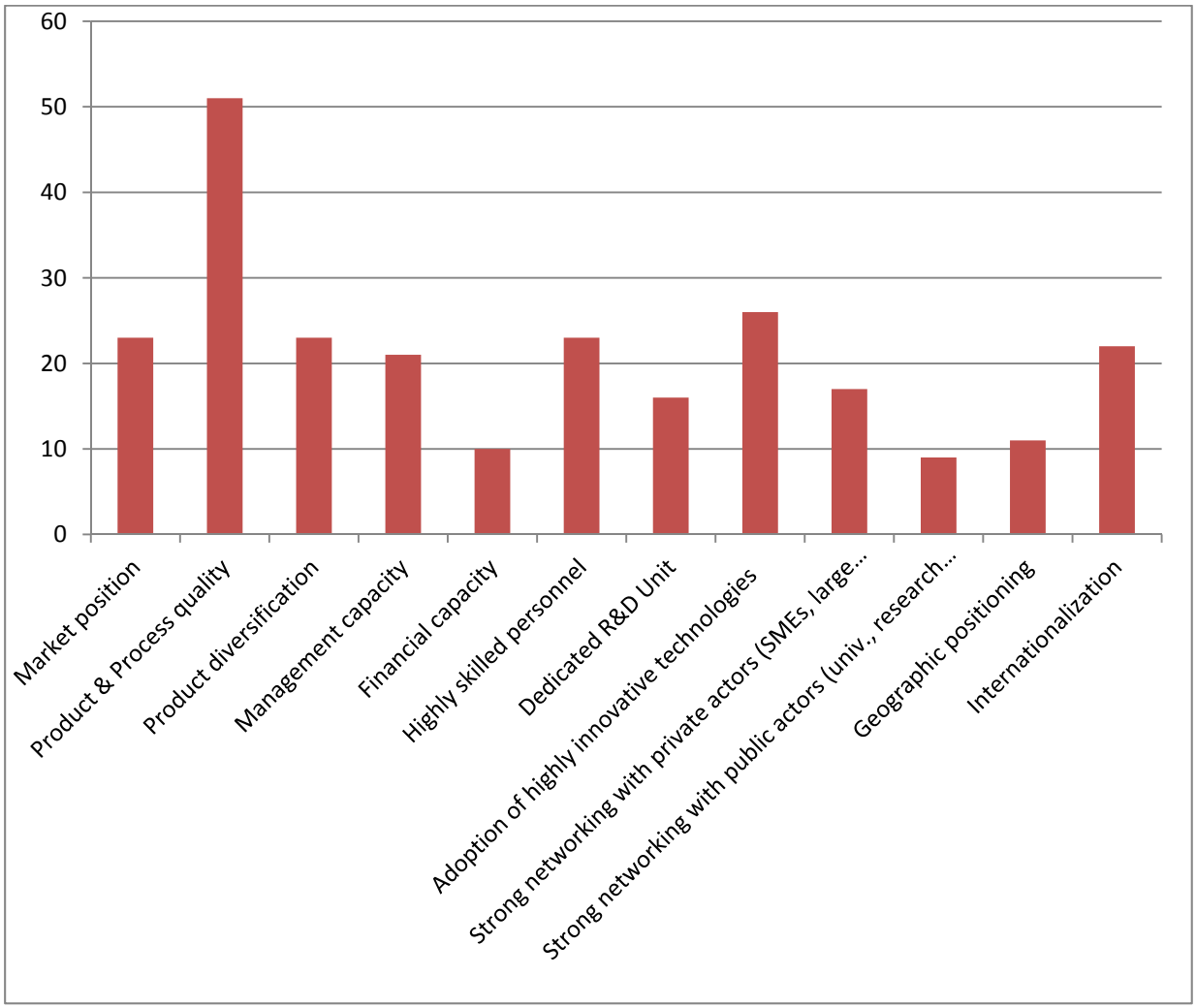
such as the meeting of delivery dates or delivery fastness (Graph 16). The low price is not foreseen as strategic factor at all, listed as the last one, indicating in this way that the competition is more based on the inner quality of the final product (obviously influenced by the raw materials quality) and on the "service" component, (delivery), concurring to quality itself for the nature of agrofood product, and diversification (variety of offer), thus expressing an overall market-oriented approach and a comprehensive attention to customer satisfaction.



Graph 16: Relevant factors for the company's strategic positioning

The SWOT analysis results very interesting giving an idea about the approach by companies towards the market and agrofood sector perspective. Considering the strenghts, interviewed companies indicated their product and process quality as the more important

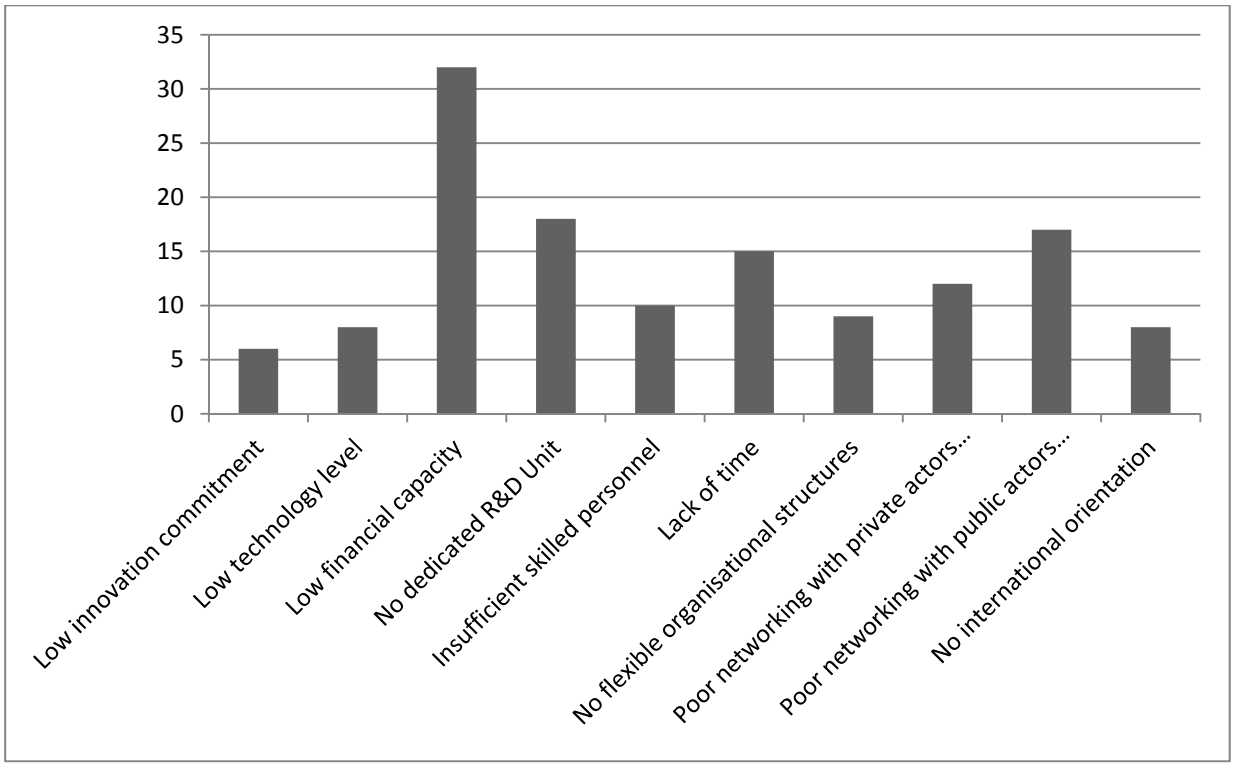
factor, followed by their capacity to adopt new technologies and realize innovation processes. Other relevant factors are their market position, evidently considered good and able to drive competition, their product diversification and the high skilled personnel, and internationalization, all factors relevant for the market. It seems that these companies are generally not very strong for their financial capacity and geographic position (Apulia is a southern region, far from national important nodes), neither for their partnerships with the local players (private and public ones); anyway these data are comfortable because indicating a beginning cooperation with territory useful for competitiveness.



Graph 17: Companies STRENGHTS

The information collected about the weaknesses confirm some structural difficulties of these companies, indicating mainly their low financial capability as critical, and the absence of

dedicated R&D unit in their organization. Others weak factors are the companies capacity of integration with territory, confirming that these aspects could be considered important and strategic for their competitiveness. The different answers obtained for strengths and weaknesses are clearly related to the different enterprises dimensions: the small and micro firms demonstrate difficulties to have internal R&D unit or international orientation or high technological level/innovation commitment, suffering often for financial capacity.



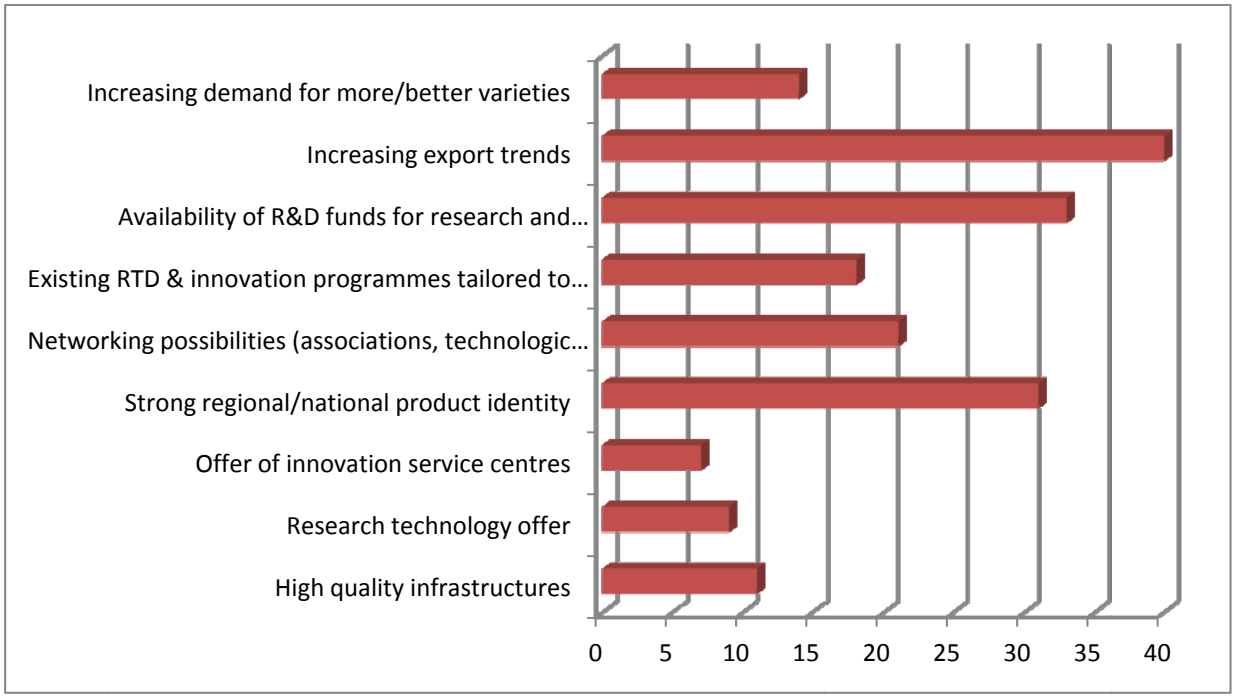
Graph 18: Companies WEAKNESSES

It's quite curious that listing their strengths and weaknesses points, the companies are more oriented to express their best characteristics than the weak ones (the total amount of answers for "strengths" have been 252, the total amount for "weaknesses" have been about the half, only 235!), thus probably indicating a positive self-consideration.

Finally, opportunities and threats have been investigated, focusing companies attention on external aspects related to sector and environment. The increasing export trends are considered as the most important factor to enlarge market shares in a profitable way. This information confirm that small enterprises are mainly local market-oriented (only in some

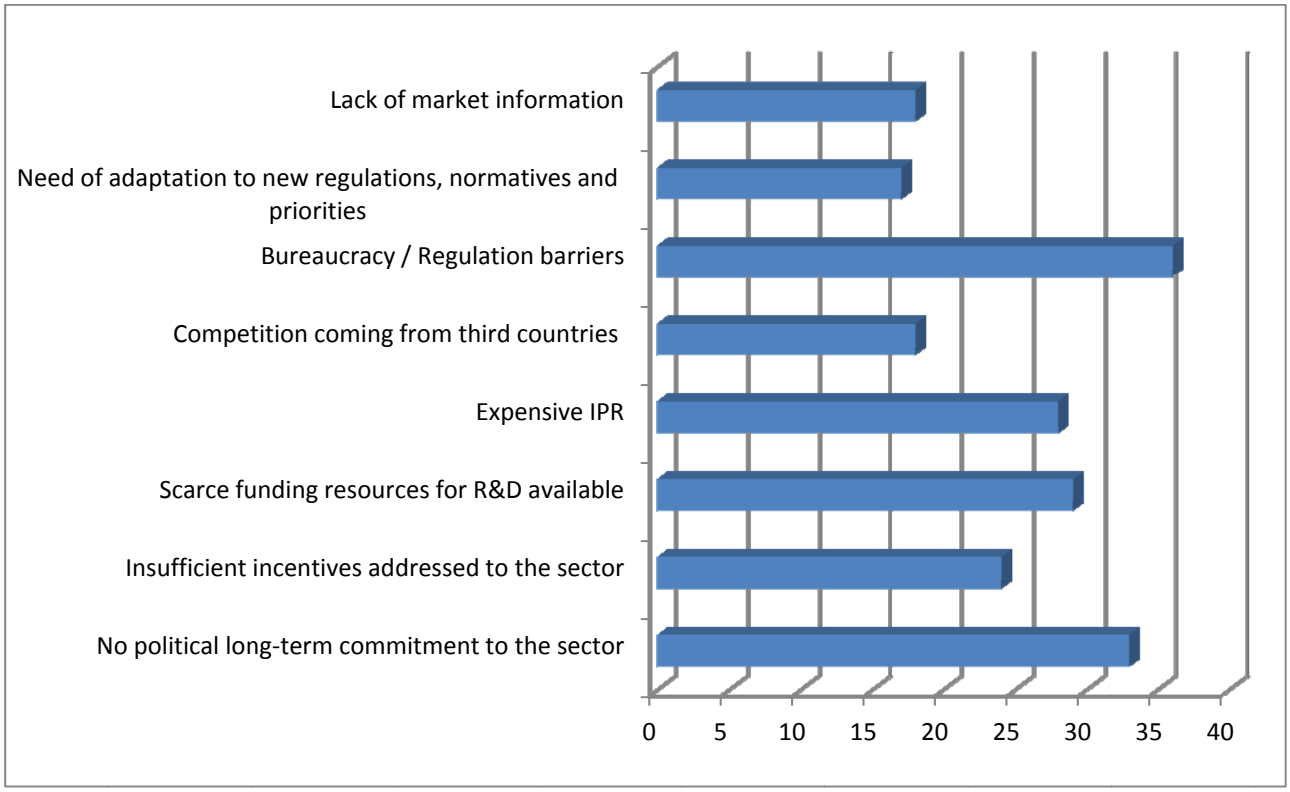
cases the national markets are served) and foreign markets represent really an opportunity. Recent data on Apulian agrofood exports indicate an encouraging growth ratio (+17% in June 2012).

Also the availability of R&D funds together with existing regional programmes addressed to agrofood chains are perceived as possibility to reinforce the competitiveness, accompanied by a strong regional/national product identity, that is very important in this field. Other opportunities by few companies are considered those factors regarding the potentiality of the territory to sustain the sector by offering innovation services as well as research and infrastructures.



Graph 19: OPPORTUNITIES according to companies

On the other side, bureaucracy and regulation barriers together with no political long-term commitment to the sector are seen as strong threats for Apulian companies, confirming the previous opinions emerged during the survey. Again, low availability of funding resources for R&D, insufficient incentives addressed to the sector and expensive IPR costs are considered the main barriers.



Graph 20: THREATS according to companies

These technological audit show that in the Apulian agrofood sector the companies are potentially oriented to and attracted by technological improvement, indicating a sort of business dynamism and attention at integrating new technological knowledge into existing organization. Nevertheless companies affirm to be ready at identifying needs for product and process innovation, however, rarely they are ready to express a defined and concrete request for new technologies, even if they set specific cooperation with research entities in order so solve some punctual problems.

The Apulian industry consists mainly of small and medium-sized enterprises, applying quite simple industrial processes and paying attention to the “tradition” of the food product (intended as inner product features strictly linked to territorial aspects or determined by, such as variety, climate conditions, agricultural practices etc). This behaviour is typical of an entrepreneurial class by handcraft origins, and actual strategies seem often not to be appropriate in the modern production and consumption context. In particular, regional companies rarely realize and sell their own brand products, and rarely develop relevant quality assortments or adopt internationalization strategies; in some cases they take contacts with buyers or dealers operating profitable markets. In addition, any innovative behavior follows

such detailed paths that become a sort of additional barrier for a wider promotion of innovation. The equipment or plants provision, also representing a mean for the transmission of innovations in traditional sectors, results weakened due to companies distance from the market; most of new equipments is seen and experienced as a business modernization (perhaps obtained by public grants) not coming up by attempt to competitive repositioning that also requires improvement in procedures, technologies and organization. Moreover, very often, the acquisition of machinery does not allow you to customize to the needs of innovation and markets. Moreover, the equipment purchasing does not allow the personalization of innovation according to enterprises and markets needs.

Another aspect characterizing the local companies is a continuous product and process improvement or re-styling, that result never properly designed and structured by entrepreneurs, but realized inside the operating processes, thus remaining quite hidden in the internal organization and not able to be expressed and known in the economic system (neither attracting public funds).

Another point emerged by technological audits is referred to the cooperation with the research public or private system. About half of the firms surveyed developed in the past, or are developing, partnerships with public research centers or private. Usually, these collaborations have been asked or pushed by the researchers themselves, who need business partners to develop and complete their research projects. Few companies have shown very active in research projects or have sought directly specialized collaborations to solve specific business needs. In this context many companies shown not to having a deep knowledge of potential public financing measures; in addition, they declared not be interested in public funding mainly because of the long bureaucratic processes.

In conclusion, it seems important not only o push the food industry towards market driven technologies in order to respond to the real demand in the region, but also to facilitate contacts between industry and the research world.

2.4 CONCLUDING REMARKS

In this present work the analysis was focused of the innovation process in the food industry in Apulia, in order to try to identify the demand for innovation in key food chains by needs and technologies analysis.

The Apulian agrofood industry system seems to move towards the creation of food products supply based on specialization as key factor to play in a large competitive market, being guided by market drivers enhancing and adding value to critical factors already existing differently in each chain.

The more potential competitive food chains seem to be those having a strong distinctive specificity, such as the traditional chains of wine, olive oil, and vegetables, wheat based products , cereals, dairy products. For these chains the companies may use existing competitive advantages arising from product characteristics (quality, diversification), organization (production and marketing), brand recognition and ability to evoke "Made in Puglia".

The first conclusion that can be drawn from the analysis is the presence of a substantial demand for innovation, mainly unspoken (or latent). During the interviews companies expressed other real needs, both for the improvement of the quality of products supply and for productivity increase. Moreover, they shown having a deep knowledge and awareness of manufacturing processes and products in order to improve their capacities/characteristic, even if they expressed a minor capability to act really and find a way for operating in this sense, as well as severely limited low financial resources..

This analysis allowed to fully experience the difficulties of small and medium-sized regional companies to transform their request for improvement in a potential pathway (internal or external) of innovation. Companies in which it was clear what and how perform innovative actions were extremely rare and often when high skilled and specialized human resources worked inside (generally in large enterprises).

The more common technological issues and needs concerned mainly the maintenance of quality standards, the higher manufacturing capacity, the food safety, the ability to product diversification to meet the -changing needs of the market and the reduction of energy and water consumption.

These technological lines identified represent the content of requests for interventions based on the needs expressed by the industry. Anyway to respond to these requests of intervention and create a serious path towards innovation, it could be useful to enforce or

create a close relationship between companies and Research & Development bodies, that result not completely developed or weak in some cases. This should be the only encouragement to lead the Apulian agrofood sector to the technological innovations bringing a significant competitive advantage to companies.