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Final Thesis
**Growth Strategic Models
in the sector of
Professional Equipment
for the Food Service**

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Hidden champions are small and medium-sized enterprises unknown to the general public but through their strong specialization on a niche market, they are ranked top in the world.

They export most of their products, contributing significantly to the economy of their countries, and are more successful than the average.

Hermann Simon

Abstract

The white goods sector represents one of the hallmarks of the Italian economy; it is considered the second manufacturing industry after the automotive. This sector is fragmented into a wide range of products such as chimneys and smoke ducts, hoods, air-conditioning and heat pumps, large appliances, small appliances, freestanding cookers, electric boilers, professional equipment for the food service and so on. The dissertation examines in depth only one of them, the segment of the Professional Equipment for the Food Service.

Although the manufacturers of Professional Equipment represent a market niche and they generate only a small share of the total turnover of the white goods sector, the Confindustria association CECED Italia identifies the Professional Equipment as the healthiest branch inside the white goods. Unlike other sectors, the figures show how the domestic production of Professional equipment for the Food service has not suffered from the arrival of the Low Cost Countries in the international scene. Conversely, the Italian manufacturers have been able to increase their competitiveness and expand the presence on world markets.

Since forever, Italy is recognized as the homeland of the good eating and drinking with its tasteful cuisine. The world is full of typical Italian places like pizzerias, restaurants and bars where people go to taste a piece of Italian culture. The manufacturers of Professional equipment are part of this cultural movement: they act as architects for handing down and spreading knowledge and desire for the Italian taste through an unquestionable know-how in manufacturing Coffee machines, professional Kitchens, Refrigerators, Gelato machines, Ice makers, equipment for Bakery, etc. These products are the symbol of one of the sectors of the Made in Italy – Food – best known and appreciated in the world.

The analysis of the manufacturers of Professional Equipment is complex due to the different products included in the sector. After having studied the dynamics and the profitability levels for each product family in a time interval of 5 years, the dissertation presents some successful business cases identified for their best economic performance both on the domestic market and outside the national borders, and for their constant flux of innovation in the product offer.

Through the study of these successful companies, leaders in their strategic business area, the dissertation research aims to draw an innovative business strategy built on a new value proposition driven by unique Design, cutting-edge Technology solutions, and a high level of Quality in terms of product and working processes. The theoretical model resulting from this research highlights the Design, Technology and Quality as the three pillars on which companies can build a continuous process of product innovation.

Index

Introduction	9
<i>The “white goods”: the paradox of an industry for long time flagship of the Italian manufacturing</i>	11
1. Domestic and Professional appliances: from past glories to a deep crisis	11
1.1. <i>A wide range of products</i>	12
1.2. <i>The second engine of the Italian manufacturing industry</i>	14
1.3. <i>An internal crisis and the threat from the Low Cost Countries</i>	17
1.4. <i>Differentiated scenarios between product segments</i>	35
<i>The Hidden niche of Professional equipment for Food service</i>	45
2. An overview of niche manufacturers of Professional equipment	45
2.1. <i>The research method</i>	46
2.2. <i>The Database</i>	50
2.3. <i>Nine Strategic Business Areas</i>	58
2.4. <i>Differences in performance between Strategic Business Areas</i>	65
<i>Four cases of fast growing and international SMEs</i>	73
3. Elektra espresso coffee machines as furnishing elements	79
3.1. <i>From the first machine in 1947 to International recognition</i>	79
3.2. <i>Innovative concepts combined with the finest Artisan tradition</i>	80
4. Luxury tailor-made kitchens made in Pordenone	88
4.1. <i>Company profile and products</i>	88
4.2. <i>Design flexibility and Quality Artisan</i>	90
5. Berto’s, the Italian culinary art in professional equipment for cooking	95
5.1. <i>A company-flagship of the “Made in Italy”</i>	95
5.2. <i>Design, technology and manufacturing aspects</i>	97
6. Irinox, a pioneer in the Technology for the Refrigeration	105
6.1. <i>Twenty years History of Steady Growth</i>	105
6.2. <i>Irinox Technology, a world benchmark for innovation and research</i>	107
<i>Hidden Champions for a new Model of Strategic Growth</i>	115
7. The three pillars that bind the Hidden Champions	118
7.1 <i>Design of Bespoke products with a strong Italian Style</i>	118
7.2 <i>The Technological innovations aimed to increase the performance</i>	120
7.3 <i>Quality innovation: coexistence of Artisanship and Digital manufacturing</i>	122

Annexes	125
<i>Annex 1 – The identity of territories</i>	
<i>Annex 2 – The commodities codes of ATECO 2007</i>	
<i>Annex 3 – List of Italian manufacturers of Professional equipment</i>	
<i>Annex 4 – Mapping the Professional equipment segment (2013)</i>	
<i>Annex 5 – Survey template for the selected Business cases</i>	
<i>Elektra Srl</i>	
<i>Luxury tailor-made kitchen made in Pordenone</i>	
<i>Berto's SpA</i>	
<i>Irinox SpA</i>	
<i>Charts, Tables and Figures</i>	155
<i>Bibliography and Web references</i>	159

Introduction

The sector of the domestic and professional appliances is one of the most emblematic expressions of success reached by Italian creative entrepreneurs, becoming the “factory of Europe” since the 1950s and the second manufacturing sector of the Italian economy, after the automotive. However, the scenario presented in the introductory chapter describes the paradox of a sector relevant in terms of turnover and workers employed but, in the last years, subjected to a deep crisis of competitiveness and continuous waves of delocalization that lead the last Italian producers towards Low-Cost Countries.

Although the picture is grim and the sustainability of the sector in the short run is at stake, a subarea of manufacturing into the white goods – the professional equipment for the food service – of which Italy is a world leader, shows production figures and economic data in countertrend. The aim of this dissertation is to go through the white goods sector in Italy, characterized by an inexorable decline no yet to the end, and to analyze in detail the niche of Professional equipment for the Food service where Italian makers are successful in increasing their margins and growing on international markets.

If in a first part of the dissertation, the sector of Professional equipment has been introduced starting from an external vision of the economic context. The second part takes a top-down approach through an internal standpoint. The scope is to study closely the features of a sector that is immune to the crisis affecting the Italian industry of domestic appliances.

Therefore, the second chapter is the beginning of the analysis and aims to display the sector of Professional equipment by gathering in a database the Italian manufacturers. This database has been built using the source AIDA and collects the financial statements of 341 firms over a time interval of 5 years, from 2009 to 2013. Then, these firms have been distinguished among nine Strategic Business Areas related to different product categories: Bakery production; Coffee machines; Cooking; General equipment; Gelato machines and Beverage dispensers; Ice makers; Refrigeration; Turnkey; and Washing.

Considering the positive trend that marks the segment of Professional equipment for the Food service, a second cycle of analysis will assess the differences in performance among the Strategic Business Areas. The purpose is to identify which product categories have showed the highest growth in the time interval based on the comparison of the average growth in Turnover from 2009, and the EBITDA levels in 2013 per each Strategic Business Areas.

By following a top-down approach, the subsequent chapters will move the focus into the Strategic Business Areas of Coffee machines, Cooking and Refrigeration. These chapters analyze four business cases that, as shown by their success, they can act as driving force for the entire segments. The challenge of this section is to explain the strategic drivers behind the product innovations that have led these companies to achieve an international success. The study of these business cases has been carried out through information gathered on internet, interviews of experts directly involved in the business processes, and factory tours when it was possible.

Finally, the conclusive section summarizes the innovation drivers and the processes activated by these companies in order to build a new value proposition and a solid strategic model of steady growth. The noble aim proposed by this research is to suggest and shape what the future for the Italian manufacturers (not only of Professional equipment) could be for the next decades.

In drafting the chapters has been privileged a synthetic argument of numbers also with the widespread use of charts and tables in order to make easier the reading. This choice has required a considerable effort, first in the research of relevant data for the phenomenon and, second in their elaboration and selection of the graphic forms more effective for the representation of interest. The main obstacles were the data retrieval for the segment of Professional equipment because it is a subsector (group) of a large sector (domestic and professional appliances) and the distinction of the selected companies among the nine strategic business areas. The source used are both national and international: between the nationals there are ISTAT, CECED Italia, AIDA, the Bank of Italy and UNIONCAMERE; among international there are EUROSTAT-Structural Business Survey, UN, and Wikipedia.

The “white goods”: the paradox of an industry for long time flagship of the Italian manufacturing

Domestic and Professional appliances: from past glories to a deep crisis

Throughout the last century, Italy has succeeded to build a worldwide leadership and to become the "Factory of Europe" in the field of Domestic Appliances and Professional equipment. Nowadays the scenario is completely changed because what the economic data explain is an inexorable crisis of competitiveness of the Italian manufacturing of white goods.

Since the beginning of the new century, the industry has been trying to fill the gap of competitiveness through investments in product and process innovation able to increase the value-added in the offer of products. However, over the past three years, the situation has further deteriorated due to the considerable contraction in demand (as consequence of the financial crisis and the sovereign debts) and the entry in the market of new products of comparable quality from countries with low labor costs (LCCs). Before the fears of survival have concerned the medium term but today all these implications threaten the sustainability of the Italian white goods factory also in the short term.

The aim of this first chapter is to present the health of the white goods sector. The support of figures will give an evidence of the degrowth and the most critical issues that have characterized the sector in the last 40 years. About the data of the white goods sector, the research resorted to the studies of CECED Italia¹, the appliance-makers' trade body, that is also part of a network of equivalent European associations. In order to develop a comparative analysis and to provide accurate evaluations on the historical trends, the research is focused mainly on a defined time interval of five years, from 2009 to 2013.

¹ CECED Italia is part of Confindustria and federated ANIE. It is integrated into the European network of associations that constitute CECED (Household Appliances) and EFCEM (Professional Equipment). The association was founded in 2006 as a continuum of the previous National Association of Domestic and Professional equipment.

1.1. A wide range of products

The starting point of the chapter is the definition of the white goods sector and its boundaries of representation. This clarification will help to distinguish which product categories are included in the statistics of the Italian manufacturing of white goods.

The result is a picture of a highly fragmented sector in which different families of no-comparable products are placed within the perimeter of the white goods. Each of them should deserve an independent attention because they represent market segments with different end-users, preferable geographical destinations and specific sales trends with variable margins.

Using CECED Italia as a reference point for the analysis of the entire white goods sector, nine families of product are identified under the following groups:

- Chimneys and Flues;

Although the Italian manufacturers of chimney and smoke ducts are world leader, they suffer the decrease of new constructions and renovations. Moreover, a lack of clear and uniform laws on the adequacy of smoke systems allows the entry in the market of new competitors of low quality products and of uncertain security.

- Hoods;

The Italian hoods are recognized worldwide thanks to superior quality and an expression of design in line with the best-known “Made in Italy”. The manufacturing is concentrated in industrial districts so the supply chains contribute to keep the offer on high quality, unique design, and product reliability.

- Air-conditioning and Heat pumps;

The majority of the manufacturing is offshored while the management and the project centers are still in Italy. The decision to maintain in Italy the strategic functions was necessary in order to feed the steady demand of innovation and to exploit the rooted Italian expertise.

- Components;

The subsector of components is one of the strengths of the Italian appliances industry because it assimilates high specialization and expertise. There are over one hundred companies, mostly SMEs, specialized in serving the appliances industry and other sectors.

- Large appliances;

Over decades, the Italian manufacturing of large appliances has carved out the primacy of the European manufacturing hub. This long process of specialization has allowed establishing high expertise that nowadays, crossed by a deep crisis of the sector, they are the only lever for continuous product and process innovations. Even though the scenario is critical, in the last ten years national firms and multinational subsidiaries have invested more than € 3 billion (the most important share of investment in Europe) with the scope to maintain the national excellence in competencies and R & D.

- Small appliances;

In the Small appliances subsector it is common to find a corporate structure with the production moved outside the national borders while design centers and top management for national brands are kept in Italy. Four main segments compose this subsector: home, cooking, person and welfare.

- Professional equipment for catering and restoration;

The Italian manufacturers of catering and restaurant equipment maintain their global leadership with a stable production based in Italy. The leading distinctive competencies for a global leadership are recognized to a great capacity for innovation, the dissemination of competencies in the entire field of appliances, and the co-penetration with the best food sector in the world. Results and future scenarios remain positive thanks to a deep internationalization of the sector. Based on subsequent analytical considerations, the subgroup of Professional Equipment for the Food Service will be the central object of this research.

- Electric boilers;

The Italian firms manufacturing electric boilers are leaders in Europe. Even though they are subjected to the decline of the construction sector, they pursue research and development in technology innovation for the reduction in consumption. The last

innovations have concerned the application of intelligent electronic controls and the use of heat pumps that decrease the need of electric energy around 70%.

- Biomass heating system;

Also this subsector benefits of the recognition of quality, as a feature of the Made in Italy. New opportunities to boost the domestic market come from new products with high efficiency and from the promotion of biomass by the government (for example wood pellets) within the renewable energy sources. This legislative action may reduce the dependence on energy imports, preserving the environment, and create new income opportunities for firms.

The diversities belonging to the segments within the Italian white goods industry are the basic thought for the development of this dissertation. In fact, the assumption of an overall feature of low competitiveness for the Italian white goods is improperly used to label the entire sector. As will be demonstrated in this dissertation, there are also specific segments characterized by positive performance that, for various reasons like lower size in terms of turnover, workers employed and even brand recognition compared to the more famous brands of large appliance companies, they lose relevance and they are mixed under the general scenario of crisis. The crisis of the white goods industry does not represent effectively all product segments included in the perimeter of the sector.

1.2. The second engine of the Italian manufacturing industry

The white goods sector has represented one of the most emblematic expression of the success reached by the Italian creative entrepreneurial spirit. After the World War II, a group of innovative entrepreneurs has led the country to become the “factory of Europe” for number of firms, production volumes, and innovative design.

Porter, in his book “The Competitive advantage of Nations” (Porter, 1990), praised the success of the Italian appliance manufacturers because, after the World War II in more or less a decade, Italy became the leading European exporter of appliances. According to Porter, the growth of the appliances industry were boosted by the increase of the domestic demand for appliances in the 50s and by the consequent technological upgrading of the Italian factories

with specific and automated production plants. In addition, in the beginning the Italian factories produced only low-cost appliances of compact form that were well suited to the needs of the European users while the other European producers considered this market segment low attractive².

Even the Pavitt's taxonomy (Pavitt, 1984) recognized the relevance of the appliance industry for the national economy. The white goods in Italy is part of those manufacturing sectors that for intensity of use of operational factors (labor and capital) are defined as "at high economies of scale" mainly with large firms producing basic materials and consumer durables³.

Unluckily, the snapshot of successful industry described by Porter does not symbolize anymore the actual scenario of the sector. Today the figures describe an involution of the sector: ever since the Italian manufacturing of white goods was considered a hub for the European area to the deep decline and crisis of competitiveness of the Italian manufacturing. Leaving aside the negative trends that pervade in general throughout the Italian manufacturing and considering only the current data in absolute value, the white goods sector still has a crucial relevance for the national economy in terms of turnover generated, numbers of firms, workers employed and level of expertise rooted inside some industrial districts.

In order to describe in detail the white good sector, CECED Italia is the main point of reference being an official source supported by Confindustria. From the website: "CECED Italia represents over 158 companies operating within the Domestic and Professional Appliance sector in Italy, they hold over 90 per cent of the Italian market. CECED Italia is integrated into a network operating in many European countries, addressing to the European Committee of Domestic Equipment Manufacturers with headquarters in Brussels"⁴. "Progetto Orizzonte"⁵, a report published in April 2014, gathers most of the figures used in this chapter to represent the size of the white goods sector in Italy.

From the last publication of CECED Italia, in 2013, the white goods got € 14.8 billion of total turnover of which nearly 60% is attributable to exports. In addition, the white goods sector

² Porter M., The competitive Advantage of Nations, 1990. Chapter two – The demand conditions.

³ Pavitt K., Sectoral Patterns of Technical Change: Towards a Taxonomy and a Theory, Research Policy, no. 13, 1984, pp. 343-373.

⁴ CECED Italia <http://www.ceceditalia.it/>

⁵ CECED Italia, Progetto Orizzonte: Il sistema Confindustria per il rilancio del settore Apparecchi Domestici e Professionali, 2014; published on April 2014.

employs more than 130.000 workers, including both direct and indirect. Nowadays, with these numbers, the white goods sector is deemed the second manufacturing sector after the automotive.

The relevance of the white goods industry is also noticeable through the composition and the distribution of the appliance manufacturers and their satellite activities in the national territory. In this regard, in Italy, the white goods sector is organized primarily in industrial frameworks where the main distinctive features comparing with other manufacturing countries are dense successful integrations between large national companies, multinationals, and SMEs. For instance, some Italian multinationals recognized on the international markets are Candy and Indesit and some famous small and medium companies are Argoclima, Polti, and Smeg.

The strong integration and coordination between activities inside the *value systems*⁶ has contributed to develop and spread highly qualified know how that after it has turned into territorial knowledge. The development of industrial districts or clusters like “The Made in Fabriano, in Pordenone, and in Varese” is the result of what Marshall called the industry localization (Krugman, 1991). In fact, the flows of information and knowledge are intangible, difficult to codify and of questionable measurement. Nevertheless, Marshall proved that innovations and best practices flow quicker and easier when the distances between actors are relatively small, in this way, the entire cluster can benefit and grow⁷.

The Italian expertise rooted within districts has made the Italian domestic and professional appliances the first ones for the quality, together with the German appliances. In the 90s, the Italian manufacturing of domestic appliances and professional equipment reached around 45% of the total white goods sold in Europe by boosting the strong specialization of factories and the achievement of high expertise by workers. Few years later, in 2002, the Made in Italy of washing machines, refrigerators and cooking equipment reported the highest peak of the Italian appliance industry with more than 30 million of units sold.

⁶ The value system or industry value-chain represents the various processes involved in producing goods or services. According to Porter (1990), the value system can extend beyond the boundaries of an enterprise including firms' supplier, firms distribution channels, and the firms' buyer.

⁷ Krugman P., Geography and Trade, 1991.

1.3. An internal crisis and the threat from the Low Cost Countries

Although the sector of domestic appliances and professional equipment was the flagship of the Italian manufacturing for decades, today the figures of the white goods sector paint a picture of an industry under siege.

The strong crisis of the white goods sector can be seen by two different standpoints; both are interconnected to each other. As suggested by the title of the paragraph, one part refers to the decline of the Western-Europe demand and of the domestic market. Instead, the other one looks at the steady loss of competitiveness on international markets in concordance with the entry of new competitors and the progressive relocation of manufacturing centers into more advantageous geographical regions.

Beginning from the latter one, the loss of competitiveness of the white goods sector in Italy has pushed out countries like Czech Republic, Poland, or farther as the great China and South Korea to become the new manufacturing hubs in the field of domestic appliances and professional equipment. In order to pursue strategies of relocation of the production towards these countries, the lower costs of inputs are crucial to benefit of high efficiency rather the existing level in the manufacturing of appliances in Italy.

Between 2002 and 2010, the international trade of appliances rose at an average annual rate of 10%, at the same time the share of export from countries with a labor cost lower than 5\$ (first of all, China) increased from 22 to 40%. An emblematic example of particular interest for the Italian appliances industry is Poland. The internal growth of competencies and skills with a collective wages containment led the appliances industry in Poland to higher profitability because of the benefits of a fall in the labor cost per product unit.

In Italy, the cost of labor affects negatively the sustainability of the entire sector. The reason is quite simple: more favorable production conditions and factors turn out in better performance, higher profits, and more capital to reinvest.

In detail, the difference of the hourly cost of labor between emerging and developed countries is one of the leading motivations whereby multinationals decide to relocate or outsource the production. Today, the average cost per hour worked into emerging countries is around 50% less of an Italian worker and taking the example of Poland, CECED Italia

demonstrated that the hourly labor cost in Italy is four times that of Poland and 10 times that of China.

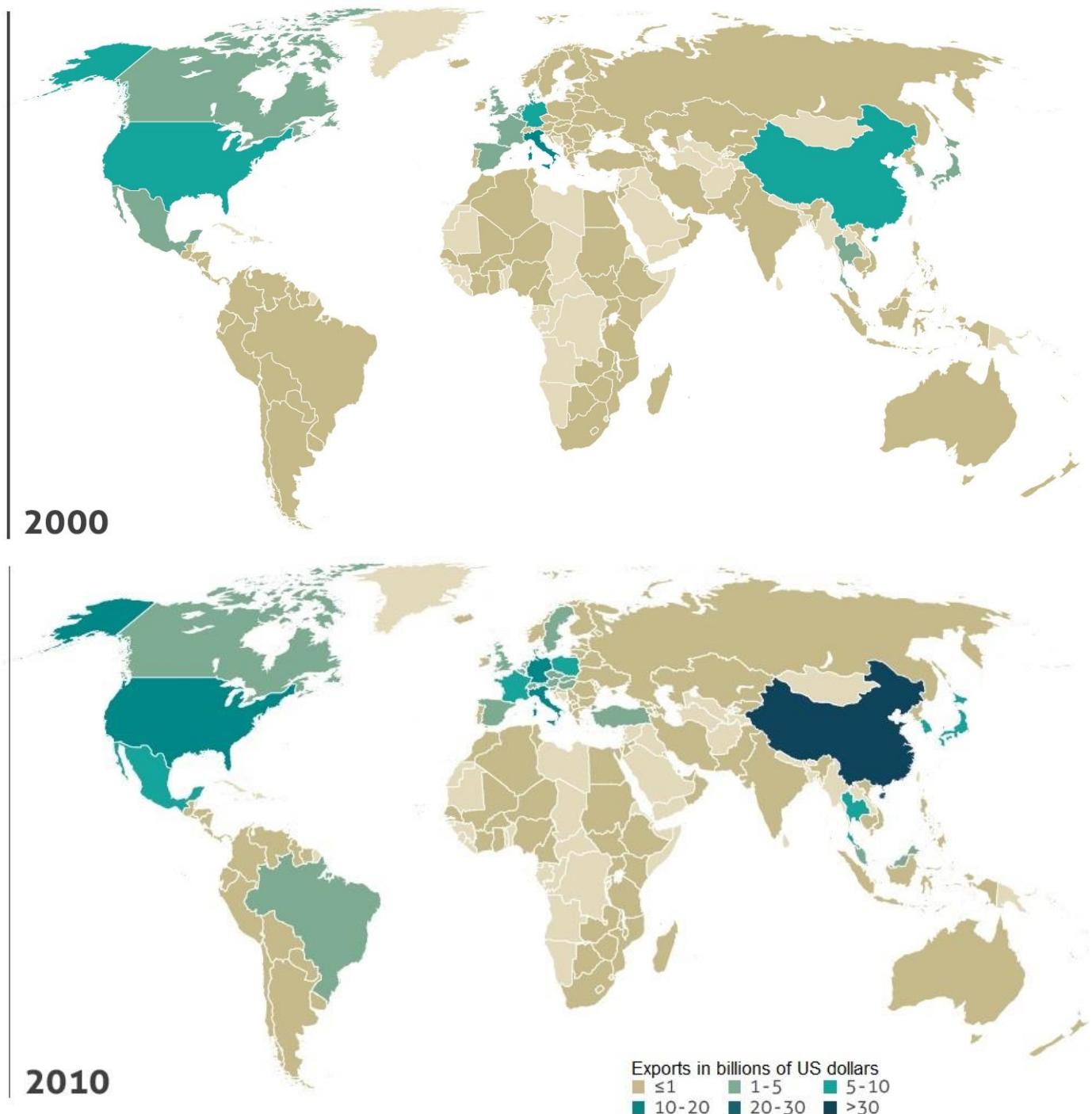
Furthermore, developing countries have reduced significantly the gap on organizational and industrial competencies comparing to the Italian firms. Under this scenario, the mass production of white goods in Italy is not economically sustainable and the current threats are a wide delocalization for multinationals and the downgrade to lower production volumes for a small part of factories. The consequence may be a dispersal of industrialization competencies and automation of processes that the Italian manufacturers have gathered in more than 50 years of success of the Italian white goods.

The strong growth of these emerging countries has been supported by a steady acquisition of competencies and know how in the white goods sector. Comparing today, the factories of new manufacturing centers have achieved higher levels of productivity in terms of value added per hour worked and product quality in line with the well-known Italian appliances industry.

The two snapshots below summarize how the scenario of international trade for the white goods sector is radically changed over 10 years, from 2000 to 2010. Although, the international trade for domestic appliances and professional equipment is increased, the growth is attributed almost exclusively to emerging countries like China, South Korea, Turkey, and nearer, the East Europe while countries such as Italy decreased their share of international trade.

In 2010, the export values of the emerging countries were comparable to that one of the Italian appliances industry. China has become the first country for export value in domestic and professional appliances with more than 30 billion US dollars and it is not a coincidence that the worldwide leader and first manufacturer of appliances is the Chinese Haier. Other countries characterized by a considerable growth are Mexico, Poland, South Korea, Japan, and Thailand with export values between 5-10 billion US dollars. Below the 5 billion US dollars, there are Turkey, Sweden, Brazil, Malaysia and several East European countries like Czech Republic, Slovakia, and Romania. The growth of these countries is important because today they represent new manufacturing hubs, born just in the last 10 years. In fact, looking at the year 2000, their export value for domestic and professional appliances was near to zero or less than 1 billion US dollars comparing with the range of 10-20 billion of Italy.

Figures 1: World Export of domestic appliances and professional equipment in 2000 and 2010



Source: Unctad Comtrade

The second standpoint analyzed in this paragraph is the internal focus on the appliances industry in Italy. This analysis aims to explain the internal dynamics of the Italian white goods sector and describe in detail about the undertaken behavior by the Italian manufacturers versus the external changes.

The years beyond the 2002 have been characterized by several signals of a radical transformation in action on the white goods sector. The crisis of the second manufacturing sector in Italy began before the crisis of 2008: the end of sales growth was in 2004 and only three years later, in 2007, the domestic market has fallen by more than 20 points.

In the more recent years, the Italian sector of domestic and professional appliances was crossed by radical changes in the composition and framework of the industrial model. Foreign multinationals, first of all the Swedish Electrolux and the American Whirlpool, acquired Italian brands such as Ariston, Rex, Ignis, Zanussi and today Indesit. In addition, important extra-Europe companies were going to enter into the European market: in 2013, the Chinese Haier announced to build a plant in Czech Republic, whereas the Korean Samsung and LG have set up their factories in Poland since 2011. In a recent interview to Il Sole 24 Ore, the President of CECED Saccone analyzed the importance of these radical changes for the Italian industry and the effects of the presence of new multinationals in the European environment. His words were emblematic in describing the changes on the competitive context: <<Haier and the other extra-European multinationals will be a four days truck from France, Germany, UK, and Italy⁸>>.

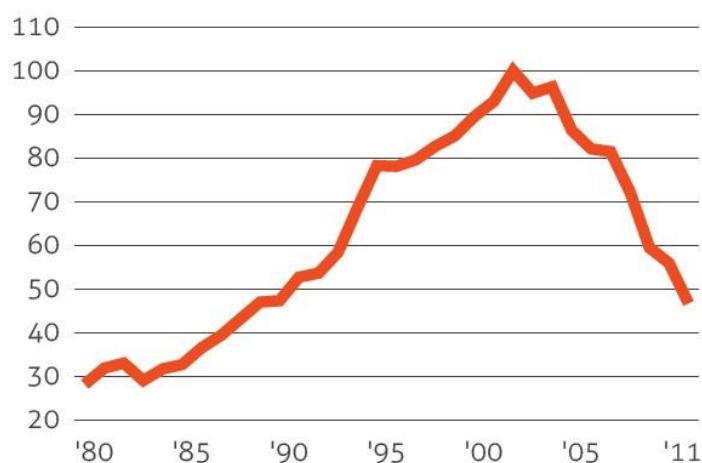
Into a competitive framework dominated by the factor price, the logistics became the key factor for the strategic plans of these multinationals. In general, the effects were disruptive: the entry of new competitors providing product at lower price provoked a collapse of margins for the Italian industry of appliances. The immediate response to the decrease of margins was the adoption of new strategies like the manufacturing relocation towards countries at lower labor costs. In about ten years, the relocation strategies of part or even the entire appliances manufacturing in countries such as Poland and Turkey have caused a halving of both production capacity and industrial sites in Italy.

The figures of the Italian appliances industry confirm a moving away of the production. In 2007, Italy produced 24 million appliances but five years of decline reduced the total amount to 14 million of units. At the end of 2013, the production volumes were estimated around 13 million units, below the level of 1987 and less than half the peak of 30 million reached in 2002. Looking at the chart, it is as if the appliances sector lost a quarter of century of industrial history.

⁸ The interview of R. Saccone, President of CECED Italia was released to Il Sole 24 Ore, in the article << Industria: deserto "bianco" la crisi dimezza gli elettrodomestici secondo settore dopo l'auto>> dated 28th January 2013.

The chart 1 shows the ISTAT data about the Italian manufacturing of domestic and professional appliances from 1980 to 2011. The production levels among the different years are compared to the highest production level reached in 2002, indexed as 100 on the vertical axis. The Italian manufacturing of domestic and professional appliances has recorded a significant growth until 2002, after which there is a steady and inexorable fall of the production. In 2011, ISTAT notified a reduction greater than 50% compared to the values in 2002 and without a reversal trend, in 2014, there will be a production level equal to that one had in 1985.

Chart 1: Manufacturing of Domestic and Professional appliances in Italy from 1980 to 2011



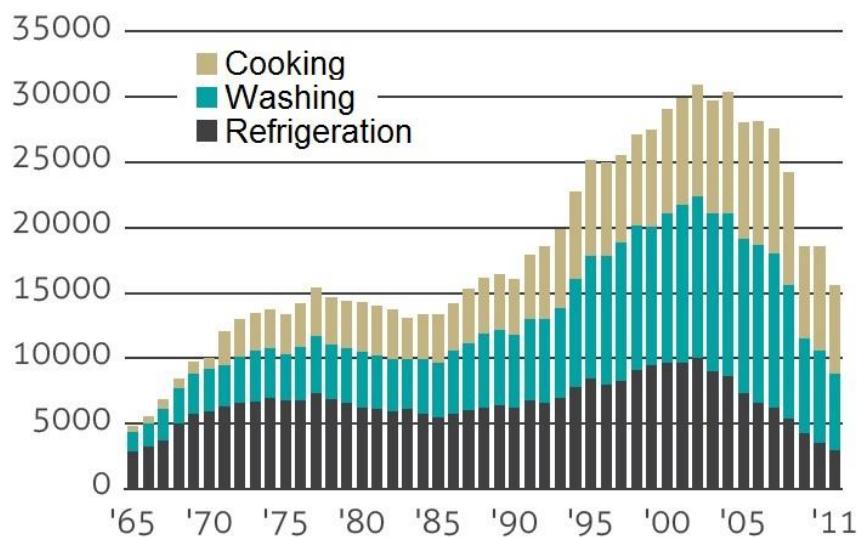
Source: ISTAT

The annual survey of Ceced Italia splits the degrowth in the white goods sector by activity levels. From 30 million of units produced in 2002, the production of refrigerators, washing machines, dishwashers, ovens and cooktops has fallen to the current 15 million pieces and at the end of 2013, 40% lower than the number of products manufactured in 2007. Moreover, taking an interval time of 5 years from 2007 to 2012, the decline had affected washing machines by 52% decreasing the production to 4,4 million units; the dishwashers by 59% to 1,1 million units; fridges by 55% to 1,8 million; and cookers by 75% to 300.000 units.

The chart splits the manufacturing trend of the white goods sector from the end of the World War II to 2011, among three different product segments: cooking, washing and refrigeration.

The manufacturing of all three product categories were subjected to significant fluctuations over time in line with the average trend of the appliances industry as a whole. Later in the analysis, it will be demonstrated that some product segments are less competitive than others and hence they are the most threatened by the advent of LCCs.

Chart 2: Manufacturing of "white goods" (000 units) by segments from 1965 to 2011

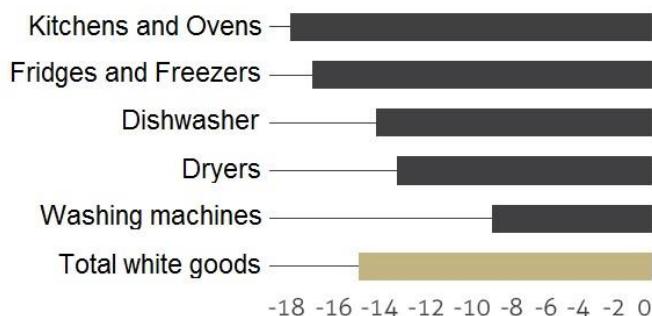


Source: Annual survey of Ceced Italia

The downturn in the manufacturing levels has been affected by negative trends in the final demand of domestic appliances. In fact, one part of the crisis of the appliances industry has to be sought also in the internal conditions of the domestic market and the European market. To demonstrate how the internal conditions of a country or even a continent weigh to the development of an industry, the analysis will be focused only on the production of domestic appliances. The domestic appliances are the products of large multinationals, which represent for turnover and number of workers an important share of the Italian industry of white goods.

From an European perspective, in 2011 the final demand of domestic appliances was characterized by two different trends: in West Europe the demand decreased of 2,5% instead in Est Europe it increased of 9,4%. As showed in the chart 3, in 4 years from 2007 to 2011, the final demand in Western Europe has fallen by almost 15% average. The products with the highest downturn were the groups of kitchens and ovens, and fridges and freezers.

*Chart 3: Percentage variation in the final demand of Domestic appliances
in Western Europe, from 2007 to 2011*



Source: Ceced Italia

The drastic collapse in purchasing domestic appliances by European families has led to a reduction of stocks both in the distribution and production chains. Therefore, a weak demand had negative escalation also to the upstream stages of the value chains.

Considering the sales volumes, in 2007 the production of appliances in Europe represented 99,2 million units while in 2011 there were only 86 million, a loss of production of 13%. It can be assumed that the losses are mainly due to the crisis of the final demand and hence the saturation of the Western market. Thus, the slowdown in demand of domestic appliances and the consequent problem of overproduction has placed companies in great difficulty, especially the Italian manufacturers that have always been export-oriented.

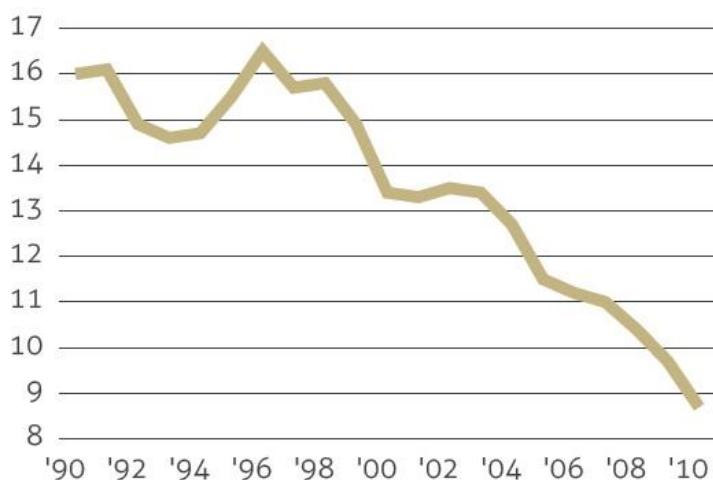
Focusing exclusively into the domestic market, the scenario remains similar: in 2010 the large appliances reached € 3,174 billion instead in 2012 they got only € 2,64 billion with a reduction in turnover of 16,8%. Even the small appliances showed a lighter decrease: in 2010 they got € 1,29 billion but in 2012 the domestic market was worth € 1,22 billion⁹.

Comparing the 2012 with the previous year, the overall decline in the sales volume is also evident by looking at the single products: washing machines (-4%); dishwashers (-6,7%); refrigerators (-4,7%); ovens (-8%); cooking system (-7,7%); and freestanding cookers (-18%). In contrast, positive signals (+1,3%) came from the coffee machines because they are viewed as a paradigm of the Made in Italy in terms of culture and technology.

⁹ L'Osservatorio Findomestic – Consumi 2013. I mercati dei beni durevoli e le nuove tendenze di consumo.
Annual periodical 2013 edition by Findomestic Banca S.p.A.

The situation for the Italian industry of appliances gets worse also including the share of exports even though it is considered the anti-crisis engine for many companies. In ten years, the Italian export has suffered a deep erosion of its shares on international markets, losing competitive positions. The chart below is an elaboration made by StudiaBo¹⁰ on data Unctad Comtrade¹¹ and shows the involution of the Italian share of export from the 1990 to 2010. In 1998, the share of export got around 16% compared with the 9% recorded in 2010.

Chart 4: Export Share of Italian industry of appliances from 1990 to 2010



Source: Unctad/Comtrade

Always observing in the long run, the penetration share by Italian products based on the total imports of domestic appliances in foreign countries has decreased considerably. The chart 5 takes into account the scissor of data between the years 2000 and 2010.

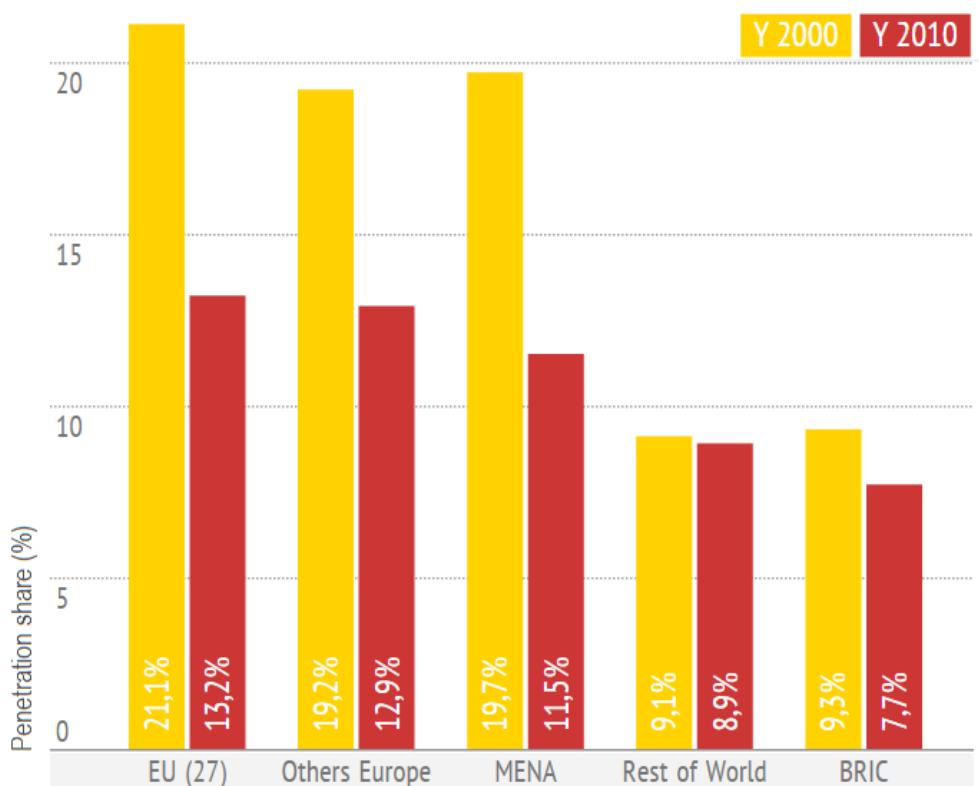
In 2000, the Italian manufacturers of appliances had a strong share of imports (around 20% of the total imports of domestic appliances) in the European market, in the other countries of Europe that were not part of the European Union, and in the geographical areas of Middle East and North Africa (MENA).

¹⁰ StudiaBo is a research office specialized in providing efficient economic information to support decision-making processes. StudiaBo has supported CECED Italia in its studies and research.

¹¹ UN Comtrade is a repository of official trade statistics and relevant analytical tables. The Trade Statistics Branch (TSB) of the United Nations Statistics Division is responsible for International Merchandise Trade Statistics (IMTS) and Statistics of International Trade in Services (SITS). Additional activities include Tourism Statistics, Distributive Trade Statistics (DTS) and the Compilation of Basic Economic Statistics.

After ten years, in 2010 the situation is radically changed. The Italian industry of white goods maintained its share of imports in the countries considered as Rest of the World as well as in the BRIC countries (Brazil, Russia, India and China) with an imperceptible variation to downward from 9,3% to 7,7%. A negative effect came out from the well-known markets of Europe, non-UE countries, and MENA where the penetration share of Italian appliances had an average level of 20% of the total imports. Considering the measurement made by CECED Italia, in 2010, the share of imports fell by almost half with serious repercussions for the economy of the sector.

Chart 5: Penetration shares of Italian products on the total imports of domestic appliances, by geographical area (comparison 2000-2010)



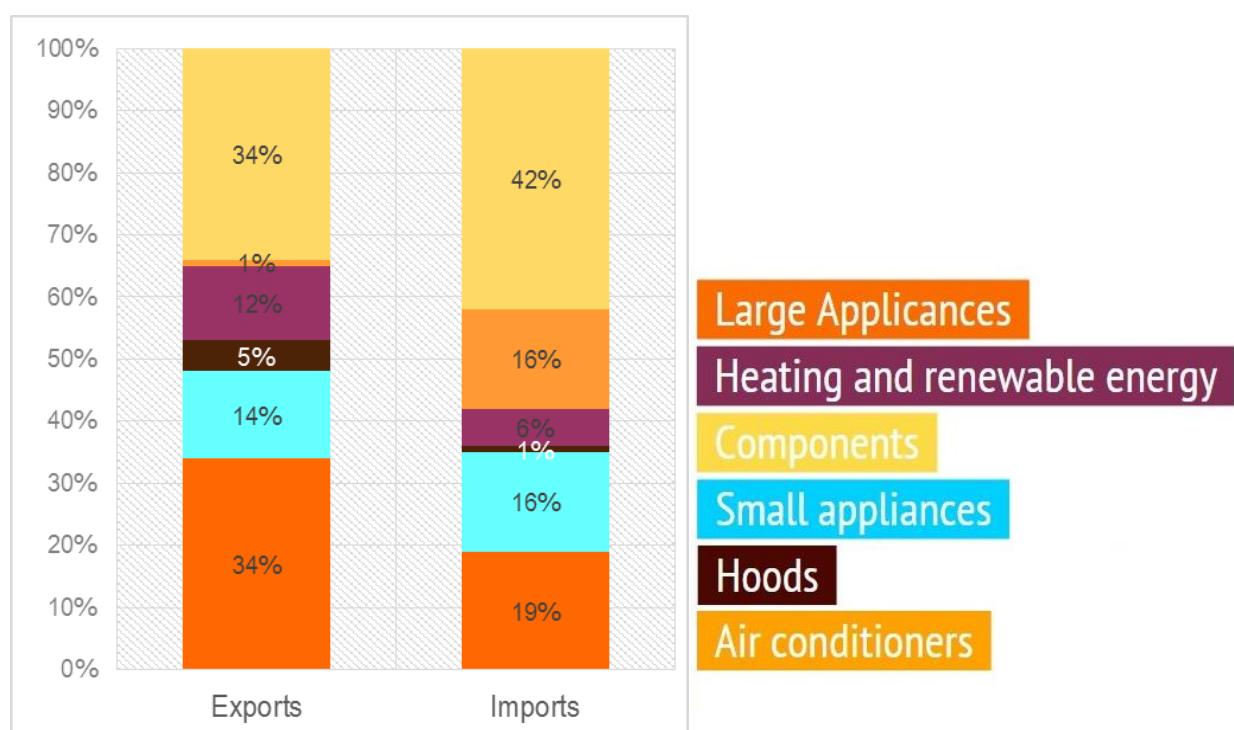
Source: Ceced Italia, Progetto Orizzonte, 2014

The third quarter of 2012 reconfirms the collapse of exports for the domestic appliances. The *ex-Factory of Europe* reported sales volumes per product category extremely low: washing machines (-1,8%); dishwashers (-12,9%); refrigerators (-7,4%); freezers (-20,6%); hobs (-20,6%); recessed ovens (-0,6%); and freestanding cookers (-27,9%).

Although the loss of competitiveness of the Italian appliances in the international context has been computed around - 6% of CAGR since 2007, the white goods sector has remained a net exporter in terms of value. In 2012, the trade balance between the total exports of Italian appliances (excluding the segment of Professional equipment) was nearly € 7 billion comparing with € 4.7 billion of total imports. Italy demonstrates to be still a net exporter with more than € 2 billion of assets in the trade balance. The most exported products are large appliances and components, each with 34% of the total exports. By contrast, the groups of air-conditioning, refrigerators and hoods have the smallest shares of exports.

Looking at the composition of imports, the greatest share is represented by components with 42% of the total value. After, large appliances, air-conditioning and small appliances recorded shares of imports between 15-20%. Instead, the least imported product are hoods with 1% of total imports. It is not a coincidence that the least imported product category in Italy is also the subgroup in the white goods sector where Italian manufacturers have an undisputed world leadership. Another subgroup, in which Italy is a world leader and still competitive in the international markets, is the Professional equipment for the Food service but the segment is not included in the import-export elaboration of CECED Italia (chart 6).

Chart 6: Trade balance in the white goods sector in Italy (2012)



Source: CECED Italia, Progetto Orizzonte, 2014

The internal market with an ongoing heavy setback (about 25% of demand has been lost in 4-5 years, with a halving in 10 years) and the double-digit growth of the markets in the Eastern Europe that requires proximity of the production pushed companies to pursue the strategies of production relocation and/or outsourcing.

The decision for multinationals, large companies and even small-medium firms to move the production in East Europe is also affected by the pursuit of higher margins. On this aspect, the average labor cost has a significant weight for the strategic plans of companies. Taking into consideration the situation of the white goods sector in Italy, the average labor cost in Western Europe is twice or three times more than the average of countries in Eastern Europe (hourly labor costs € 24 against € 5-10 in Eastern Europe and Turkey). Therefore, with the pervasive dissemination of globalization, in the last decade the labor cost has become probably the most important factor able to move organizations and plants across national borders.

In parallel with the higher labor cost, also the trend of prices has weighted on level of margins for the Italian manufacturers of appliances. A research made by Il Sole24Ore highlighted a collapse in the prices levels of domestic appliances from 2008 to 2013¹². In addition to the collapse of prices, the products illustrated in the table have experienced processes of technological upgrading and reduction of consumption in the time interval concerned. This means that from a reduction in prices, the products have not lost quality but they have even improved in the technical features and performance.

Table 1: Trend of prices between 2008 and 2013

Product category	Y2008 (€)	Y2013 (€)
Washing machines	370 (5kg, class A)	270 (7kg, class A+ A++)
Refrigerators	540 (300 liters, class A)	370 (330 liters, class A+ A++)
Dishwashers	600 (12 plates, class B)	230 (12 plates, class A+ A++)
Kitchens	400 (4 fires and gas oven)	280 (6 fires)

Source: Il Sole 24 Ore on 31st October 2013

¹² P. Guidi, Elettrodomestici, produzione dimezzata e crollo dei prezzi: dieci anni di crisi del <>bianco<>, published by Il Sole 24 Ore on 31st October 2013.

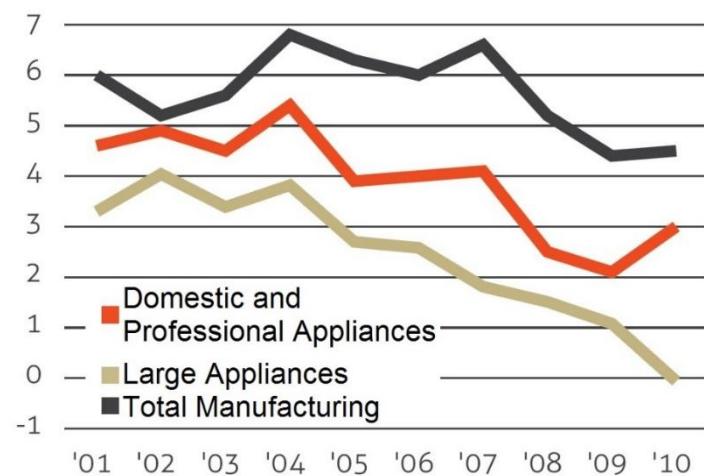
The factors described above have radically changed the Italian industry of appliances. Nowadays these pressures do not appear to recede indeed they seem to reinforce the differences in manufacturing context between neighboring countries.

The assessment on the profitability levels for the manufacturing of domestic and professional appliances and, in particular, for the manufacturing of large appliances demonstrates the difficulties of Italian industry of white goods accentuated if they are compared to the average level of the Italian manufacturing as a whole. The level of profitability measures the percentage of EBIT on the Net Revenue, taking as a simple the financial statements of some companies associated with Ceced Italia.

Over years the white goods sector is characterized by a reduced ability to produce and the gap with the total manufacturing is getting bigger (chart 7). Already now, the situation is getting critical because inefficiencies lead to lose competitiveness and to favor the Low Cost Countries.

In 2010, the Italian manufacturing of large appliances got a profitability level near zero: it means that the production of large appliances is always less sustainable in Italy. Definitely better is the situation for the general production of domestic and professional appliances with a level around 3% of EBIT on the Net Revenue. However, this level is always lower than the average Italian manufacturing as a whole which is around 4,5%.

Chart 7: Profitability assessment (% EBIT on the Net Revenue) in relation to the average level of the Italian manufacturing, from 2000 to 2010



Source: R&S Mediobanca

The difficulties for companies to get appropriate margins is also proven by ISTAT with another calculation of profitability for the white goods industry. ISTAT measured the operational profitability as percentage of EBITDA on the total Revenues.

In the 1994, the manufacturers reported the highest level of operational profitability, around 11,5% of EBITDA. The following years, despite the growth recorded in the time intervals 1998-1999 and 2008-2010, the operational profitability has been eroded until getting in 2011 an average level of EBITDA slightly less than 7%. This index is illustrative of the crisis exploded in Italy in the field of the white goods because such a low level of operational profitability has never been reported in the last twenty years.

Chart 8: Operational Profitability (% EBITDA on Revenue) of the Italian manufacturers of Domestic and Professional appliances, from 1990 to 2011



Source: ISTAT

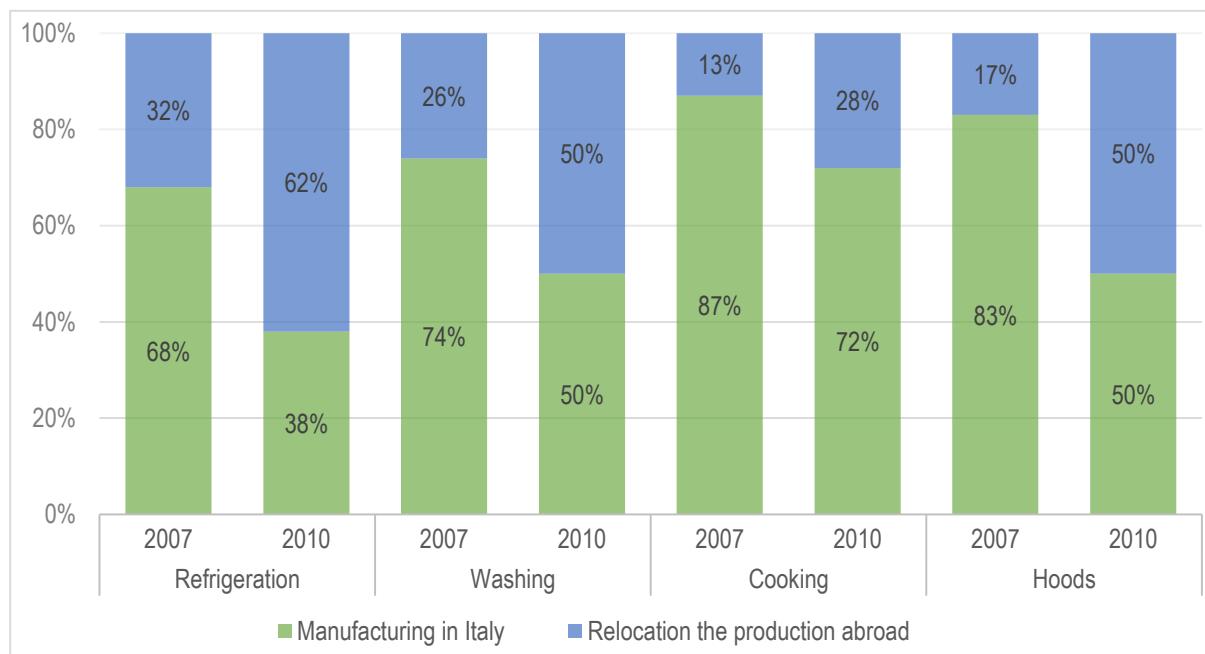
The entry in the European market of new multinationals from China and South Korea has reinforced the differences in manufacturing conditions among countries and nowadays, a fierce competition based on production costs and selling prices has been affecting the business operational model. Therefore, the strategic choice of new entrants to establish manufacturing plants in Poland and Czech Republic has forced the European incumbents such as Electrolux, Indesit and Candy to follow this path or the risk of losing competitiveness and market shares.

Analyzing these dynamics, for the Italian manufacturing of domestic and professional appliances seems to be the unequivocal the recourse to policies of relocation of the production towards the LCCs and towards new market destinations for the Italian products.

The researches of Ceced Italy highlighted how the relocation strategies have already been widely adopted by the Italian manufacturers since 2007, from the fields of refrigeration to the hoods, also including washing and cooking appliances (chart 9).

Between 2007 and 2010, a steady growth in the adoption of relocation processes of the production has characterized the strategies of many manufacturers in the Italian industry of appliances. The manufacturing relocation in LCCs has been adopted across all products in the field of white goods and, in some cases the numbers show a halving of the production. Following the data provided by CECED Italia, the segments of refrigeration, washing and hoods got the highest levels of relocation, respectively with the 62% for refrigeration and 50% for washing and hoods.

*Chart 9: Levels of production relocation in the Italian industry of appliances
(comparison 2007-2010, by segment)*



Source: Ceced Italia, Progetto Orizzonte, 2014

A new environment for the appliance industry is emerging and it seems that the manufacturing hub for domestic and professional appliances would not be longer in Italy. So the question is unavoidable: today what remains of the first center of European manufacturing of white goods? Are there product segments that still make the difference for the Italian industry and they may lead to future development?

Ten years ago, in Italy there were more than 20 production plants of large appliances. Today they are around less than half exclusively dedicated to the manufacture of high-end appliances with distinctive design and mainly recessed appliances. Although there is a strong product specialization, the Italian manufacture of appliances is still considered at risk. Some reasons of this uncertainty are the fall of prices caused by retailers' policies, the provision for the retailers of their brands produced by Turkish suppliers, and provision of other substitute products of comparable quality from manufacturing plants established in LCCs in East Europe (to a reasonable distance to the interests of logistics).

In Italy, the current scenario of the white goods sector sees the presence of three important actors. Thanks to their relevance in turnover and numbers of workers employed, they play the role of major representatives in front of institutions and media. Through a data processing on corporate financial statements, Il Sole 24 Ore has analyzed the weight of the three actors.

- Electrolux

The Swedish multinational owns four production sites: Porcia (PN) specialized on washing; Forlì in cooking equipment; Solaro (MI) in dishwashers; and Susegana (TV) for refrigerators.

The multinational employs 6.100 workers. However, around 1.100 workers were laid off in 2013 and for the biennium 2014-15 other 461 layoffs are planned.

- Indesit

The company of Italian origin and born from the Merloni Group owns five plants on three production centers: two are in Fabriano with the production of recessed appliances and cooking systems, two are in Caserta with recessed for refrigeration and cooking systems, and one in Comunanza (in the province of Ascoli Piceno - AP) specialized in washing systems.

Indesit employs 4.300 workers. For the 2013 and following years, 1.030 layoffs were planned but the negotiations with labor unions have reduced the layoffs to 300 units.

- Whirlpool

The American multinational owns four production centers in Cassinetta (VA) for refrigerators and recessed cooking systems; in Siena for freezers; in Napoli for washing machines; and in Trento for recessed refrigerators.

The number of employees is 4.000 but with the closure of the plant in Trento, the layoffs will be around 460. In 2015, Whirlpool has taken over as ownership of the Indesit group.

Always from the source of Il Sole 24 Ore, the three multinationals reach more than 50% of the appliances market share in Italy and respectively Indesit has 25% of market share, Whirlpool 17,5%, and Electrolux has 15,9%.

These business cases, besides being relevant for their weight into the white goods sector, describe the changing process that is taking place in the Italian industry of domestic appliances. Di Vico to Corriere della Sera analyzed the transformation as follow: "The large companies are not able to implement those strategies of specialization and customization that instead in the sectors of Made in Italy still have success. This is the case of the domestic appliances and professional equipment sector".

"In Italy for too long, the manufacturers have been at the mercy of the retail channels that were forced to compete on prices, revealed today as losing strategy. In many cases, products like washing machines and refrigerators have become commodities and undifferentiated items perceived by consumers at low value added. The general result has had two negative effects. On one hand, the Italian companies have been called to compete on labor costs, for instance, with the district of Olawa in Poland. On the other hand, other companies have decided to merge with those multinationals like the American Whirlpool that aim to compete on large volumes and they have the courage to oppose the large Asian manufacturers like Samsung."¹³

Therefore, because the multinationals in the Italian territory are drivers of this change, the future development of the sector seems to be far away from Italy and the manufacturing gets closer to the new low-cost countries (LCCs). The first signals of gradual abandonment of the production from the factories of our country have been manifested thorough official announcements of planned layoffs. Because of the reorganization of the workforce, the 2014 was characterized by several meeting between the ownership of the multinationals, representatives of labor unions, and the Minister of Economic Development Guidi with the scope to rethink a strategic plan for the relaunch of the entire sector¹⁴.

¹³ D. Di Vico, "Il paradosso del Paese industriale che ha perso il controllo delle «sue» grandi imprese", article on Corriere della Sera, published on 12th July 2014.

¹⁴ Il Sole 24 Ore, Il tavolo sul settore diventa permanente, 5th February 2014.

Observing the strategies pursued by these companies, the layoffs are in line (or better a consequence) with a strong boost to the internationalization of markets and productions. In fact, Indesit owns some factories in Poland while Electrolux, establishing itself in Hungary, has the opportunity to move there the processes accomplished now into the historical plants of Zoppas and Zanussi between Veneto e Friuli Venezia Giulia.

The regions of Veneto and Friuli Venezia Giulia are one of the geographical areas of strategic importance for the appliances industry. Here, the presence of Electrolux and many SMEs, especially those with a recognized world leadership in the sector of professional equipment for the food service, have shaped the industrial and economic structure of the territory.

Veneto and Friuli Venezia Giulia represent two cases where the localization of firms focused on specific fields has led to the formation of clusters. In Italy, the white goods sector has developed itself and has achieved a great success in the European markets thanks to the expertise and high-qualified knowledge rooted in specific industrial districts or clusters. Therefore, the framework of Italian clusters enhances the specialization of territories because the “nerve endings” of collaboration, cooperation and even competition between the mother factories, subcontractors or suppliers of components, and other small-medium competitors create an ecosystem of businesses where knowledge and expertise flow and increase easily. The annex 1 entitled the identity of territories dedicates a session about the features of the Italian clusters and their distribution throughout the national territory.

Inside a cluster, the network of suppliers also plays a crucial role. They participate to the creation and development of final products, influencing technological profile and sale prices. Suppliers share the buyers' decisions and cooperate with them regardless of whether is an Italian group such as Candy or Indesit, or a foreign multinationals as Electrolux or Whirlpool.

However, the situation becomes critical when the mother factory decides to relocate the production to LCCs where the business conditions ensure increased levels of efficiency and profitability. Because of the strategy of manufacturing relocation, the network of suppliers can only follow the buyer where eventually it has decided to establish the new factory.

The situation just now described represents analogies with the current context in the white goods sector characterized by internationalization processes of the three major multinationals of our country (Indesit, Whirlpool and Electrolux) and numerous cases between Piedmont,

Lombardy and Veneto, until the bankruptcy of the Merloni Group in Marche in which links between mother factory and suppliers have been broken. The *last weapon* in the hands of suppliers is to relocate the production as Elica in Fabriano did (leader supplier in the hoods field). After the previous stops in Mexico, China, India, and Germany, the company has had to follow the buyer in the new manufacturing investments in Poland.

Although this trend seems apparently positive with the growth of Italian firms on global markets, the actual result is the emptying of the Italian manufacturing. In detail, the manufacturing of appliances has halved around to 14 million units and losing a quarter of a century of industrial history.

Cipolletta, an economist at University of Trento who sits on the Indesit board, confirmed his worries to The Economist: <<the steady loss of links in the supply chains is forcing the big makers of final products to recreate the whole chain abroad, accelerating the hollowing-out of Italian manufacturing>>. Today, Indesit produces 13 million units of which only 4 million are made in Italy where the domestic market represents only 15% of total turnover.

As described extensively in this chapter, the reasons for the emptying of the Italian manufacturing as regards the white goods sector are the most miscellaneous. Nowadays, the high efficiency of the production plants, the best competencies and the high product quality do not consent to cover anymore the gap of competitiveness with the new LCCs.

The only way to survive to a sluggish demand of markets and to an increasing competition from new giants of the appliances industry like the Chinese Haier is to shift the factories in low-cost countries where favorable business conditions make the production much more efficient. Therefore, the waves of delocalization towards new production centers in Poland and Turkey go on with the last manufacturers remained in Italy. In 2013, Guerrini, director-general of CECED Italia, acknowledged to The Economist: <<Manufacturing mass or entry-level products in Italy is no longer economical sustainable>>¹⁵.

¹⁵ Italian Manufacturing, A washout, The Economist, August 10th 2013.

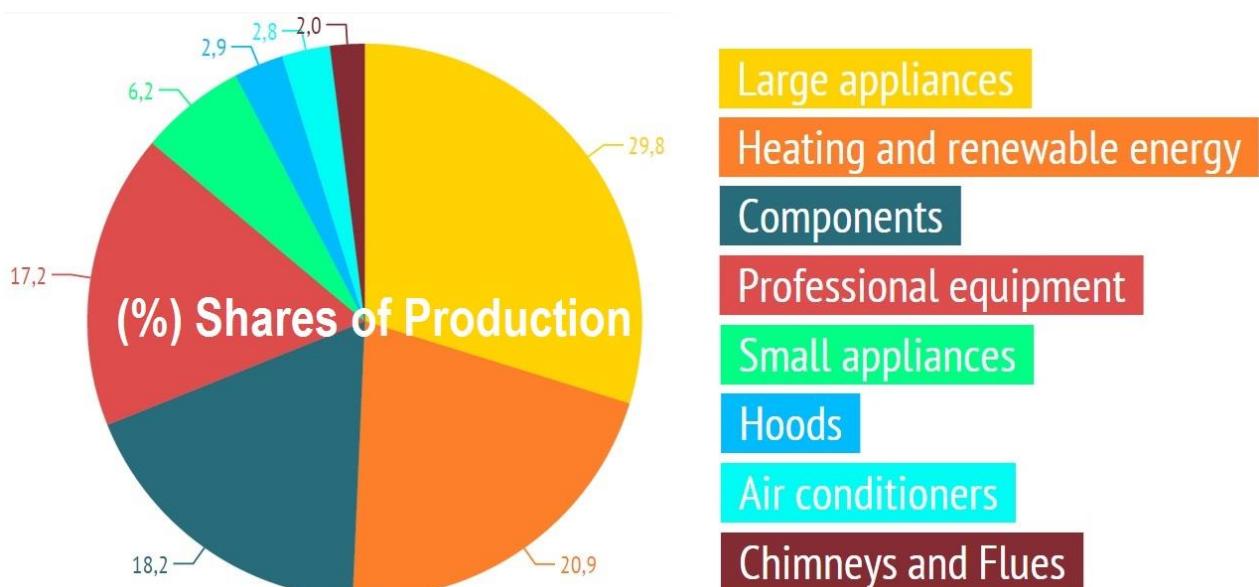
1.4. Differentiated scenarios between product segments

Although the general context is critical, different trends in relation to the subgroups of product are emerged. The dissertation aims to give a value-added to the research by going deeply on those sectors characterized by countered performance of success and growth. Therefore, the paragraph briefly highlights which subgroups of product within the white goods sector are performing better and at the same time, maintaining a competitive positioning in relation to their size of value. In these terms, it means to think over the competitiveness of some white goods that persist in the markets through those subgroups of product where Italy still makes the difference on the international scenario.

Before to emphasize those subgroups of product with positive performance, the pie below displays the distribution of production by segment, in terms of total turnover. The representation allows assessing the weight of each trend referred to the different subgroups.

From the pie (chart 10), the greatest segment measured as share percentage of production is the Large appliances with 29,8%, followed by Heating and renewable energy with 20,9% of share (of which 6,0% are Pellet and biomass stoves), Components with 18,2%, and Professional equipment with 17,2% of total production. Hoods, Air conditioners, and Chimneys and Flues represent the lowest share of production, respectively with 2,9%, 2,8% and 2,0%.

Chart 10: Distribution of production by Segment (2013)



Source: CECED Italia

In order to identify the subgroups with positive performance that would deserve a deeper analysis, the research considers a multiple assessment based on a normalized trade balance, the operational profitability and the turnover trend per each subgroup. In the end, an increased level in turnover may justify the assumption of a subsector in contrast with the decline of the Italian white goods sector as a whole. The following calculation and charts are provided by the research of StudiaBo based on Unctad Comtrade data¹⁶.

The snapshot of the sector of Domestic and Professional appliances can be declined on four different situations at the level of product groups.

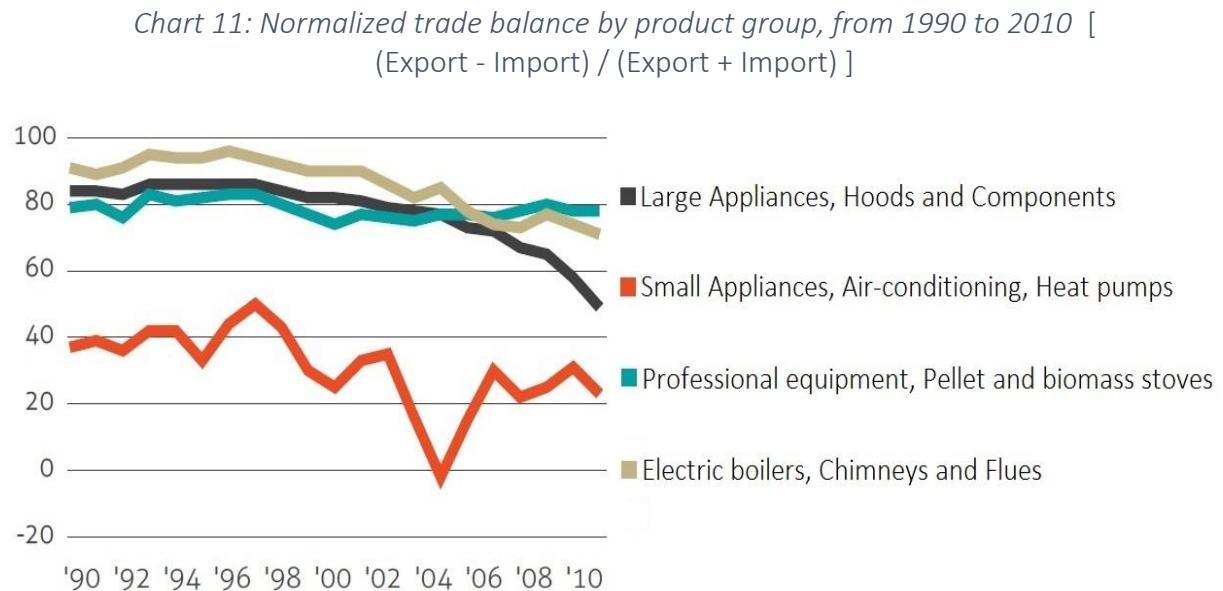
The first situation describes the subgroups of Small appliances, Air-conditioning and Heat Pumps. For these products, the competitiveness of Italian manufacturers has been eroded by the progress on the international scenario of a strong competition from LCCs, since the last decade of the last century. In 2010, the share of international trade from countries with hourly labor costs less than \$ 5 was close to 60%, compared with an average of 40% for the Italian sector of Domestic and Professional appliances as a whole.

For several years, the Italian manufacturers have attempted to reposition their offers through the relocation of purely manufacturing phases and a strengthening in Italy of activities with greater value added like Marketing and R&D. The Air-conditioning chain and more in general the Refrigeration sector have established in Italy expertise in innovation in order to exploit the advantages of the Italian Lifestyle and design. About Small appliances, the competencies in R&D has allowed to maintain in Italy the management and the centers of marketing and innovation, especially for the high range products. Although Italy remains an important manufacturing hub, today most of the production takes place into the LCCs.

The general effect of this strategy was so far limited to a net loss of jobs, a worsening of the trade balance and levels of operational profitability that fluctuate on minimum values. From chart 11, the normalized level of trade balance has decreased in twenty years starting from 40% and ending to 20% in 2010. In particular, during the biennium 2002-2004, Small appliances, Air-conditioning and Heat pumps reached a level near zero, in favor of new producers from LCCs. The trend of the operational profitability illustrated in the chart 13 is in

¹⁶ Apparecchi Domestici e Professionali, garantite il futuro in Italia, Osservatorio strategico CECED Italia 2012 a cura di StudiaBo.

line with the general decrease of the net revenues since 2004 (chart 12). The evidence is a collapse in the operational profitability started with the new century and continued until the 2010 by scoring a level slightly above 2%. Under these conditions, the manufacturing in Italy is no longer sustainable and the progress of new producers from LCCs will get stronger for the next years.



Source: StudiaBo on Unctad Comtrade data

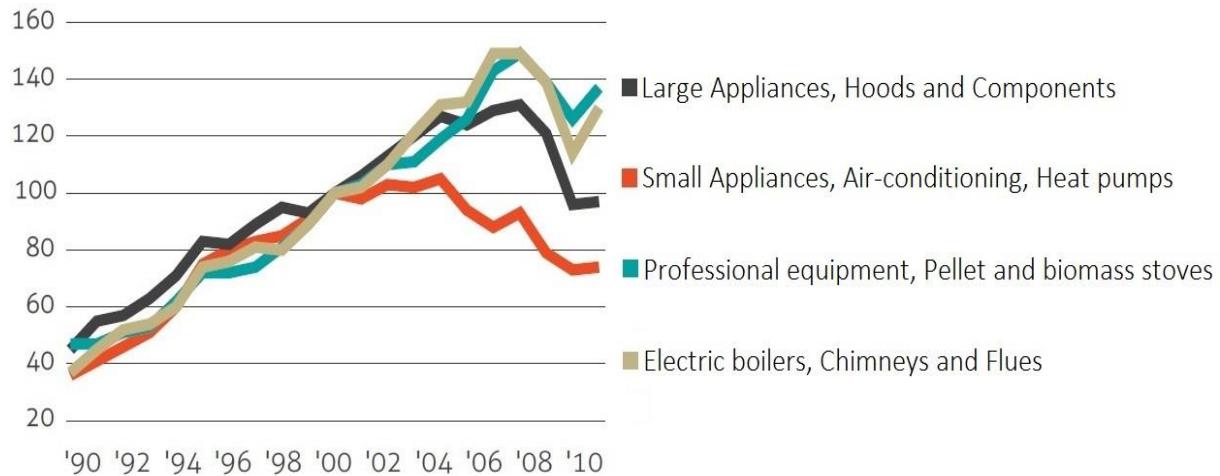
Electric boilers, Chimneys and Flues represent the second situation into the white goods sector. The trend of the construction sector has a strong influence on the performance of this group of products.

The decline in the competitiveness has already started even if the negative effects are still limited. In a decade, between 2000 and 2010, the international trade from LCCs has reached around 30% of share and consequently, the share of Italian export of these products has reported a significant downward trend. The share of normalized trade balance (Chart 11) has decreased under the threshold of 80% while at the beginning of 90s the level was around 90%. Although the net revenues for Electric boilers, Chimneys and Flues keep in the long term a growth trend (Chart 12) with a decrease only during the biennium 2007-2009, the operational profitability is shrinking (Chart 13).

From the Chart below, the Electric boilers, Chimneys and Flues are the only segments together with the Professional equipment, Pellet and biomass stoves to register increasing

revenues in the most recent years with values above their outcomes achieved in 2000. However, looking at the operational profitability, the fall for the segments of Electric boilers, Chimneys and Flues is alarming, going from around 10% of EBITDA on the total Net Revenue in 1990 to a value of 8% in 2010. The operational profitability curve of Electric boilers, Chimneys and Flues displays the most negative slope if compared with the other segments.

Chart 12: Net Revenues (index 100 = 2000) by product group, from 1990 to 2010



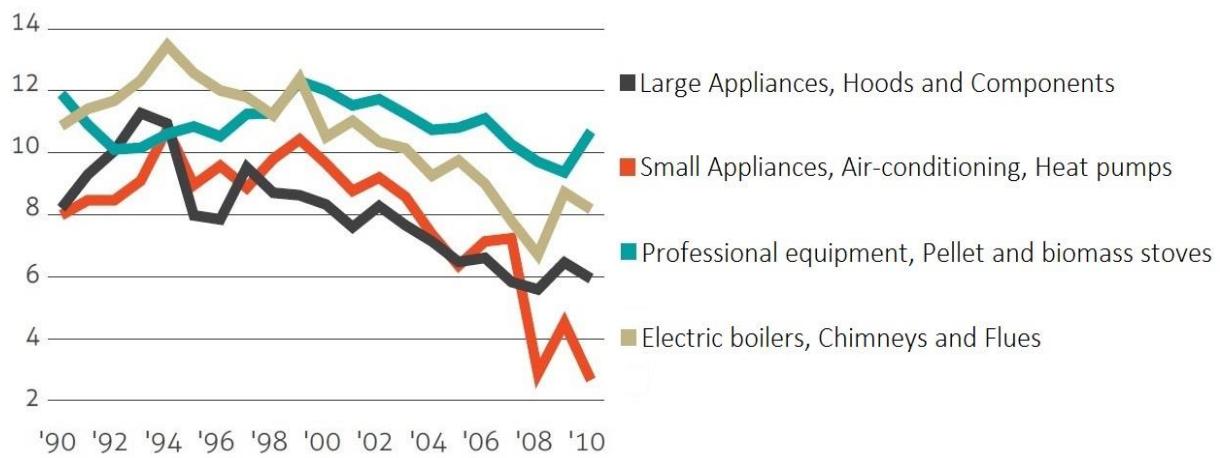
Source StudiaBo on Financial statements data

The segments of Large appliances together with Components and Hoods show the most critical situation aggravated by the fact that these products represent half of the total production of the white goods industry in Italy, around 50,9% of share in 2013 (see chart 10). The competitiveness deterioration for the Italian manufacturers, already in place for some time, has entered into a neuralgic phase. In particular, the acceleration in dynamics of change has radically modified the competitive environment: the pressure from the LCCs has gotten stronger with the growth of share on international trade, doubled to 40% in around a decade.

Analyzing together the three segments, they showed a stability of net revenues in the period 2003-2007, which was followed by a significant fall in the years 2008-2009, not recovered at all in 2010 (chart 12). In addition, the operating profitability has had a prolonged downward trend, which led the manufacturers of these subgroups to record the historical lowest levels of the recent period (chart 13). The most plausible risk is that the segments of Large appliances, Hoods and Components re-experience the path taken by Small appliances, Air-conditioning and Heat

pumps with a relevant reduction of the activities made in Italy. Given the importance of this group of manufacturers within the sector of white goods in Italy, the possibility of partially relocation would mean a substantial downsizing of the presence of the sector in Italy. Moreover, it would have social costs much higher of what experienced in the past for the repositioning of the segments of Small appliances, Air-conditioning and Heat pumps.

*Chart 13: Operational Profitability (% EBITDA on Net Revenue)
by product group, from 1990 to 2010*



Source StudiaBo on Financial statements data

In contrast, the last situation draws the case of Professional Equipment, Pellet and biomass stoves. Regarding these products, their competitiveness of Italian manufacturers remains on high levels thanks to a limited exposure to competitors from LCCs. In fact, in 2010, the international trade of countries with hourly labor costs less than \$ 5 was close to 20% of share that is the lowest level if compared with the other segments into the white goods sector. Given the strong development of international trade in the recent years, the share of export is growing and the normalized trade balance is stable at high levels, around 80% that is the highest level among the other segments of the white goods sector (chart 11).

The Operational Profitability is increasing (chart 13) with margins that oscillate between 10 and 12% of EBITDA on the Net Revenues. The Net Revenues, despite the downturn in 2008-2009, show a significant growth trend, getting +40% in 2010 if compared with the outcomes got in 2000 (chart 12). Anyway, from the charts above, both the Net Revenues and the

Operational Profitability show figures that are above the other segments and above the average level recorded by the Italian industry of white goods as a whole.

In conclusion, the table 2 provides a summary of the entire assessment between the four segments, associating per each subgroup the Normalized trade balance index, the Net Revenues and the Operational Profitability. Through this schematic illustration will be easier to identify which subgroup is characterized by countered trend and should be considered interesting for a further research analysis.

Table 2: Summary of the Assessment made by Segment

Segments	Normalized Trade Balance	Net Revenues (index 100 = 2000)	Operational Profitability
Large Appliances, Hoods and Components	50% 	90 	6,0% 
Small Appliances, Air-conditioning and Heat Pumps	25% 	70 	3,0% 
Professional equipment, Pellet and biomass stoves	80% 	140 	11,0% 
Electric boilers, Chimneys and Flues	70% 	135 	8,0% 

The segment of Professional equipment, Pellet and biomass stoves seems to be the only segment able to resist to the general crisis that portrays into the white goods sector. This segment shows a growth trend of the net revenue with levels above what it reached in 2000 and in addition, they do not seem to suffer the progress of LCCs because the segment maintains in the long term steady levels of operational profitability and normalized trade balance.

The purpose of the dissertation is to identify the product subgroups with positive performance into the white goods sector. Although the segment of Professional equipment, Pellet and biomass stoves has demonstrated positive trends in the long run, for the pursuit of the dissertation and to simply the work of research only one product family will be considered.

As described in the first paragraph (“A wide range of products”), CECED Italia distinguishes the subgroup between Professional equipment for the Food service and Pellet and biomass stoves. The next considerations try to explain the differences in performance between the two products families following the assessment method previously used. Of course, some evaluations are purely qualitative, provided by experts of the sector such as the CECED Italia association.

Regarding the share of export and the view of international agents, the Italian firms manufacturing Professional equipment for the Food service are considered leaders in the global markets. Their shares of international trade are above the traditional producer countries like Germany and USA and above the new competitors such as China, South Korea, Mexico and Czech Republic that are achieving high positions in the rank of global exporters. The Chinese competition and in general the LCCs has begun to be relevant among some product ranges characterized by segments of low range static equipment or in the refrigeration field. Anyway, the features of the Chinese offer does not seem comparable with those of Italian products. Moreover, the progress of new LCCs in the niche of Professional equipment at international level is much more limited than the situations of other segments into the white goods sector.

The scenario is a little bit different for Pellet and biomass stoves because the Italian products are on the level of the best foreign producers, thanks to superior technology, and design and quality associated with the well-known "Made in Italy". The demand is primarily from the European markets while the extra-Europe remains so far unexplored due to the difficulties of the internationalization processes for the SMEs. CECED Italia recognizes around 200 firms in the subgroup of Pellet and biomass stoves, most of them are SMEs of which $\frac{3}{4}$ are microenterprises with a turnover below € 2 million. Pellet and biomass stoves are under much more pressure than the Professional equipment because the Europe is the area where most of trade takes place and where there are also the leading exporting countries.

A relevant data about the international trade is the share of export: in 2010, CECED Italia recorded for Pellet and biomass stoves around 35% of export, estimated in € 265 million while Professional equipment for the Food service got more than € 1,5 billion of export, around 60-70% of the total value of production. The production values for the two subgroups are estimations under the assumption that the data gathered by CECED Italia represent the 75% of total population. Through this assumption, the number of firms that complete the whole subgroup of Professional equipment for the Food service are about 350 units.

About the overall net revenues illustrated in the chart and after in the summary table, the growth is attributable mainly to the Professional equipment for the Food service. First of all, in 2013 the production of Professional equipment were 17,2% of the entire white goods sector against the Pellet and biomass stoves with only 6% of production share. According to the publications of CECED Italia, in 2013 the production of Professional equipment was worth

approximately € 2,5 billion so the Italian manufacturers of Professional equipment represent the third subgroup in terms of turnover within the white goods sector, immediately after the Large appliances and the Components. Instead, the production of Pellet and biomass stoves was worth just over € 890 million.

Table 3: Variation in Turnover for the segments of Professional equipment and Pellet and biomass stoves, comparing 2011 and 2013

Product groups and Grand Total	Turnover (million euro)		
	2011	2013	Δ Variation
Pellet and biomass stoves	800	890	90 11,3% 
Professional equipment	2.200	2.560	360 16,4% 
Total Domestic appliances and Professional equipment	15.400	14.860	-540 -3,5% 

In the period 2011-2013, the white goods sector lost in general around 3,5% of its total turnover, approximately € 540 million¹⁷. The value lost as consequence of a crisis of competitiveness of the Italian industry of white goods represents more than half of the total turnover got in 2013 by Pellet and biomass stoves. The Professional equipment and the Pellet and biomass stoves were the only two product groups to stem the loss. In the time interval 2013-2011, the Professional equipment showed the strongest growth in terms of turnover with 16,4% and € 360 million instead Pellet and biomass stoves has increased of 11,3%, around € 90 million. A reason why the growth was less vigorous is due to the average size of the firms. The subsector of Pellet and biomass stoves is newly formed and there are no firms that exceed the threshold of € 100 million in turnover and only a few firms are close to € 50 million.

From the perspective of income conditions, the operational margins (measured as % EBITDA on Net Revenues) of the Italian firms manufacturing both Professional equipment and Pellet and biomass stoves appear on favorable levels, with no signs of deterioration. In 2010, the percentage of EBITDA on Net Revenue for both product groups were above the 10% comparing with an average level for the sector of domestic and professional appliances of 8%. In two years, the manufacturers of Professional equipment has increased the operational profitability at about 14% of EBITDA as well as the firms producing Pellet and biomass stoves at 15%.

¹⁷ Source ANIE from the Annex "Household Appliances and Catering Equipment" in the publications of CECED.

In such context, the average level of operational margins of the firms within the white goods sector has fallen by 2 percentage points to 6%. The benefits of high operational margins are to ensure a self-financing capacity adequate to the processes of corporate growth.

In conclusion, although the white goods sector is under siege from new producers at low labor costs, in Italy the manufacturing centers of Professional equipment and Pellet and biomass stoves are still competitive in the global arena and, in addition, the firms show significant trends of growth in turnover and operational profitability (margins).

The outcomes reached by Professional equipment and Pellet and biomass stoves justify the decision to distinguish these product groups from the general scenario of the white goods sector as a whole. In fact, they do not seem to be affected by slowdown trends instead, they expect to growth further also in the next years, decades.

In order to provide a comparative analysis and due to an extensive fragmentation even inside the two product groups, the dissertation research will analyze only one segment. In the next chapters, the focus flows on the manufacturers of Professional equipment for the Food service. The reasons of this choice are several: first, the framework of this group is much larger in terms of number of firms included in the sample (they are around 350 units for the entire national territory with also multinationals like Electrolux Professional S.p.a. and other important players like Alì S.p.a. and Angelo Po Grandi Cucine S.p.a.). Second, the manufacturers of Professional equipment for the Food service work on a market niche but they are global leaders with successful performance in terms of generated turnover (an increasing percentage on the total turnover of the white goods sector in Italy) and in terms of ongoing internationalization processes in the markets around the world.

The next chapter will introduce a monograph on the Professional equipment sector based on an independent research of the manufacturers to be included in this product group. Through the portal AIDA, the financial statements data collection has led to the construction of a database of 341 firms. For further details on the analysis of the manufacturers of Professional equipment, please read the chapter two.

The Hidden niche of Professional equipment for Food service

An overview of niche manufacturers of Professional equipment

The country-system does not seem to present the most suitable conditions for the continuity of appliances manufacturing, both the domestic and international demand of Italian appliances is in the doldrums and much more competitive countries (China, Poland and Turkey) have entered aggressively into the West Europe markets.

Despite this siege, the segment of Professional equipment for the Food service represents a key value of the sector of Domestic and Professional appliances and a case of excellence for the Italian manufacturing industry as a whole.

Italy holds in the Professional equipment for the Food service a historical leader position at the world level and the future trends are going to be particularly favorable. The history of this segment describes several cases of successful SMEs on international markets because they have inherited a “culture of making” and key competencies rooted in clusters specialized in the appliances field. The Italian manufacturers have characterized their offer on flexibility, product innovation and leading edge technology combined with customized services. More recently, the manufacturers have been able to develop highly integrated offers and to nurture a high vocation to the internationalization also acting as drivers for the smaller firms.

In the interval time of 5 years, the Italian manufacturers in the niche of Professional Equipment for the Food Service have increased their turnover, they have further improved the operational efficiency of their factories, and today they look at the most promising international markets thanks to their recognized world leadership. These are the leading reasons that have encouraged the dissertation research to focus on and to study the niche of Professional equipment for the Food service.

The chapter presents a monograph on the economic-financial conditions of the Professional equipment sector through an independent analysis of the financial statements data.

The gathering of financial statements can represent an important element of knowledge about the firms' peculiarities and the conditions of the competitive environment into the sector by interpreting the ongoing changes in the markets, the pressure and in the competitive positioning of the firms.

The relevance of the analysis of aggregated financial statements is evident from the results of this report, in which a sample of about 341 companies operating in Italy has been analyzed for a time interval of five years (2009-2013). Under the studies of CECED Italia, this set of companies is very close to the estimated population of firms manufacturing Professional equipment in Italy.

In the development of the analysis, it has been paid methodological attention with the aim to measure and highlight the phenomena, often hidden by relevant "statistical noise". Then, have been studied the results not only of the segment as a whole, but also of nine different product categories (or strategic business areas) judged relevant within the segment of Professional equipment.

The information included in this report would aim to increase the awareness on the performance and behaviors of the Italian manufacturers of Professional equipment for the Food service. The noble scope is to raise some *food for thought* on those common features that characterized most of the successful business models.

2.1. The research method

Even though the segment of Professional equipment is a niche compared with the white goods sector in Italy, this segment is complex due to a strong fragmentation among different products. Hence, in the first part of this chapter it will be provided an important classification made per economic activities.

The identification of the economic activities of the firms within the segment of Professional equipment for the Food service (hereinafter renamed only as Professional equipment) has seen a search process consisting of more phases and various selection criteria.

The first layer of classification refers the identification of manufacturers of Professional equipment within the manufacturing industry in Italy. For such purpose, the best tool is the ATECO 2007's list of commodities codes because they allow enclosing all firms manufacturing the same product under a common commodity code. However, the segment of Professional equipment for the Food service include a wide range of products and a single code for all manufacturers of Professional equipment does not exist. Thus, the search process has had to consider several ATECO codes of different nature.

Before to extrapolate the commodities codes of ATECO 2007 and include them in the research, the firms represented under each commodities code must demonstrate that the manufacturing of Professional equipment is the main source of revenue for the business.

The ability to organize the firms of interest per commodities codes has allowed the use of the portal AIDA, as basic tool for the research. The decision to use AIDA has led to the definition of some requirements in line with the purpose of the dissertation. First, the firms considered and gathered from AIDA are only limited companies (S.p.A. and S.r.l.) regularly registered in Italy and spread throughout the national territory. Second, in order to simplify the research, another parameter voluntarily added is a total turnover of € 1 million at least for the firms included in the research. The choice to fix the minimum size of € 1 million in turnover enables to exclude those firms of recent foundation with a history under 5 years and the microenterprises that for their small size would not contribute significantly to the analysis of the business models.

In the end, when a company manufacturing Professional equipment met all these requirements, it was included in a database (DB). Then, through the portal AIDA, a list of firms registered with the same commodity code of ATECO 2007 was generated in order to seek other companies. The following steps were the creation of a common DB with all selected firms and an overall analysis of the Professional equipment sector through the financial statements data of all selected companies over a period of five years, from 2009 to 2013.

The commodities codes listed below are the groups more numerous in the DB and they represent 288 firms, around 85% of the total sample. Instead, the missing commodities codes are low relevant because they represent groups with less than five firms or with a single firm.

Anyway, for a further comprehension of all commodities codes included in the research, please refer to the annex two in the end of the dissertation.

- code 28.93.00: "manufacture of machinery for the Food, Beverage and Tobacco industry (including parts and accessories)" – 146 firms;
- code 28.25.00: "manufacture of non-domestic equipment for refrigeration and ventilation" – 54 firms;
- code 31.01.20 (21 and 22): "manufacture of metal furniture and not for office and shops" – 25 firms;
- code 46.69.99: "wholesale of other machinery and equipment for industry, trade, and navigation" – 19 firms;
- code 27.51.00: "manufacture of appliances" – 8 firms;
- code 25.11.00: "manufacture of metal structures and assembled parts" – 7 firms;
- code 25.99.19: "manufacture of dishes, pots, tableware, kitchenware and other non-electrical equipment, metal items for the furnishing" – 6 firms;
- code 27.90.09: "manufacture of other electrical equipment" – 6 firms;
- code 28.21.10: "manufacture of ovens, furnaces and burners" – 6 firms;
- code 31.00.00: "manufacture of furniture" – 6 firms;
- code 28.29.10: "manufacture of scales and machines for sale and distribution (including parts and accessories)" – 5 firms.

The difficulties to seek manufacturers of Professional equipment are evident observing the code descriptions: the code 27.51.00 – manufacture of appliances – seems to be the most appropriate for the group of firms under analysis but on the contrary, it represents only eight firms, around 2,35% of the total DB. On the other hand, looking for a commodities code much more representative of the Professional equipment sector, the code 28.93.00 – "manufacture of machinery for the Food, Beverage and Tobacco industry (including parts and accessories)" – gathers the largest amount of manufacturers, exactly 146 firms that is 42,8% of the DB.

The results contained in this search process are the financial statements of a sample of 341 firms manufacturing Professional equipment for the Food service. In this regard, from the 341 firms have been gathered the financial statements for the period 2009-2013, for a total of over 1600 observations.

The allocation of the sample firms to the different “clusters” or product categories has concerned the second cycle of clarification because the only identification and collection of the commodities codes have not guarantee a clear classification per category of product. Although the diversities between economic activities start to be evident, it misses a rule able to mark the borders among products within the same sector. Thus, the standard model used in the research is the one adopted by the company Ali S.p.A., a giant in the segment of Professional equipment. The decision to look at the Ali S.p.A.’s business structure is because the company offers a wide range of products and its business divisions cover all market segments into the subsector of Professional equipment.

The only revision regards the products with different purposes of use. For example, into the cooking group there are ovens employed both in the bakery and pastry production and in the professional kitchen by chefs for the meal preparation. Another example can be the equipment into the refrigeration group: are included specific equipment for the conservation and controlled fermentation of bread and pastry but also cold systems like wine cabinets and chillers used in professional kitchen or inside bars and shops for the food exposition.

Facing these misunderstanding of allocation, the risks were to consider twice the same firms or deprive specific product groups of those firms already allocated elsewhere. Moreover, the rule to look at the market target for the specific equipment would not allow an optimal description of the product groups because almost all firms, included in the DB, diversify their offer on a wide range of products touching different market segments.

Therefore, the standard adopted for the allocation of Professional equipment under the appropriate group regards the technology incorporated into the product. In fact, some business cases demonstrate how manufacturers of Professional equipment can replicate the technology in similar market segments using expertise that they already own. Unox S.p.A. is a perfect example of firm that manufactures ovens and operates on more market segments: on professional kitchen and in the bakery and pastry production. Then, in the specific case of Unox S.p.A., considering its range of products the company has been included into the general product group of manufacturers of ovens that is part of the set of cooking systems.

These details will be better describe in the next paragraph with the presentation of the nine product categories into the Professional equipment sector.

2.2. The Database

The result of the research process is certainly important: the DB comprises 341 firms for a total turnover of € 4,5 billion and an EBIT of € 306 million in 2013¹. Comparing the turnover generated by the Italian manufacturers of Professional equipment with the data declared in the studies of CECED Italia, the subsector of Professional equipment amounts to 30,4% of the total turnover of the Italian white goods sector in 2013, approximately € 14,8 billion. It is a considerable share of the pie that today it is in the spotlight for a deep and overwhelming crisis of competitiveness of the Italian appliances. The estimate of the total amount of direct workers is over the 20.000 units (table 4).

Table 4: Accounting in the Professional equipment sector (2013)

(million euro)	
Number of Firms (units)	341
Turnover (Total Production value)	4.644
Sales Revenue	4.522
EBIT	306
Exports	1.216*
Direct employees (units)	20.531

Source: Financial statements data from the portal AIDA²

In a time interval of five years (2009-2013), the segment of manufacturers of Professional equipment has highlighted a steady growth both in the total Turnover (as sum of the Production value of all firms included in the DB) and in the specific Sales Revenues. The picture represented is a positive scenario with an increased ability of the Italian manufacturers to develop their business in terms of product offer and market destinations.

In order to elucidate the general situation of the sector, it has been decided to illustrate the time interval of five years (2009-2013) through two charts. The first one refers to the Total Turnover and the Sales Revenues of the Italian manufacturers included in the DB, while the

¹ The analysis of the economic conditions in the segment of Professional equipment was carried out by studying the financial statements of 341 firms in the interval time of 5 years, from 2009 to 2013. The annex 3 reports the complete list of all firms included in the Database.

² The total values of the table 4 represent the sum of the financial statements data of each company, obtained through the portal AIDA. Regarding the estimate of the total exports, the calculation has included the values of those companies that have documented in "The Management Report" the allocation of revenues by geographic areas. Thus, it does not represent explicitly the total value of export for the entire sample.

other one is about the overall EBITDA in absolute value and in percentage of the Total Turnover. Thereafter, a summary table provides documentary evidence of the growth trend through ratios of financial statements data.

However, the sample of financial statements analyzed has the peculiar characteristic of being dynamic that it means a different number of financial statements per each year concerned. This tends reflects on one hand the many changes in the manufacturing sector in the last five years (for instance mergers and acquisitions between companies, but also the entry and the exit into the market of new and old players) and, second, they are inevitable limitations encountered in the availability of financial statements of the selected companies.

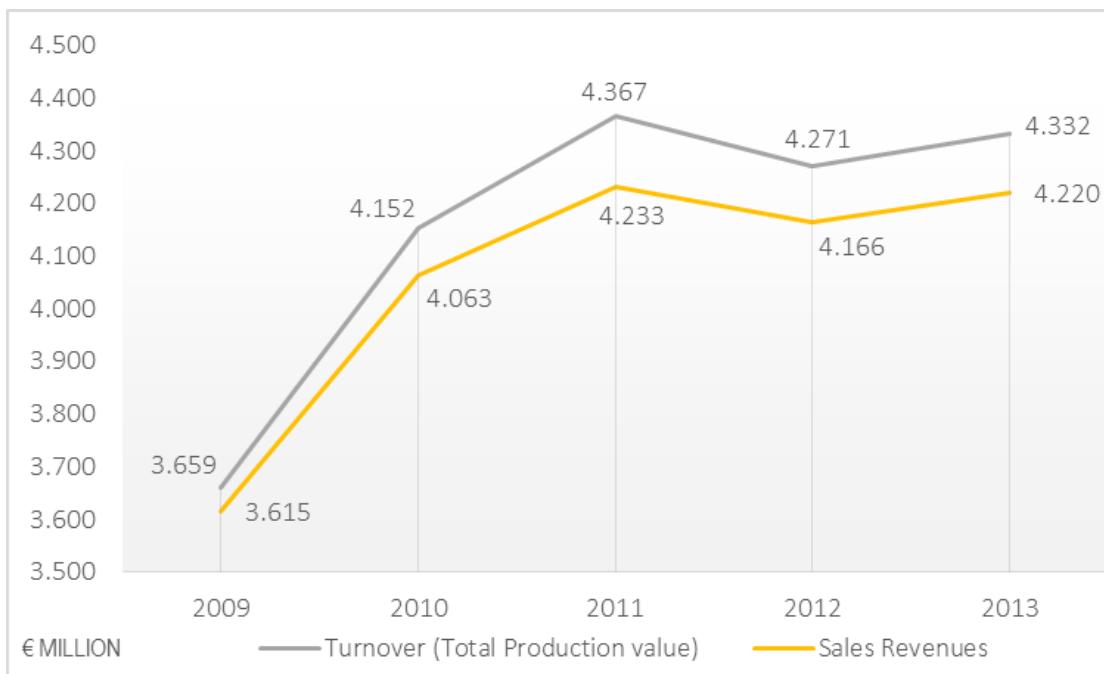
Therefore, the picture of the manufacturers of Professional equipment contemplates only those companies that have deposited in the chamber of commerce the financial statements for all five years considered. This solution enables to overcome the problem of different number of financial statements in the sample in the time period analyzed and to exploit all information that the financial statements have made available in the various years.

After the international economic crisis in the biennium 2008-2009, the financial statements data of the Italian manufacturers of Professional equipment have reported a strong growth in terms of Total Turnover (or Total Production value) and in the Sales Revenues in a time interval of five years, ending in 2013.

The first chart shows in gray the curve of the Total turnover and in yellow the trend of Revenues from sales of professional equipment for the food service. At the beginning of the analysis, the level of total Turnover and the Sales revenues of the sector were around € 3,6 billion. Apart the slowdown registered in the biennium 2011-2012, these values are increased steadily until to reach in 2013 a Total Turnover of € 4,33 billion and € 4,22 billion of Sales Revenues (chart 14).

Comparing the initial values in 2009 with the level reached by the whole sector of Professional equipment in the end of 2013, the growth has meant an average +18,4% for the Turnover and +16,7% exclusively for the Sales Revenues (table 5). These figures are relevant indexes on the health status of the sector and demonstrate the business development path undertaken by the Italian manufacturers.

Chart 14: Total Turnover and Sales Revenues of Italian manufacturers of Professional equipment for the Food Service, (2009-2013)



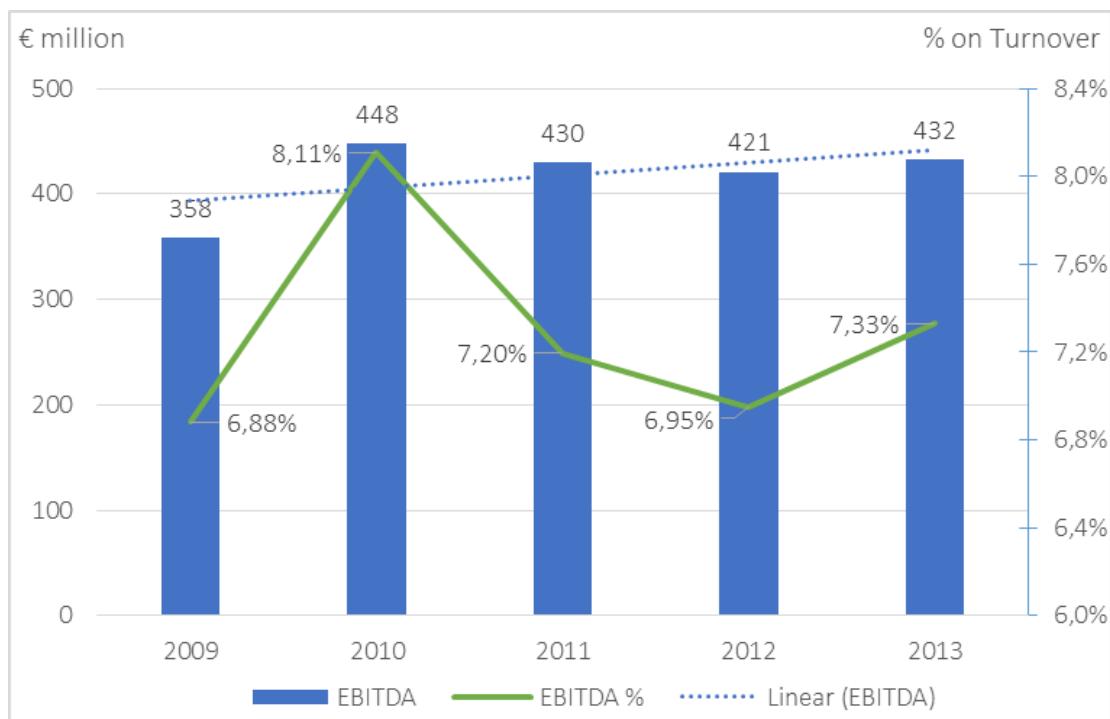
Source: Financial statements data from the portal AIDA

In the time interval 2009-2013, the financial statements data provide the evidence of a growth trend also in the operational margins. In detail, the chart 15 demonstrates the level of EBITDA measured in absolute value and in percentage of the total Turnover.

In the period 2009-2010, the amount of EBITDA (for all companies with registered financial statements in the time interval concerned) increased significantly reaching € 448 million in absolute value, almost 25% more than the previous year (table 5). In concordance, the average percentage of EBITDA exceeded the 8% of total Turnover, more than one percentage point up.

In the next years, although the EBITDA in the sector is remained on high levels, it has remarked two opposite trends. With the sample of companies fixed on those firms with financial statements for all five years, the EBITDA in absolute value has kept a constant trend around to € 430 million. Instead the average percentage of EBITDA of all firms has seen decreasing the level of more than one percentage point to 6,95%, close to the value got at the beginning of the research (2009). Only in the last biennium 2012-2013, the percentage of EBITDA returned to growth exceeding the percentage recorded in 2011 (chart 15).

Chart 15: EBITDA in absolute value and % of the Total Turnover (2009-2013)



Source: Financial statements data from the portal AIDA

The table 5 summarizes the data of the sector exclusively for the companies included in the DB, which have deposited in the chamber of commerce the financial statements for all five years considered. The left side indicates the numerical values of Total Turnover, Sales Revenues, Exports, and EBITDA while the right part shows the variations for each period. The only review regards the values of domestic sales and export because were gathered only for the years 2012 and 2013.

Table 5: Numbers of the sector of Professional equipment in Italy (2009-2013)

	2009	2010	2011	2012	2013	2010/ 2009	2011/ 2010	2012/ 2011	2013/ 2012	2013/ 2009
	(million euro)					% variations				
Turnover (Production value)	3.659	4.152	4.367	4.271	4.332	13,48%	5,16%	-2,19%	1,43%	18,40%
Sales Revenues	3.615	4.063	4.233	4.166	4.220	12,41%	4,17%	-1,59%	1,31%	16,74%
Domestic market*				1.293	1.244					-3,79%
Export*				2.369	2.485					4,91%
EBITDA	358	448	430	421	432	24,95%	-3,87%	-2,15%	2,72%	20,74%
EBITDA %	6,88%	8,11%	7,20%	6,95%	7,33%					

* data from only those companies that have reported in their financial statements the geographical allocation of revenues

Source: Financial statements data from the portal AIDA

The sector is characterized by a clear predominance of SMEs ranked by turnovers below € 100 million (especially under € 20 million). Nevertheless, inside the segment of Professional equipment, there are also groups of companies with consolidated revenues at group level above € 500 million. These groups have Italian origins like the Ali Group, Electrolux Professional (the ownership is Sweden but the technical and commercial culture has strong Italian roots) and Angelo Po Grandi Cucine; and companies with foreign origins as the result of foreign operators entered in the market by acquiring brand and Italian factories (table 6).

Using the turnover as the size variable to measure the firms and the sector it is possible to calculate the market share of the major industrial firms operating in Italy. Before the calculation, there are some assumptions to clarify: even the turnover is a flow and it may be affected by particular annual trends, in the last 5 years the market shares of the major firms have been quite stable within the entire sector. The second assumption regards the total turnover considered for the calculation of market shares. The total turnover reported does not contemplate the share of imports because it is very low and using this figures in the table 5 there is no the risk of overestimating the shares of the Italian manufacturers.

Applying the concentration ratio (CR) on the major industrial firms operating in Italy results that Ali S.p.A., the first company in term of turnover, got 7,35% of markets share in 2013. Instead, the sum of the ten major firms reached a total market share approximately of 32,55%. Then one can state that the segment of Professional equipment has a low concentration ratio.

Table 6: The major industrial firms operating in Italy (2013)

Turnover in the FY2013	(million euro)
ALI S.p.A.	332
ELECTROLUX PROFESSIONAL S.p.A.	279
COSTAN S.p.A.	182
ARNEG S.p.A.	172
GRUPPO CIMBALI S.p.A.	117
ISA S.r.l.	101
IARP - S.r.l.	79
IMAFORNI INT'L S.p.A.	76
EUROTEC S.r.l.	67
UNOX S.p.A.	67

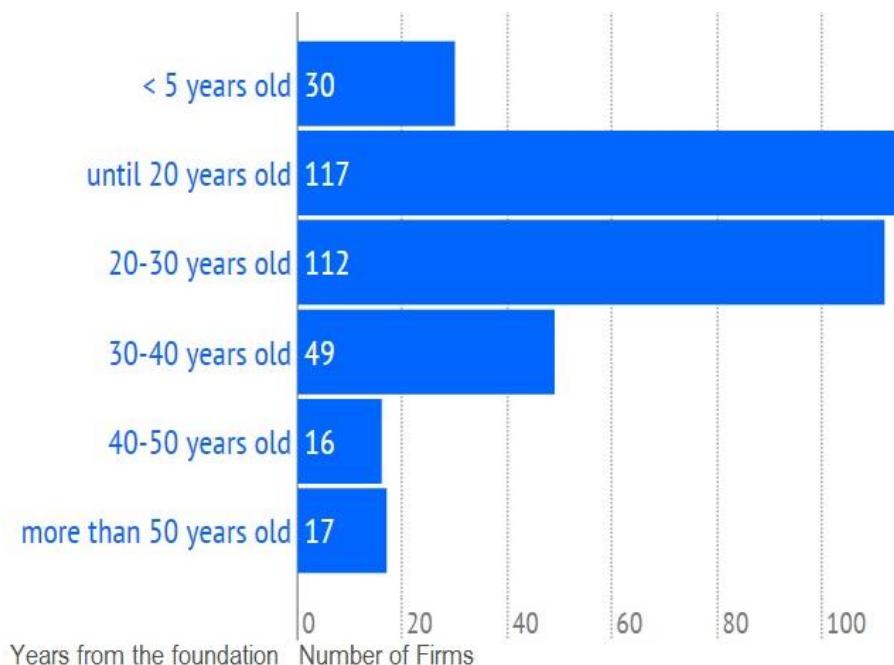
Source: Financial statements data from the portal AIDA

The reasons of a dimensional characteristic of the sector tending to companies of small-medium size depend also on the history of the sector and then the number of years since the foundation of each company. On this topic, the chart 16 analyzes all firms included in the DB.

Although the success of the Italian manufacturers of Professional equipment is recognized at the international level, the sector is a relatively young, in fact, the majority of firms included in the DB have a business history enclosed between 5 and 30 years old. Exceeding the 30 years of history seems to be the major stumbling block for the manufacturers of Professional equipment. In the chart, the number of firms is halved drastically going from 112 units in the range 20-30 years old and ending to 49 companies with a business history enclosed between 30-40 years old. Also in the next step the number is significantly reduced from 49 units to 16 firms that are between 40-50 years old. After the 50 years old, the business model seems to be consolidated and the number of companies remain almost similar to the previous step.

The 30 firms of newly foundation (lower than 5 years old) are those companies excluded from the general analysis of the sector of Professional equipment, regarding Total Turnover and EBITDA. These companies were excluded from the analysis in order to keep the sample of firms constant in the time interval concerned (2009-2013).

Chart 16: History of the sector and Years from the foundation of the firms

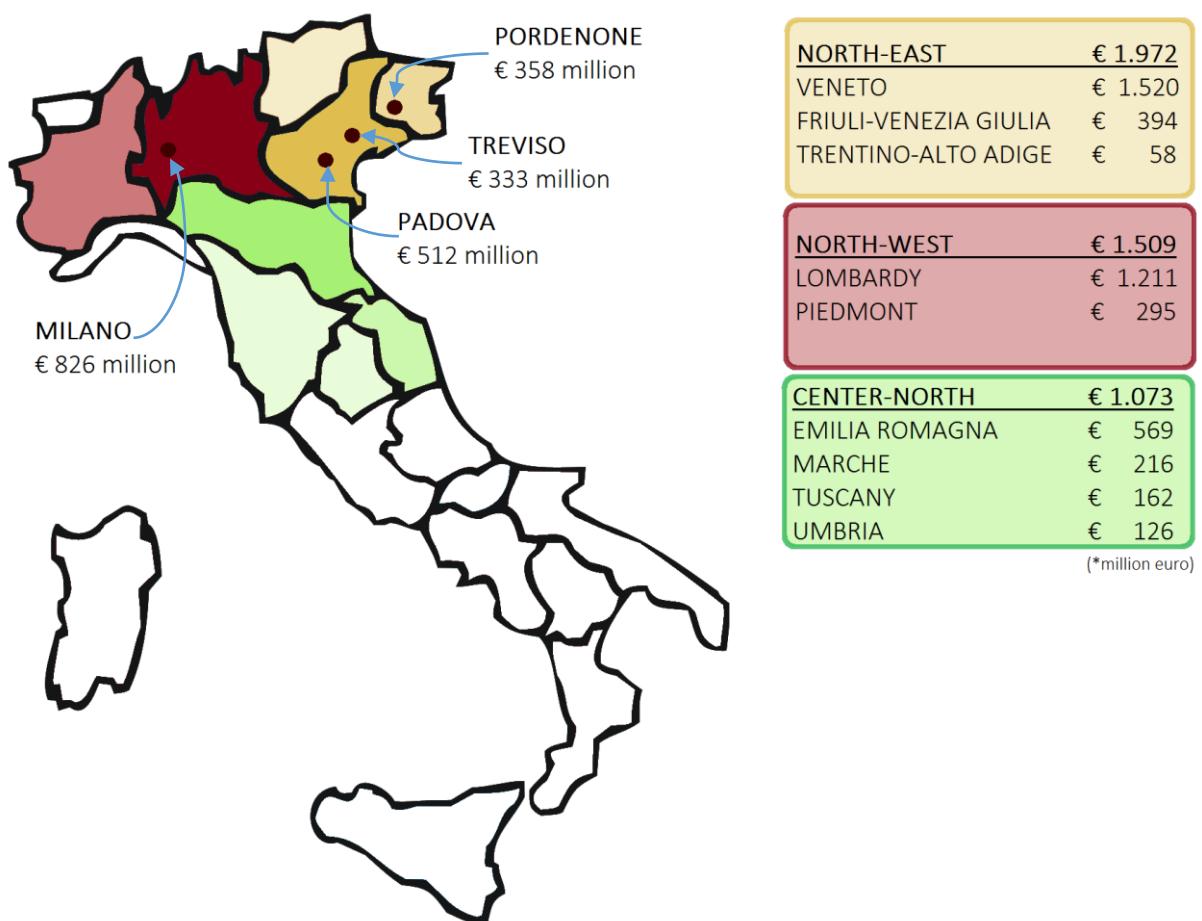


Source: Financial statements data from the portal AIDA

Another relevant feature detected in the sector is a strong territorial connotation of the manufacturers of Professional equipment. The majority of SMEs are in the North East, especially in the historical cluster of high vocation in the appliances field between Pordenone (Zanussi) and Conegliano Veneto (Zoppas). The culture of these territories has spread a sense of "entrepreneurship", extending to the owners of companies and to people who work there.

Looking at the geographical distribution of the industrial sites manufacturing Professional equipment (figure 2), the highest concentration is in the North area of the country, where the macro-regions of North-East and North-West generate together 75% of total turnover in 2013. The distribution in the remaining areas of the country is followed by the Center-North macro-region that represents approximately the 23% of total turnover, and after, in order of size, Center-South, South and then only Sicily in the group of islands. The first macro-regions ordered by level of turnover are detailed in the three rectangles at the side of the map.

Figure 2: Geographical distribution of Manufacturers of Professional equipment (2013)



Source: Financial statements data from the portal AIDA

Taking the regions individually, the first three regions that most contribute to the total turnover of the Professional equipment sector are Veneto with € 1.520 million, Lombardy with € 1.211 million and Emilia Romagna with € 569 million (highlighted with the brightest colors in the figure one). The total of these three regions is above the € 3,3 billion, 71% of the total turnover of the sector.

Through a more detailed analysis, it can be seen that the most important provinces are in order Milan, Padua, Pordenone and Treviso. In terms of turnover, they catch € 2.030 million, around 44% of the total turnover of the entire sector in 2013. The manufacturers operating in these few provinces can explain the strong concentration in turnover around four provinces.

In the portal AIDA, SMEs have usually the same reference for the registered office and the operational headquarter. In the case of groups or multinationals with several manufacturing centers under the same ownership and the impossibility to split the revenues for each center (for instance the situation of the group Ali S.p.A.), the standard methodology used has foreseen the recording into the DB of the location of the registered office of the company or the group.

After these clarifications, an individual analysis on the first four provinces and on the major manufacturers operating there is provided. Beginning from the first province per level of turnover, Milan got € 826 million in 2013. The most important manufacturers are the group Ali S.p.A. with registered office in Milan but it owns operating centers throughout the national territory that correspond to business divisions in all market segments of Professional equipment sector. Other important firms are Gruppo Cimbali S.p.A. and Rancilio Group S.p.A. specialized in the field of professional coffee machines.

The second province per level of turnover is Padua with € 512 million in 2013, approximately the same turnover generated by the region Emilia Romagna. Here, there is a high vocation on the industrial refrigeration with the company Arneg S.p.A. and on the production of ovens with the company Unox S.p.A.

The province of Pordenone is the third one with a total turnover of € 358 million. Electrolux Professional S.p.A. drives the economy of the territory in fact, the Swedish multinational is specialized in almost all market segments of the Professional equipment sector including turnkey services.

The last province significant for the level of turnover is Treviso. The territory is characterized by manufacturers in all range of products of the Professional equipment for the Food service. Anyhow, the CMA Macchine per caffè S.r.l., Irinox S.p.A. and Castel Mac S.p.a. are the major players that led the total turnover of province to € 333 million in 2013.

In the end of the dissertation, the annex 4 provides the breakdown of the total turnover generated in 2013 by geographical areas (from Macro-regions, to regions and provinces).

2.3. Nine Strategic Business Areas

In order to permit a more efficient reading of the companies' performance of Professional Equipment, nine different competitive environments have been identified inside the sector in which operate individual firms. These competitive environments, characterized by specific conditions, are also called with the term "Strategic Business Areas" (SBA)³.

More specifically, the Strategic Business Areas are the result of the second cycle of clarification explained in the methodological research notes (paragraph 2.1). Therefore, in the DB, the manufacturing of Professional equipment has been split through nine product categories, each category has been coupled with a specific color and it will be constant throughout the dissertation research.

1. Bakery production

They are integrated machines for all preparation stages in a bakery: from dough mixing to forming such as spiral mixers, dividers, moulders, conical rounders and groups for bread. As described before, the cold storage equipment used for conservation and controlled fermentation are included in the refrigeration product group while the bread ovens are integrated into the cooking group.

2. Coffee machines

Production of fully-automatic machines, professional espresso machines and dosing-grinders.

³ A Strategic Business Area (SBA) is a portion of sector or market identified by the typology of target client, by the alternative technologies of production and the benefits sought by end users (Barbarito L., 2011).

3. Cooking: kitchens & ovens

The cooking group can be split on two categories: kitchens and related accessories, and ovens. The first category gathers premium heavy-duty professional cooking ranges, bespoke cooking systems, modular cooking, and other special cooking equipment like combi and tilting kettles, pressure steamers, and bratt pans, fryers, chargrills and grills, griddles, and so on.

The range of ovens is for all cooking and baking needs. Included models for gastronomy and confectionery, as well as convection ovens, combi ovens that are compact and easy to use, pizza ovens and combi steamers with the related accessories.

4. Gelato machines & Beverage dispenses

Production of soft serve ice cream machines, vertical gelato makers, cream whippers, batch freezers and pasteurizers, slush and shake machines, yogurt machines, refrigerated units for cold drinks, hot chocolate and hot drink dispensers.

5. Ice makers

Self-contained and modular machines depending on the type of ice made: hollow-shaped cube, square section full cube, waffle-style dice cube, nugget, flake ice, pearl ice; and commercial storage & ice transport systems, and ice dispensers.

6. General equipment in meal preparation & delivery

This product group gathers all general equipment used for the food preparation like mixer, vegetable slicers, French fry cutters, knife sharpening, can openers and can crushers, peelers, hamburger machines, and so on; and for the delivery like cook-serve, cook-chill and cook-Freeze meal delivery, tray line systems, trolleys, and line of dishware and disposables.

7. Refrigeration

Products include reach-in refrigerators and freezers, cabinet, counters, worktop and under counters, blast chillers, cold rooms, glass door merchandisers, school milk coolers, open-air merchandisers, bottle coolers, bar equipment including: back bar, deep well, and direct draw models. As wrote before, the professional refrigeration can be used on different market segments like restaurants, caterers, bakeries and pastry shops, bars and butchers.

8. Turnkey: contract, distribution & service

Provision of complete professional catering solutions, supplying, installing and supporting projects from major contract caterers to hospitals, from institutions to famous luxury hotels, from restaurants to single bar and bakery. This product group includes also product & technical training, after sales service and parts.

9. Washing and waste management

Production of commercial ware washing equipment: rack conveyor and flight type dishwashers, granule warewashers, pot and pan washers, pulpers, glass washer and so on.

In the product groups described above, all firms designing and manufacturing bottling systems, packaging plants and, in general, all large plants for the food processing are excluded. Although also the Italian firms manufacturing industrial plants and systems for the food processing play a leadership role at world level, the dissertation research has preferred to omit this specific segment from the Professional equipment sector. Essentially the target market is different because they look at to large producers of food that turn to supply large and small retailers. Conversely, the firms included in the DB are focused on all professional equipment employed directly in the food preparation and/or delivery of services to end users or consumers. In fact, the Professional equipment are products used in places like restaurants, bakeries, bars, ice cream shops, hotels, and canteens.

Afterwards to the distinction among SBAs or product groups, now it is possible to organize the DB and describe in detail the composition of the professional equipment sector.

The largest SBA is the General equipment with 77 firms, around 23% of the total number of firms in the DB. The wide range of products included explains the size of this group: there are small appliances for bars and restaurants like mixer, blenders, juicers, etc. and other equipment like mincer, slicers, and bone saws, graters for the food processing. The smallest SBA is the icemakers with only 6 firms, around the 2% of the DB. Other SBAs of relevant size are refrigeration, cooking and turnkey. The second group per number of firms is the refrigeration with 68 firms, around 20% of the total. The third group - cooking with kitchens and ovens - represents 60 firms and 18% of the total DB, followed by the turnkey with 46 firms (13% of the total) classified as providers of fully solutions in the hospitality and catering sector, and after sales services and training programs. Always in order from the largest to the smallest, the

remaining groups are the Coffee machines with 29 firms (8%); the Gelato machines and Beverage dispensers with 23 firms (7%); the Bakery production with 20 firms (6%); in the end, the Washing machines with 12 firms that is 3% of the total DB.

The size in number of companies per each SBA does not describe properly the distribution of Total Turnover and EBITDA within the sector. Thus, the charts 17 and 18 show the percentage weight of the different SBAs respectively in terms of Total Turnover and EBITDA.

Chart 17: Weight (%) of Total Turnover (2013) distributed by SBA

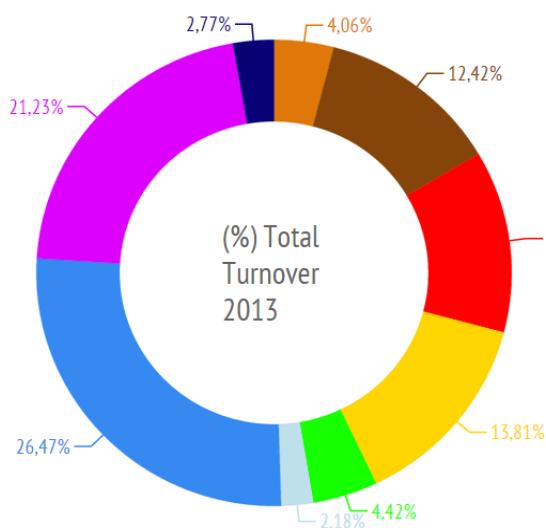
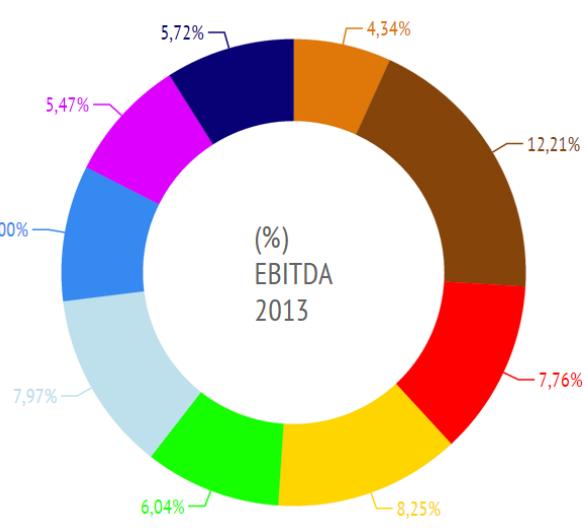


Chart 18: Weight (%) of EBITDA (2013) distributed by SBA



Bakery production **Coffee machines** **Cooking: kitchens & ovens** **Gelato machines** **General equipment**
Refrigeration **Turnkey: contract & services** **Icemakers** **Washing and waste management**

Source: Financial statements data from the portal AIDA

Regarding the Total Turnover, the largest share is the refrigeration group with 26,47% that corresponds to € 1.229 million. Such a high level of Turnover is explained by the concentration ratio of the SBA in which the first five companies (Costan S.p.A.; Arneg S.p.A.; Indel B S.p.A.; Iarp S.r.l.; and De Rigo Refrigeration S.r.l.) achieved around 45% of the total turnover in 2013.

The second SBA per share of total turnover is the Turnkey group with 21,23% (€ 986 million). Even for the turnkey the situation is analogous to the refrigeration group. The three most important players contribute with 75% to the total turnover of the SBA. These players are Ali S.p.A., Electrolux Professional S.p.A., and Isa S.r.l.

Other relevant SBAs, always in terms of Turnover generated within the Professional equipment sector, are the General equipment, Cooking, and Coffee machines. Their share of Turnover is between the ranges of 12-14%, approximately from € 576 million of coffee machines to € 641 million generated by the firms manufacturing general equipment.

Perhaps the chart 18 is more interesting because illustrates the EBITDA (or operational margins) per each SBA. First, it is computed the EBITDA as percentage of the Turnover 2013 in each firm, thereafter the chart displays the average percentage of EBITDA of all firm included in a specific SBA. From these calculations, the highest percentage of EBITDA comes from the manufacturers of Coffee machines (12,21%), after General equipment (8,25%), Ice markers (7,97%) and Cooking (7,76%). The lowest level of operational margins is attributed to the Bakery production with 4,34% of EBITDA on the Turnover 2013.

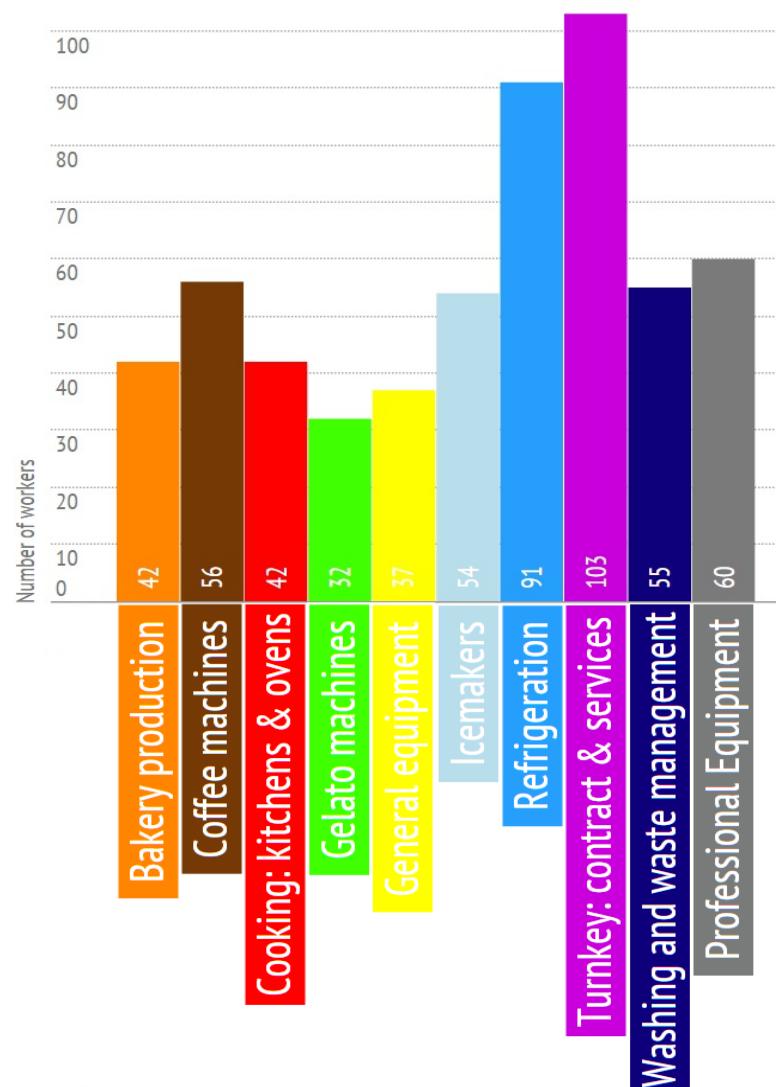
The sector of Professional equipment has a relevant weight also in terms of number of direct workers employed. Comparing the number of direct workers in the DB and the data observed by CECED Italia, the manufacturers of professional equipment represent a total workforce of 20.515 people, around the 20,5% on the white goods sector.

Because the number of employees is a data extrapolated from the financial statements 2013 of each firms included in the DB, it may be subject to criticism or to sensitive changes in the years. However, it is important to underline that the number of employees represents only the direct workers whereas the indirect workers and all workers with particular contractual forms (linked to projects, temporary contracts, etc.) are excluded from the count.

An interesting aspect is the relation between the number of employees and the number of firms inside each SBA because the ratio computed can explains the average size of the firms in a specific product group (the figures refers only to the fiscal year 2013). For instance, taking in consideration the largest SBA for number of firms (77 units) - General equipment - it is only the third one for number of employees (2.873). In the opposite way, the Turnkey is the fourth for number of firms (46 units) but it ranks in second position for number of employees (4.745). Such large number of employees is due to the inclusion of leading companies like Ali S.p.A. and Electrolux Professional S.p.A. because their manufacturing covers all market segments.

Therefore, the chart 19 shows the average size of firm per each SBA through the ratio between the number of direct workers and the number of firms.

Chart 19: Average size of firms per SBA (Number of employees / Number of firms)



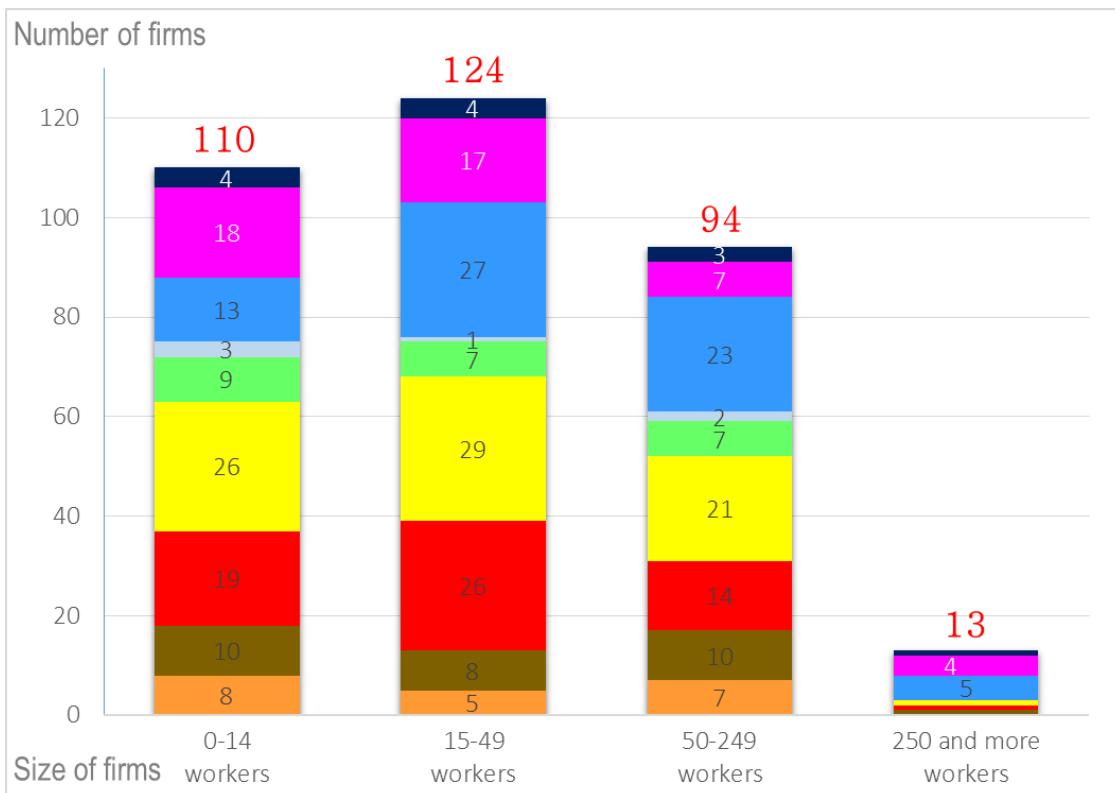
Source: Financial statements from the portal AIDA

In these terms, the Turnkey group with its leading companies has the largest average size with 103 direct workers per firm. Follows the Refrigeration with an average of 91 workers thanks to Costan S.p.A. and Arneg S.p.A. at the third and fourth position in the rank of the major industrial firms of the sector. Thereafter there are the manufacturers of Coffee machines with an average of 56 workers per firm. The SBAs with the lowest average size of firm are the Gelato machines and Beverage Dispensers with 32 workers and the General equipment with 37 workers. The median into the sector of Professional equipment is 60 employees per firm and it is six times greater than that of the Italian manufacturing as a whole (nine workers per firm⁴).

⁴ Elaborations on ISTAT data 2013

The dimensional character draws attention on the SMEs also in the case of internal analysis for the different SBAs. In fact, the firms identified with a workforce between 15 and 49 employees are 124 units (36,4% of the DB), followed by firms classified in the range 0-14 workers which are 110 units (32,3%). Considering small companies those firms with a workforce lower than 50 employees, the set of small firms in the DB are 234 units, around 70% of the sample. The medium companies with a minimum of 50 workers and a maximum of 249 employees are 94 units (27,8%) instead, the large companies with 250 employees or more are 13 units, around 4% of the DB. Thus, excluding the large companies, the SMEs characterized by a workforce until 249 employees represent the majority with 96% of the total.

Chart 20: Dimensional characteristic of firms distributed by SBAs (2013)



Source: Financial statements data from the portal AIDA

Using always the same legend of colors, the chart 20 illustrates the size composition in absolute numbers of firms distributed by the SBAs. Some relevant aspects refer to the Refrigeration and the Turnkey groups because they contain the greatest number of large companies with a workforce over 250 employees. Instead, general equipment is the group with more small firms (26 units) and medium firms (29 units) in the DB.

Following a top-down approach adopted in previous analyzes (see the breakdown in the white goods sector), the next paragraph will focus on the performance of each Strategic Business Area (SBA) into the sector of Professional equipment.

The goal is to highlights the differences in performance in order to identify which segments contribute most to the positive results of the niche manufacturers of Professional Equipment for the Food Service. The comparisons in terms of growth of the Turnover and Sales Revenues, and levels of EBITDA under a perspective of medium-term (the time interval of 5 years – 2009-2013) are the basic method for the study of the performance.

The identification of the most successful SBA will allow to move deeper the focus directly on those companies that act as drivers for the entire segments (chapter 3). Using a top-down approach, the dissertation research aims to discover the common features that have led some business models to success and thus hypothetically they could have applications in other fields.

2.4. Differences in performance between Strategic Business Areas

The comparison between Strategic Business Areas within the sector of Professional equipment follows the top-down criteria. After the general presentation of the sector of Professional equipment and the subsequent distinction between Strategic Business Areas, the dissertation provides a comparison on performance between the different segments (SBAs).

The advanced analysis on this paragraph recalls the methodological tools used in the distinction among the SBAs. More precisely, the analysis will be carried out through two indexes considering the time interval 2009-2013: from one side the progression on the values of Total Turnover and Sales Revenues, and on the other side, the levels of EBITDA in percentage recorded in the last year (2013). The two indexes will be studied separately first to understand the internal dynamics and then the overall results will be grouped in a summary chart.

In the chart 21, the percentage growth of Total Turnover of the sector of Professional equipment has been split by SBAs during the time interval, 2009-2013. The percentages of growth compare the results of each year with the level of Turnover recorded in the previous year. Thus, considering as a starting point the values in 2009, the chart shows four comparisons: 2010-2009, 2011-2010, 2012-2011, and 2013-2012. In the case of an unstable growth for a

SBA, the straight-line swings on the X-axis, instead when the growth trend is constant along the time interval, the straight-line tends to be parallel to the X-axis.

Considering the starting values in 2009, all Strategic Business Areas have showed a strong growth in 2010 probably as effect of the post-economic crisis. First, the segment of Icemakers stands out with a growth of 40% from the previous year. Being the icemakers a small group with only 6 firms in the DB, the growth effect is due mainly to the two leading companies from Milan, Frimont S.p.A. owned by the group Ali S.p.A. and Brema Ice makers S.p.A. that together have always represented around 90% of the entire segment.

In order from the largest growth from the smallest one, after the Ice makers there are the segments of Bakery production and Gelato machines with growth percentages in their turnover above the 20%. By contrast, the only segment under the threshold of 10% is the Turnkey group with a growth in Turnover of 5,87% from the year 2009.

In the next years, all SBAs seem to suffer an important reduction, going back on more "normal value" of growth. Although almost all SBAs has recorded a positive trend of growth in their turnover, the segments of Cooking, Gelato machines, Ice makers and Refrigeration has kept percentages level between 5 and 10%. Instead, the Bakery Production recorded a percentage value of growth under 5% while the General equipment got closer to zero growth. Worse was only the segment of Washing that in 2011 it has begun a process of decline, when the degrowth was just of -0,66%.

The only segments to maintain a strong growth and then an ongoing development of their business were the manufacturers of professional Coffee machines with a percentage of 12,8% and the Turnkey group with 20,8% from the previous year. For the first group, the medium-size companies (above € 15 million of Total Turnover) have driven the growth; some of them are Rancilio Group S.p.A., Carimali S.p.A., Mazzer Luigi S.p.A., and Nuova Simoncelli S.p.A.

Regarding the Turnkey, the relevant percentage growth is due to the entry in the segment of a new player, ISA S.r.l. born from three different brands in the refrigeration field and nowadays one leading companies specialized in shop furnishing and turnkey services.

The process of realignment to "normal values" of the growth percentages continued also in the last biennium concerned, 2012 and 2013. In particular, the 2012 has seen a strong slowdown in almost the entire sector of Professional equipment and for some SBAs also a

degrowth comparing the values got in 2011. The segments most affected by a degrowth were the Washing with -11,6%; Bakery production and Cooking between the range of -6% and -5%; and General equipment, Refrigeration and Turnkey below the -2% of degrowth. Following the values in 2011, the only SBAs to maintain a positive trend were the Icemakers (3,83%) even though the slope of the curve is negative since 2010; the Gelato machines (5,84%); and the Coffee machines with 13,34%. The manufacturers of Coffee machines are the only segment that improve their business in 2012, starting from the values recorded in 2011.

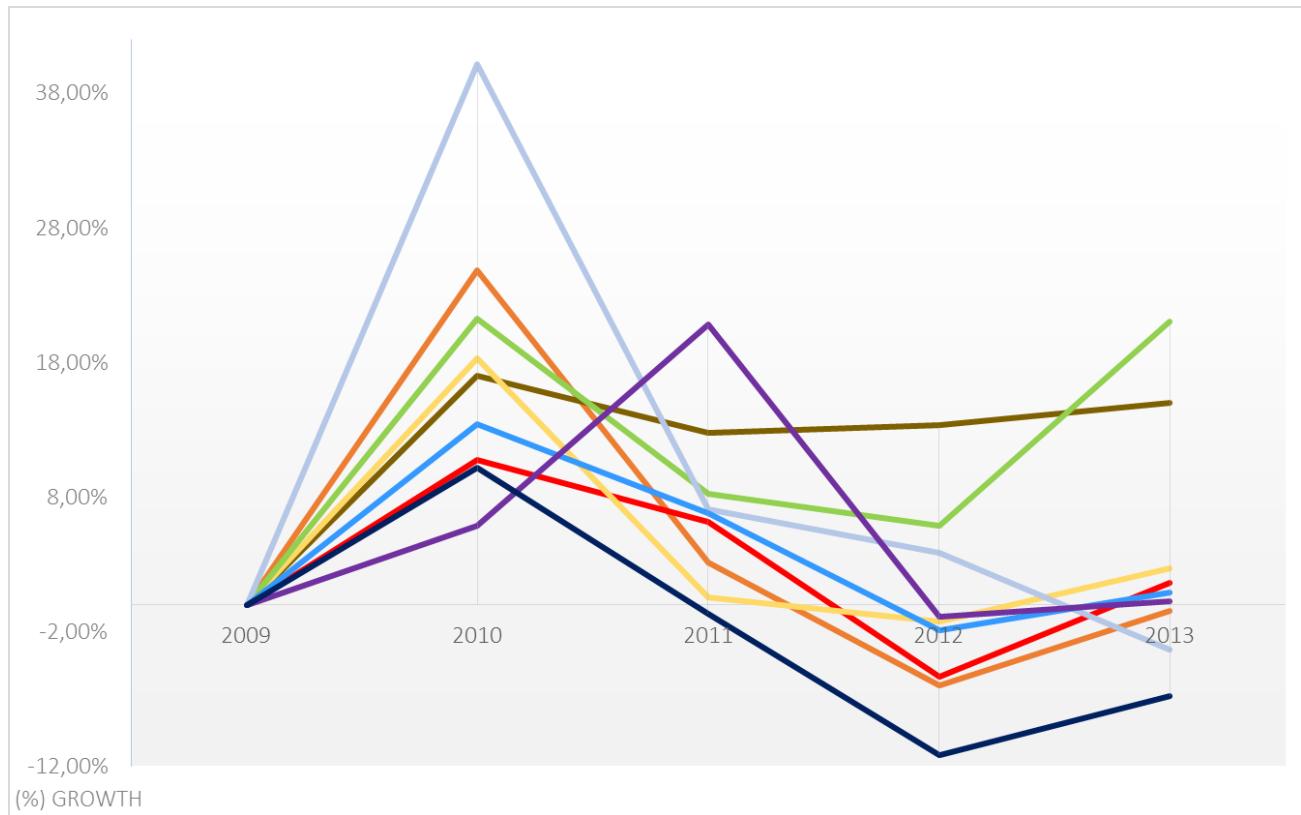
The last year (2013) is characterized by a general recovery of the sector. All SBAs showed a positive slope in the curve of percentage growth. Only the Icemakers were unable to reverse the negative trend began in 2010 with a constant regression in the total Turnover. Even though the percentages of growth were positive if compared with the values of 2012, the only segment able to recover the entire loss and to increase the Turnover over the total got in 2011 was the General equipment. The others segments (Cooking, Refrigeration and Turnkey) with positive percentages have not grown enough to recoup the values of Total Turnover recorded in 2011.

It's important to underline how in 2013, the segment of Gelato machines increased significantly (+21%) from the values in 2012 and the Coffee machines have kept a constant growth trend (+14,96%) in line with the previous years.

Through an analysis of the percentages of growth in the Total Turnover during the time interval of five years, the most interesting SBA seems to be the manufacturers of Coffee machines because they have kept a growth trend constant on high levels in all five years.

The decision to draw the trends of the total turnover for the SBAs (chart 21) exemplifies also what the Sales Revenues showed during the time interval concerned. In fact, looking at the summary tables below, there is a general alignment between the trends in Total Turnover and the levels of Sales Revenues achieved by each SBA.

Chart 21: Growth (%) in Total Turnover split by SBA, (2009-2013)



Source: Financial statements data from the portal AIDA

Tables 7 and 8: Total Turnover and Sales Revenues split by SBA, (2009-2013)

Total Turnover (k€)	2009	2010	2011	2012	2013	2010-2009	2011-2010	2012-2011	2013-2012
Bakery production	156.639	195.593	201.778	189.714	188.783	24,87%	3,16%	-5,98%	-0,49%
Coffee machines	335.510	392.484	442.670	501.710	576.782	16,98%	12,79%	13,34%	14,96%
Cooking	519.300	575.267	610.462	577.677	587.015	10,78%	6,12%	-5,37%	1,62%
General equipment	531.224	628.579	632.225	624.228	641.309	18,33%	0,58%	-1,26%	2,74%
Gelato machines	122.167	148.104	160.258	169.612	205.257	21,23%	8,21%	5,84%	21,02%
Ice makers	67.228	94.223	100.886	104.747	101.284	40,15%	7,07%	3,83%	-3,31%
Refrigeration	1.025.319	1.163.040	1.242.342	1.218.485	1.229.325	13,43%	6,82%	-1,92%	0,89%
Turnkey	776.058	821.590	992.676	983.914	986.146	5,87%	20,82%	-0,88%	0,23%
Washing	141.736	156.192	155.157	137.841	128.525	10,20%	-0,66%	-11,16%	-6,76%

Sales Revenues (k€)	2009	2010	2011	2012	2013	2010-2009	2011-2010	2012-2011	2013-2012
Bakery production	156.879	193.130	194.345	187.672	183.817	23,11%	0,63%	-3,43%	-2,05%
Coffee machines	330.859	382.321	432.228	482.174	563.689	15,55%	13,05%	11,56%	16,91%
Cooking	507.444	567.999	593.820	563.150	575.592	11,93%	4,55%	-5,16%	2,21%
General equipment	532.067	610.426	611.614	616.665	625.009	14,73%	0,19%	0,83%	1,35%
Gelato machines	121.061	144.413	151.584	166.018	201.919	19,29%	4,97%	9,52%	21,63%
Ice makers	68.869	93.138	99.594	102.663	100.214	35,24%	6,93%	3,08%	-2,39%
Refrigeration	1.005.895	1.132.798	1.201.641	1.180.154	1.189.342	12,62%	6,08%	-1,79%	0,78%
Turnkey	769.161	808.378	965.452	956.816	957.871	5,10%	19,43%	-0,89%	0,11%
Washing	138.271	153.003	151.751	134.807	124.699	10,65%	-0,82%	-11,17%	-7,50%

Source: Financial statements data from the portal AIDA

The second part of the paragraph studies the differences in performance between SBAs thorough the analysis of the average margins got by the manufacturers in each product category.

The process to compute the overall average margins in each SBAs follows a bottom-up critieria. In a first phase, from the financial statements of each selected firms, the values of EBITDA for all five years (2009-2013) have been gathered and included in the DB. Then, by dividing for every fiscal year the EBITDA with the Total Turnover (or Production value) has allowed to determine an operational margin expressed in percent for the single company.

Afterward, knowing the operational margins of each firm in all five years, it has been possible to compute an operational margin representative for every SBAs, by averaging the percentages of all firms in the segment for all year concerned.

In the following table is represented the trend in operational margins which each SBA is subjected to. On the left side of the table there are the average levels of EBITA as percentage on the Total Turnover recorded in each SBA for all years. The right side of the table, there are the variations as percentage subtractions between the current year and the previous one. This representation will help to avoid misunderstanding and incorrect charges because a general trend with relevant fluctuations on values, similar what it has been illustrate in the chart of the Total Turnover, is quite unlikely. Essentially, an average level of operational margin indicative for an entire SBA can not conceive great differences into a time interval of five years.

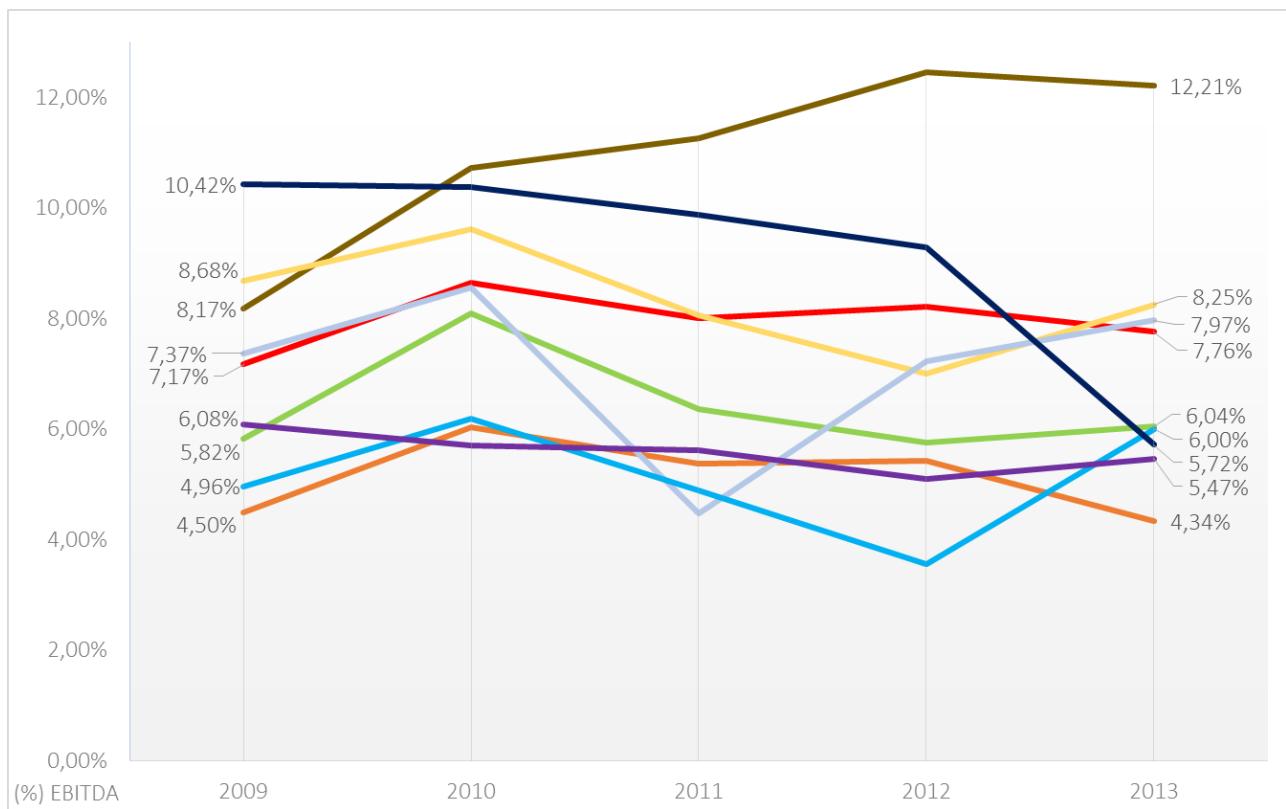
The same data (% EBITDA) are shown also on the chart 22 so to highlight which segments have greater operational margins and have improved their ability to generate profits during the five years, 2009-2013.

Table 9: % EBITDA split by SBA, (2009-2013)

SBAs	2009	2010	2011	2012	2013	2010-2009	2011-2010	2012-2011	2013-2012
	% EBITDA on Total Turnover (Production value)					% variation			
Bakery production	4,50%	6,03%	5,37%	5,43%	4,34%	1,53%	-0,66%	0,06%	-1,10%
Coffee machines	8,17%	10,72%	11,26%	12,45%	12,21%	2,55%	0,55%	1,18%	-0,24%
Cooking	7,17%	8,65%	8,01%	8,22%	7,76%	1,48%	-0,64%	0,21%	-0,46%
General equipment	8,68%	9,62%	8,05%	7,00%	8,25%	0,95%	-1,57%	-1,05%	1,25%
Gelato machines	5,82%	8,10%	6,36%	5,76%	6,04%	2,28%	-1,74%	-0,60%	0,28%
Ice makers	7,37%	8,56%	4,48%	7,22%	7,97%	1,19%	-4,08%	2,74%	0,75%
Refrigeration	4,96%	6,20%	4,88%	3,56%	6,00%	1,23%	-1,31%	-1,32%	2,44%
Turnkey	6,08%	5,71%	5,61%	5,10%	5,47%	-0,37%	-0,10%	-0,51%	0,37%
Washing	10,42%	10,37%	9,87%	9,28%	5,72%	-0,05%	-0,50%	-0,59%	-3,56%

Source: Financial statements data from the portal AIDA

Chart 22: Operational margins split by SBA, (2009-2013)



Source: Financial statements data from the portal AIDA

Based on this analysis, the most interesting SBAs are the segments which recorded average operational margins higher than the median of the sector of Professional equipment, and show a constant process of growth and develop during all five years. On this last point, a constant growth path in the level of EBITDA demonstrates the ability of the segment and more precisely, of the manufacturers to improve the business through multiyear strategic plans. The positive effects of occasional government policies like the incentives for the substitution of obsolete equipment are excluded as improvement of the average level of EBITDA in the medium term.

Looking at the chart 22, the SBA with the highest level of EBITDA in 2013 is the Coffee machines (12,21%). This segment has been able to increase regularly the percentage of EBITDA in relation to the Total Turnover generated in every fiscal year. After the Coffee machines, there is a considerable gap in fact the second SBA is the General equipment with 8,25%, slightly less the percentage recorded for the year 2009. Close to 8% of EBITDA are ranked also the segments of Icemakers and Cooking. All other SBAs have registered average percentages of EBITDA between 6-5% while the Bakery production was the lowest segment with 4,34% in 2013.

This analysis highlights also the segment of Refrigeration because since 2012 it has grown on the average levels of EBITDA near the 2010 (6,20%). On the opposite way, the Washing group is seeing to collapse its level of EBITDA due also to the effects of regression in the values of Total Turnover and Sales Revenues.

As a conclusion of this comparative analysis between Strategic Business Areas, the final step matches in a summary chart (chart 23) the trends in Total Turnover with the EBITDA levels.

In the X-axis it has been entered the average percentage of EBITDA referred to the last years analyzed (2013). The decision to use the last year as a reference value is because for all SBAs there were no relevant fluctuations during the time interval. Only in the case of Washing, it is believed that the level of EBITDA of 2013 is the most correct interpretation of the economic situation of the segment due also to the negative performance in Turnover and Sales Revenues.

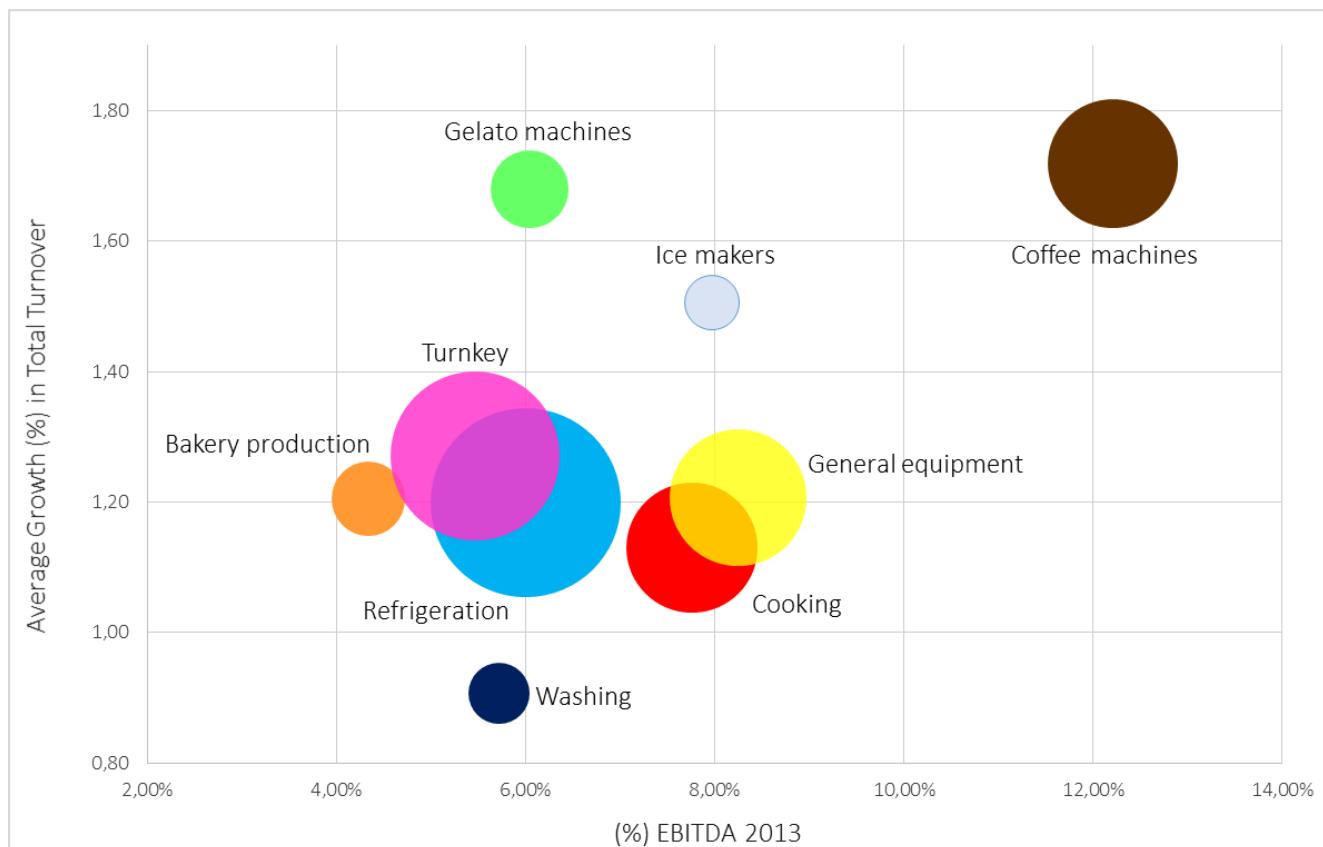
On the Y-axis, it has been decided to consider an average growth in Total Turnover for all five years concerned. The average variations in Total Turnover has been computed with the geometric mean⁵ because the distributions of values include also variations in negative percentages (see the decrease in the Turnovers levels recorded in 2012 by almost all SBAs).

In addition, through the bubble size the chart indicates the values of Turnover per each SBA in relation to the Total Turnover generated by the sector of Professional equipment (the data used refer to the fiscal year 2013).

The result of this analysis identifies the professional Coffee machines as the most interesting segment both in terms of average growth of Turnover and EBITDA level. Moreover, its relevance into the sector of Professional equipment is demonstrated also by the bubble size: the manufacturers of Coffee machines represent around 15% of the Total Turnover generated by the sector in 2013.

⁵ The geometric mean of a set of numerical data is that value that replaces the data and leaves unchanged their product. The calculation of the geometric mean starts with the variation factors that are the ratio between the Turnover in the current year and the Turnover of the previous year per each SBA. After that, the multiplication of all annual variation factors provides the average variation factor of each SBA. Thus, multiplying the initial value (Turnover 2009) with the average variation factor, the result will be a final value equal to the Total Turnover recorded in 2013 in each SBA.

Chart 23: Average Growth (%) in Total Turnover (2009-2013) and % EBITDA (2013) split by SBA



Source: Financial statements data from the portal AIDA

After enhancing the differences in performance among SBAs, the top-down analysis reaches the highest level of detail in the next session – the Fieldwork – when the focus shifts on the study of business models of leading companies.

The segments analyzed in the next chapters are the Espresso Coffee machines, the professional Kitchens and the Refrigeration field. Four business cases have been chosen in order to demonstrate how to achieve successful performance and to become leader in the markets around the world through the potential of three innovation drivers.

The Fieldwork session begins with a brief introduction on the methodological notes used for the analysis of the firms. Subsequently the next chapters get in touch with the manufacturing world through the studies of the business models. The fieldwork inside the manufacturing context provides direct relations with Experts working for the companies concerned and factory tours when it was possible.

Four cases of fast growing and international SMEs

The Strategic Business Areas examined in this section are the Espresso coffee machines, the professional Kitchens and the Refrigeration equipment. These segments include prestigious brands that have been able to build over time the great Italian tradition of the manufacturing of professional equipment, making the sector one of the great protagonists of the "Made in Italy" in the markets around the world. Examples of stories of entrepreneurial successes, able to renew themselves and to achieve many unexplored markets, are proven also through the high percentage of export of the sector which nowadays, it reaches levels above the 60% of the total production.

The companies described in the next chapters aims to express the manufacturing capacity of Italian industry of Professional equipment for the Food service. Over time, these companies have demonstrated aptitudes in conceiving products redefined according to design concepts, reinterpreting the demand in order to respond to changing markets and costumers' needs, and engaging in a constant research of new technological solutions.

Thus, the purpose of this session wants to outline the features of Design, Quality and Technology as strategic drivers of success. In general, these drivers have led the companies to the abandonment of static strategies based on limited competitive environments by specific market spaces, where firms strive on conditions of cost reduction (production efficiency) or increasing of revenues (for instance, by pursuing aggressive marketing campaigns that are typical of multinationals). The scenario of companies driven by strategies of cost reduction or increasing of revenues describes properly what is happening in the Italian industry of domestic appliances.

Therefore, as an alternative described in this session, a new formulation of strategy more innovative and characterized by the strategic research of Design, Quality and Technology has brought the companies to generate dynamic business environments based on the definition of new market spaces and new value propositions.

The focus of the fieldwork will be the research of a correlation between the successful performance of specific business cases and the investments made by the same companies for the strengthening of the strategic drivers of Design, Technology and Quality. Being the business cases part of three different SBAs, the theoretical model built in the conclusive chapter gets a common character of applicability for other firms included in the segments concerned and even for other no-related sectors.

Therefore, the definition of the drivers of Design, Quality and Technology as pillars of an innovative strategy will be the final reflection of the last chapter that close the dissertation work. The noble aim is to open a constructive debate for the rethinking of several business models and the future development of those not competitive anymore.

Regarding the methodologies adopted for the analysis of the business cases, the next chapters will examine three SBAs in the following order: the Espresso coffee machines, the Professional Kitchens and the field of the professional Refrigeration for the Food service. The companies selected have showed significant economic performance and innovative value propositions. The study of the business models has been very complex because in addition to the documentation of the financial statements of the last five years, it was necessary to gather information from other sources. Using Internet as a main tool, the first phase has consisted in acquiring awareness about the company's values and the history of the brand. Then, the focus shifted to the analysis of the products and their distinctive characteristics in order to determine the competitive positioning and the target customers that the company aims to achieve.

After becoming familiar with the business cases in question, the next step was to *get in touch* with the Experts working for these companies. The purpose was to understand deeper the business models and how they implement and reinforce the strategic drivers of Design, Quality and Technology for the creation of value through innovative product concepts.

The contact with the selected companies was carried out through the guided compilation of a survey and where possible there has been a factory tour along the production premises.

The factory tours have increased the awareness of the organizational models adopted by the companies. In addition, the observation of flows of information and working processes between the business functions has put in evidence a work climate where the new product concepts are in the air because generated by the knowledge and the savoir-faire of experts.

Regarding the surveys filled out with the business experts, the questions go through the business models and reflect on those activities tightly related to the strategic drivers of Design, Quality and Technology (a survey template is attached in the annex at the end of the dissertation).

The structure of the survey is organized in three different parts. The first one introduces the company by gathering information about the mission, the range of products, the business processes and activities accomplished by the people and last, a self-assessment of the economic performance in relation to the internationalization level and the ability to generate margins. Along this section, the interviewee reflects on the key values and on the most important features of the business, reasoning about the company's history and future vision of innovative products, best practices in manufacturing, and the customers loyalty expressed by the financial results in Italy and abroad.

The second part of the survey analyzes in details the products offered by the company and the typology of innovation incorporated. On this last point, the survey splits the product innovations into three levels: Design, Technology and Quality. As described in the chapter of each business case, these levels of innovation represent the strategic drivers on which the selected firms have built their process of future growth and development.

Following the structure of the survey, the first level of innovation analyzed is the Design. When a company performs an innovation driven by the Design means that it redefines the product concept. The concept revolution could be incremental with improvements in the product features or only in the external appearance, or it could be of radical type when the design creates products new for the company. The goal of the first questions is to understand where the innovation in design is generated. The second step aims to highlight the processes built by the company in order to develop and recreate over time distinctive capabilities of product design. Finally, the last questions refer to the relevance of this strategic driver in relation to the main competitors and the target customers.

Regarding the first point in the innovations in Design, it is important to define if the company is a market leader or it has a follower mindset in its design proposals. Subsequently, from a customer's perspective, the survey tries to figure out if the new product concepts come from a contamination with other fields of interest for the company or are just the result of a clear comprehension of customers' needs through stages of co-design. This last point leads to the final question that aims to understand how much value-added the company attributes to the design and if customers are willing to pay this markup.

The second driver in the survey is the innovation pushed by the Technology progress. This kind of innovations comes from the scientific research and usually are of radical type. In line with the previous part referred to the innovations in Design, the first questions analyze the ownership of the research processes for new technology solutions. The goal is to understand if the company is equipped of a technology center where highly qualified staff create technological innovations and test them on prototypes. The opposite cases can be forms of collaboration with external providers for the joint development of new technologies or the direct provision of cutting-edge technology from external high-specialized suppliers. In the latter case, it may be assumed that the company does not own a proper level of skills and knowledge able to guarantee technological progress towards solutions of exclusive application in the specific field of products that the company offers. Thus, this type of technology innovations become soon available also for other companies and sectors.

The last part of the Technology session explores the relation between technological innovations applied in the product and the customers' perspective. On this aspect, the survey wants to distinguish the technology solutions based on customers' requests left uncovered in the market and the research of additional features in order to increase the product value. After, the conclusive reflections aim to measure the weight of technology innovations in the final price. In line with this information, it becomes interesting to know how much the company is betting on the technology research as competitive advantage for the future.

The last session of questions focuses the attention on innovations driven by the Quality of the product and of the manufacturing processes. The innovations in quality leads to raise the standards of the product through the use of different materials, new manufacturing processes, increasing levels of functionalities and making longer the products life.

The quality is a characteristic of the product strictly tied to the professionalism of the personnel working in the company.

Therefore, the first objective of the questions is to find out the complexity of the manufacturing activities and the automation level of the processes. These aspects are important because they allow understanding the professionalism and the expertise required to the personnel working in the company. For instance, the assembly processes of standard components do not need expressly of workers with a high level of product knowledge and skills. By contrast, a company producing customizable products needs flexibility in the manufacturing and probably it requires the employment of personnel with different skills.

The session of questions in the innovations of quality wants to investigate on the reasons why the company seeks workers with high levels of skills and knowledge. More precisely, are high levels of expertise and knowledge a consequence of a lack of modernization of the production? Or is it an evolution of the *savoir-faire* on which the new Experts know how to work several raw materials and to transform them through new technologies? Surely, the *savoir-faire* improves the quality when the product features are in line with the most recent solutions provided in the market and they respond to the latest customers' needs. Experts with this kind of skills and knowledge can contribute in the research and development of new products like for instance, in the prototyping stages.

The last questions are focused on the perception of the concept of quality to the customers' eyes. The survey measures the quality as value-added because customers appreciate and are willing to pay a markup for that product. In addition, the quality gains a higher value when there is a correlation with the concept of "Made in Italy" because that product or better, the manufacturing processes are expression of the Italian *savoir-faire*. Another factor that is able to increase the quality perception is the company's history because as demonstrated by the widespread use of storytelling, a faraway knowledge of the product and a historic specialization of the company increase the feeling of quality in the customers' mindset.

Going back to the structure of the survey, the third and last set of questions analyzes the critical factors of the company's success and, afterwards the incentives that have brought and still direct the company towards the strengthening of the strategic drivers of Design, Technology and Quality.

Concerning the critical factors of success, it is asked to the interviewee to evaluate the relevance of nine product features for all firms in the SBA, and then their influence on the economic results of the specific company versus its competitors. The purpose of these questions is to discover any correlation between the critical factor of success and the innovations in Design, Technology and Quality: Do the strategic drivers of Design, Technology and Quality contribute to improve any of the nine product features? What are the critical factors on which the strategic drivers pursued by the company have a greater impact?

Thereafter, the following reasoning is to comprehend if the critical factors of success for the specific company nurtured by the strategic drivers are in common with all companies in the segment or they are just the competitive levers of a closed set of companies inside the SBA.

This may be the case when a group of companies takes a different positioning within the SBA because, for instance, they decide to produce high range products. Thus, these reflections place the attention on the potential of the strategic drivers for the success of the company. It is possible to affirm that when the strategic drivers act on critical factors of success in common with other firms in the sector of Professional equipment, they make up an innovative strategy that even other companies from different SBAs should consider. Instead, when the critical factors identified by the specific company are the levers for an exclusive success of a closed group of companies like in the case of high range products, the strategic research of Design, Technology and Quality will be more suitable for that category of business model.

The second part of this last session highlights the incentives that push the company towards the strategic research of Design, Technology and Quality. The interviewer aims to explain the origins behind the formulation of an innovative company's strategy. Understanding the motivations behind to a strategic choice makes clear even those processes that fuel the implementation and the improvements of features of Design, Technology and Quality in the product offering. Finally, this strategy based on a new value proposition can be associated to specific motivations or in response to a certain external phenomena like the new possibilities offered by the technology or the emerging socio-cultural trends.

For more details on the entire survey, see the annexes at the end of the dissertation.

Elektra espresso coffee machines as furnishing elements

3.1. From the first machine in 1947 to International recognition

"Coffee is part of important moments of everyday life: its aroma awakens people in the morning and gives new strength after a break. Its characteristic flavor does not miss at the special moments spent at the bar with friends". Elektra aims to be present in these moments with its production of espresso coffee machines.

The name Elektra comes from the Greek word "elektron", a shining object, and it is also a tribute to the Italian scientist and Nobel prizewinner Guglielmo Marconi who invented the radio and called his famous floating laboratory Elettra. Since 1947, Elektra is a family run business and manufactures espresso coffee machines, one by one, inspired by the inimitable experience of its artisans. This Italian excellence has built its success on the highest quality craftsmanship and its mission for the future still looks at the highest quality, elegant and refined design, so the espresso coffee machines made at Elektra become a "multifunctional furnishing element".

Over the years, commitment, creativity and initiative are the cornerstones which clearly distinguish Elektra's espresso coffee machines. In addition, the owner family has been able to bring to the table continuous knowledge and experience, resulting in a successful combination of the most innovative concepts and traditions of the finest craftsmanship values.

The result of today is an espresso coffee machines that is user-friendly and easy-to-handle. Elektra offers 40 different models from the traditional style until the ones with a much more modern effect. The Elektra coffee machines are divided between the professional sector and the domestic use. The one that better represents the company is the Belle Epoque in copper and brass: the brilliance of its metal and the molded design with a retro charm reminds of the origins of Italian espresso.

Looking at behind the product, from the production phases to the packing of an Elektra coffee machine, the working methodology highlights a meticulous attention to details and to the operation of the machine. All the machine components, of which over 80% are manufactured in the company, are also scrupulously tried and tested, and before being delivered, every machine is tested non-stop for 48 hours. In order to guarantee sheer

perfection and punctual deliveries, the Belle Epoque line has its own specific person in charge of controlling every machine throughout each manufacturing phase. Even the packaging is carried out manually as to ensure highest protection during shipping.

The company has successfully entered in the most important international markets through a well-defined and fully committed marketing strategy. It has achieved new customers from China and South Korea and has increased the sales in Australia and UK. Moreover, the company has built a consolidated partnership with Caffè Morettino, historical Sicilian roasting plant, and together they participated at the fair Brand Italy that was held in Doha, Qatar.

Elektra has participated to the Hotelex fair in Shanghai, one of the largest exhibition platforms worldwide for international manufacturers in the equipment for making coffee. The Elektra received thousands of visitors attracted by the style and performance of its espresso machines. Even in China, the CoffeeGeek (fanatics and lovers of the perfect espresso and cappuccino) showed admiration for the Elektra Kup recognized as benchmark because it is the only one to regulate the temperature of the extraction delivery groups with more or less than 0.25 degrees for a very good coffee in the cup.

In 2013, the company recorded a total turnover just below 4 million euro of which more than 80% is from Export sales. Although the turnover and the sales revenues were flat in the last five years, the company has improved significantly the EBITDA and the EBIT. By comparing with the previous year, Elektra has recouped the decrease in the domestic market with the export sales, especially in the UE and the Asian countries.

3.2. Innovative concepts combined with the finest Artisan tradition

Elektra continues to push on the innovations driven by Design, Technology and Quality in order to make leaps in the competitive world of espresso. Each Elektra espresso coffee machine is the result of countless hours of design, commitment, creativity and initiative that Elektra prides itself on maintaining as the core factors of the company.

DESIGN

"A beauty that excited, ease of use, and solidity": the Elektra espresso coffee machines are built even today on the original principles of ease, efficiency and attention to design in the

meaning of beauty. According to these concepts, the design in Elektra aims to rational and minimum maintenance of the espresso coffee machines.

The careful design carried out by technical experts is demonstrated by the Belle Epoque that stripped reveals a boiler of 5 liters (for the smaller version) and all other internal organs housed rationally.

The innovative design is the result of deep product knowledge and experience in the field of espresso. The long history of the company has contributed to build a strong specialization and know how in the espresso coffee machines. All solutions in terms of technical components, working operations and external design are provided by a team of designers guided by the experience of one of the members of the owner family, who is in charge for the technical research and product development. Thus, the innovations in design are unique processes that are formed within the company. The company does not foresee activities of co-design with external players such as suppliers. Normally, Elektra selects its suppliers based on their ability to satisfy the highest quality standards on the components required; after that, the company provides them with all necessary details and sometimes the specific equipment like molds for the production of components ad hoc. Not always providers know the destination of use of the components in the Elektra coffee machines.

The owner family has a primary role in contributing to the innovations driven by the design. In fact, the two brothers who are in charge respectively for the R & D and for the commercial part travel constantly to meet customers. These travels become a source of inspiration for new product concepts because the explorations of several coffee shops around the world move the focus on the product functionalities according to the specific use. Then, the mission of the company is to guarantee the same quality of coffee whatever the place and the bartender, such as a Coffee Geek or a student worker just for the summer season.

The company has built also a training center, where operators and retailers are trained appropriately to make a good coffee with an Elektra espresso machine. They can analyze and understand the Elektra machines without cloaks coverage, in a simple, direct, and effective way. The advantage to have in-house a training center is to bring customers in the company so the technicians can interpret their needs and anticipate the future trends.

In Elektra, the innovation is not purely technical but it is also aesthetic: for the 50th anniversary in 1997, Elektra launched the Barlume, the first machine combining retro charm with cutting-edge technology. Since ever, the Belle Epoque is the masterpiece of Elektra with superior technology and an emblematic retro style as symbol of quality and tradition.

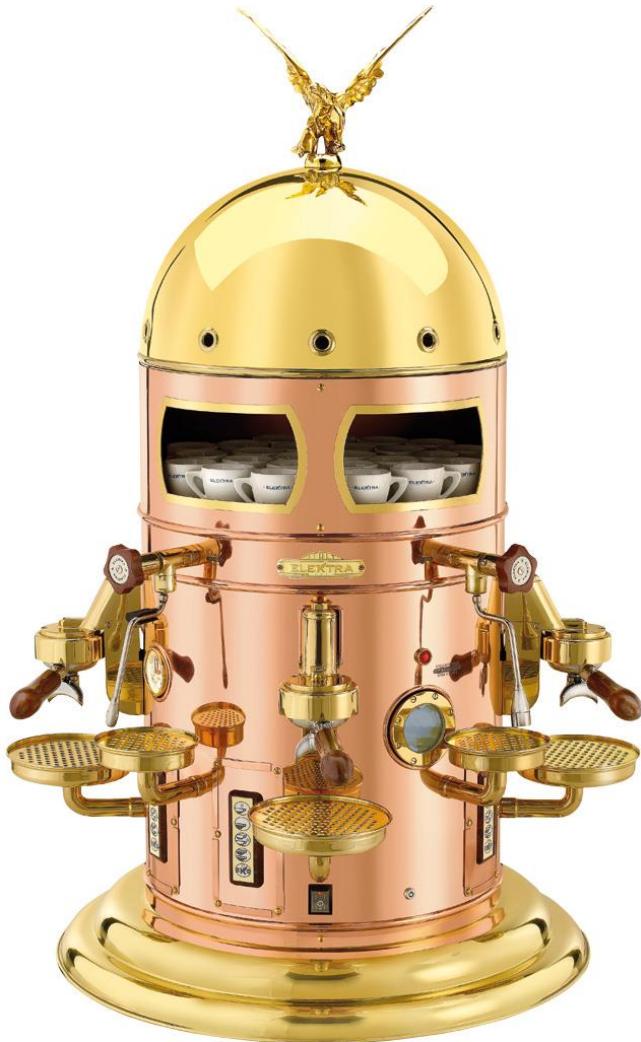


Figure 3: Belle Epoque in copper and brass, hand crafted one by one for over 60 years;

The beauty of the Elektra coffee machines is a mean to return to the initial symbol of the coffee machines in public places. At the beginning, the first coffee machines were furnishing element distinguished for their style, in fact, they were placed on the bar counter so that the bartender could converse with customers without turning his back while making coffees. Today, the symbol of the coffee machine has been lost: they are placed behind the counter and very often are assessed only for their functionality. Elektra aims to give back the right meaning to the coffee machines.

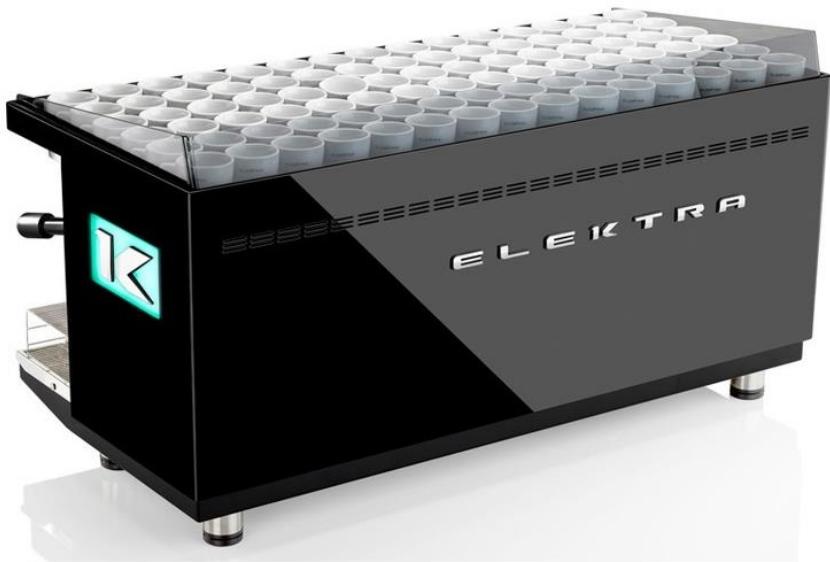


Figure 4: Elektra Kup,

*Essential Italian Design
with bodywork sides
enlightened by led lights;*



In the recent models, the company studies with attention the automotive world and the concept of new cars so that it becomes understandable the style of Elektra Kup with minimalistic shapes and customizable body enlightened by led lights in the sides.

The proximity to the automotive world for the development of new design styles has brought the company to collaborate with the design department of Audi for the creation of a Bespoke Espresso machine. The machine has a functional yet architecturally inspired design, enlightened by Led technology in all surface. The body covered by free form shaped glass panels made of handcrafted Murano Glass is a crossover of modern design and classic Italian masters. Moreover, Elektra has completed the body machine with highest quality materials as stainless steel, chrome and handless in ebony.

TECHNOLOGY

The technological research is a constant in the long history of the company. Elektra aims to improve continuously the technological solutions for espresso coffee machines. A proof are the large number of significant and essential international patents (over 25 patents) that have been registered over the years, such as the patent about the first espresso coffee machine with an automatic hydraulic unit in 1950, till the first totally automatic machine in 1984.

More recently, Elektra Kup is a benchmark for its technology because it can regulate the temperature of the extraction delivery groups with more or less than 0.25 degrees for a very good coffee in the cup. Instead, Aletta is the first machine in the world with an automatic water softening system removing chlorine and lime scale from the water. All these technical innovations increase the performance of the machine and the quality of the coffee.

In the world of coffee machines, the technological innovations are not driven by industry leaders or fanatics of the perfect coffee, known as CoffeeGeek. Usually, innovative technological solutions are presented by suppliers with a strong specialization in a specific field such as the electronics, and a long experience/collaboration with companies in the sector of coffee machines. Even though the presentation of innovative solutions can be frequent over time, these suppliers do not develop the technology exclusively for a company but they aim to sell it also to other manufacturers in the sector. Thus, the benefits of an innovative technology go immediately to disappear because other companies can adopt it on their products.

Elektra considers crucial its identity and history, thus, it has always kept in-house its center of research and development. Through a deep experience and product knowledge, the company rethinks the operation of the machine and looks for new solutions that improve and increase the functionalities. The conclusion of a research project is a design book that describe the product concept in all its facets. Obviously, in this design book, some details are going to be planned and manufactured in-house while other can be outsourced because the company has not enough competencies to develop a specific technology or components.

About technological solutions, if the company does not own the specific know-how, it defines the result that wants to get with the technology within the design book. After that, the company consults the most prominent of that technology, also from sector not related to the coffee machines and then they develop this technology exclusively for Elektra.

The Elektra's mission remains that to provide machines that are most reliable and friendly-user so that a beginner and a lover of coffee looking for highest levels of personalization in operation are able to make both a good coffee. Therefore, the company is aware to be open to any need: it does not take part to specific target customers but thanks the long history in producing coffee machines wants to demonstrate its ability and know-how to make the best machine for any use.

Following this philosophy, Elektra maintains an independent position in the market, listening new opinions from Coffee Geeks as well as understanding the requests from the most basic users. These concept has led to the simplification of the Elektra coffee machines and an increased personalization of operations for the CoffeeGeek. An open focus on different target customers and market destinations has led the company to new challenges and towards the constant improvement of product technology.

QUALITY

In Elektra, the manufacturing is based on unsurpassed methods of artisan expertise where the human factor is still irreplaceable. The Espresso coffee machines are manufactured according to traditional techniques: the technicians with their experience and passion analyze complex infusion and pressure boilers, moving between copper coils in a tidy and quiet space, smelling sweetly of coffee issued by machines in testing. In the same building, the polishing and painting department finishes by hand every small detail of copper and brass, and finally, the assembly department considered, the heart of the factory where the espresso coffee machines are produced one by one.

Over 80% of the components in an Elektra espresso coffee machine are manufactured in the company and they are scrupulously tried and tested. Before being delivered, the fully-assembled machines are tested non-stop for 48 hours in order to guarantee the operative perfection and thus avoiding the extraordinary maintenance of the machine.

The check process is very important in Elektra, in fact, the Belle Epoque line has its own specific person in charge of controlling every machine throughout each working phase. From the production to the packaging, all models are thoroughly checked and the packaging is carried out manually as to ensure highest protection during shipping.

The artisan quality of all these operations is evident in the final product, in fact, customers perceive the value and the uniqueness of an Elektra coffee machine. In addition, the product value is positively influenced by the concept of Made in Italy and the link with the tradition of the classic Italian espresso. The challenge for the future is to maintain the product knowledge rooted in the company's history and to innovate it through the new technologies and modern style design.

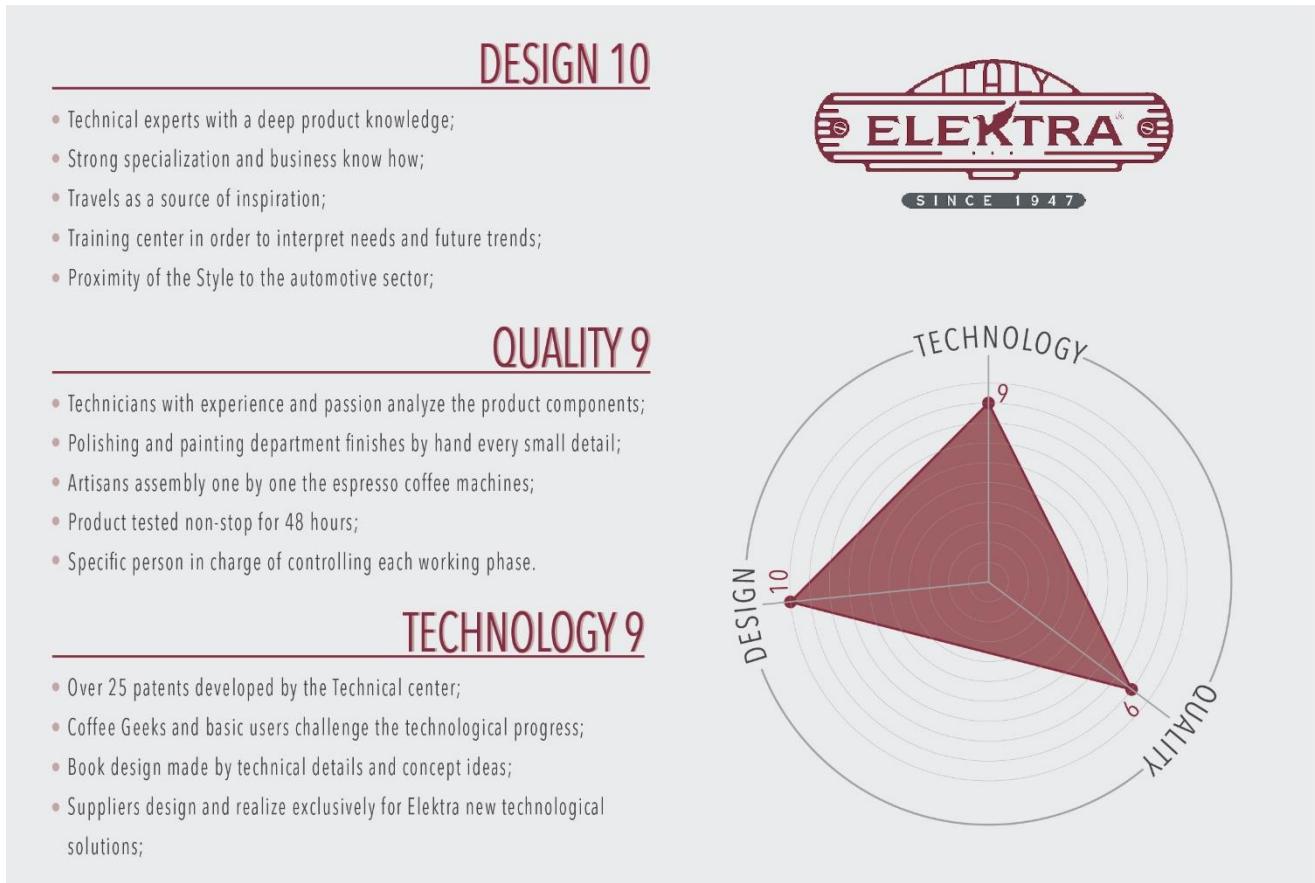
THE CRITICAL FACTORS OF SUCCESS AND THE INCENTIVES TO INNOVATIONS

Through the innovations in Design, Technology and Quality, the company reinforces the critical factors of product performance, tangible and intangible qualities, and product customization. To improve the performance, the technological solutions have always distinguished the Elektra machines and for the future, the challenges from different customers and markets continue to push the company to the search of new applications. The tangible and intangible qualities are put in evidence by the traditional techniques of production where the ability of the artisans of over 60 years history transforms the coffee machine in a masterpiece. The last critical factor is the customization in order to give the perfect machine for any need: the personalization in design and the increased level of functionalities offered by the latest technology make of the Elektra coffee machine an unique product for bar/restaurants.

The most important incentive that reinforces over time the strategic drivers of Design, Technology and Quality is the top managers' emphasis, represented by the figures of Head of R&D and Sales director, both focused on product innovations. Other incentives are the requirements from different target customers and market destinations that challenge continuously the company, and the new possibility offered by the technology like the touch screen or the new sensors able to increase the product performance and the quality of the coffee.

The table below provides a summary of the most relevant factors and processes that the company has implemented in order to strengthen the strategic drivers of Design, Technology and Quality. In the attachments section at the end of the dissertation, it is possible to see the completed questionnaire with one of the company representatives. The scores highlighted in green are those to whom it have been given an explanation.

Figure 5: Summary assessment on the three innovation drivers: Elektra S.r.l.;



Luxury tailor-made kitchens made in Pordenone

4.1. Company profile and products

The company in question is located in the province of Pordenone and manufacturers for more than 30 years prestigious kitchens for the most demanding restaurateurs. This factory of artisans had a glorious past until the 2008 when the difficulties due to generational change and the lack of investments brought the company close to the bankruptcy. In this period of difficulty, around forty artisans worked in the factory generating a turnover of € 3.2 million. In 2013, after a tremendous crisis, the company has more than doubled its turnover reaching around € 8 million and the number of artisans has increased to 44.

The mission of the company of artisans in Pordenone is to personalize. The first priority is the needs of the Chef. These needs become a design and then it is finalized in stainless steel with unique stoves created specifically to contain and give to the Chef all energy that he needs.

The company creates luxury professional kitchens totally made in Italy and convey a strong feeling of the best beauty and Italian style. All kitchens are the result of the application of a deep product expertise and artisan *savoir-faire* that come from the best-known sector of Italian food. As written in the company's mission, the monobloc kitchens are artisan products of high quality and with infinite possibilities of customization. Thus, the kitchens become uniqueness products for every customers through the composition of different modules like char broiler, bain-marie, deep fat fryer, fry-top, electric oven, and so on. Another important feature of the monobloc kitchen made in Pordenone is their beautiful sense of design: they represent the modern solution of kitchen at sight often adopted by new restaurants.

Who wants a monobloc kitchen made in Pordenone is carried away in a purchasing path, which emphasizes the quality of details, the love for Food, and the tailor-made technical solutions proposed by designers with an experience of thirty years in creating professional kitchens. Along this process, the company takes on the role of advisor and through its experts provides the solutions that better fit the customer's dreams of kitchen. These professional kitchens stand out for their combination of high technology with style and sophistication worthy of the best Italian tradition.

The target customers are luxuries hotels and restaurants but it is growing also the private sector with fine dining and food lovers that seek luxury products and professional performance for their kitchen. Over the years, distinguished clients and world-renowned chefs have chosen the monobloc kitchens made in Pordenone: from Gordon Ramsay until Bruno Barbieri. Alajmo, the youngest chef to receive three stars from the Guide Michelin, upgraded the kitchen of his "Le Calandre" with a monobloc made in Pordenone. The company in question was able to seduce the chef Alajmo thanks to its unique expertise for the care of the technical details, the aesthetics, ergonomics of the "stove" and, finally, with adding the logo Alajmo on steel.

The monoblocs made in Pordenone ensure any kind of cooking and are distributed over the four continents through an important sales team for the geographical areas of UE, Asia and Oceania. To support a strong specialization for the Oriental cuisine, the company launched its website in Chinese language and established in Malaysia the sales office for the Asian countries.

The success of Italian monobloc kitchens is arrived in some of the most famous restaurants in the world like in the Eiffel Tower, in the towers of St. Regis in Abu Dhabi, Kuala Lumpur and Singapore, the Burj Khalifa in Dubai and the building Ozone in Hong Kong, respectively the highest restaurant in the world. The monobloc kitchens made in Pordenone are also the choice of Arab sheiks and Russian magnates for their mega yachts and residences.

The markets wants the monoblocs made in Pordenone and the orders are in steady growth. In response, the company does not neglect any detail, even a knob is distinctive hallmark of the product quality. This is what has allowed the company to become the Ferrari of the luxury kitchens, the undisputed leaders in the rich markets of the Middle East and Asia.

For the next future, the company's goal is to become a brand of worldwide level through the constant attention to markets and their evolutions. The worldwide brand recognition based on quality, research, innovation, reliability of materials, design, customer care, speed and efficiency in deliveries, and full support in after-sales will push even more the company on international markets.

What is the secret of this success? The value of the monobloc kitchens depends significantly on the ability of the company to invest in the strategic drivers of Design, Technology and Quality.

4.2. Design flexibility and Quality Artisan

DESIGN

In the factory of expert artisans, the design is the first step to give to the monobloc kitchen the characteristic of uniqueness. This uniqueness of the product is the result of an internal know how to meet the customers' needs and a successful integration of cultures of different countries through new cooking systems like the concepts of wok, steamer, and so on. Thus, the innovations driven by Design are born as result of a strong international vision of the markets and people' needs: on this direction, the wide network of sales people and commercial partnerships around the world increase the company's listening and attention towards changing demands.

Therefore, the company drives the innovation in Design through a global vision and the exploration of new markets. An example of this strategy is the specialization on the Oriental cuisine: the company has studied the Asian countries, learning from their culture and habits/needs in dining. After that, it has entered in the local manufacturing, analyzing the product design of new cooking systems. This exploration began as a research of new competencies on different cooking methods; today the company can show a strong specialization for the Oriental cuisine through the production of components ad hoc. In this process, the company has not only replicated the foreign products but it has radically changed them, improving job security, performance, and giving an unmistakable beauty and Italian style. The success reached by this integration of different cultures is demonstrated by the work for the internationally renowned Chef Tetsuya Wakuda and his namesake restaurant in Sydney, soon inaugurated.

Being the monoblocs unique kitchens, the process for the creation of innovations in design follows some essential phases for the product development. The goal is to outline the ideas of chefs therefore each new project becomes a challenge to research new solutions and a step more towards the kitchen of the future. Everything initiates from a spark of an idea, which is achieved by those who know how to overcome obstacles and create new workflow systems. These people are experts with a deep product knowledge and they provide the chef with unique proposals of cooking systems.

Thus, the winning feature is the ability to design according to customer's needs by providing a tailor-made product. Another winning feature is the ability to co-design with professionals from other countries. This can be the case of specific components built on the design of a foreign architect and they characterize the kitchen with the presence of different tastes from other cultures.

The co-design increases the personalization of each monobloc kitchen and contributes to the internationalization of the company until becoming a factory of global artisans. In fact it can happen that "in Milan the company has to study the equipment to achieve the perfect steamed dumplings, in India it may be necessary to carry out the project with the coordination of a Malaysian consultant and an interior designer living in Tokyo, all for a chain of five-star hotels located in Brussels." Each design of kitchens is tailor-made on the chef's needs, and like a tailored suit that has to be comfortable, the monobloc kitchens made in Pordenone have to be flawless.

Because today kitchens are visible and they must combine efficiency and elegance, in Pordenone, the innovation in design means also an innate sense of beauty as binomial of hard work and pleasure: the beauty of the monobloc made in Pordenone proves a work well done that even looks great. Chefs appreciate the aesthetic design and it is evident from their faces when the monobloc kitchen arrives in their kitchen. Thus, each component is unique in its functions and the details become innovative because they meet the needs of chefs, giving to them the pleasure of cooking with confidence.

TECHNOLOGY

The company offers all technologies for cooking systems already in the markets. Technology is utilized with precision and flair to develop the perfect solution, according to the chefs' needs.

The company is not a pioneer in the research and development of new technologies but for example, it relies on external suppliers for the implementation of electronics components. The latest technologies coming from an internal process of research were the creation of specific components destined to the Oriental cooking systems. These components make of the factory in Pordenone, one of the few companies in the world specialized in the Oriental cuisine. Some of the products developed are the electric steamer with lid and perforated screen round; the Chen Fung, lidded rectangular perforated base; the wok gas used for virtually any type of

cooking; and the large wok inductive powers increased. The company makes also the teppanyaki, a plate with hard chrome for optimum cooking and nonstick particularly suitable for delicate foods such as fish; and the functions robata, satay and yakitori, ideal for cooking different types of foods such as beef, lamb, chicken, fish and vegetables. Thanks to its versatility, the best-selling product is definitely the wok gas, both in Italy and abroad, and not only in restaurants specializing in Oriental cuisine.

The company has a Technology Leader that can be associate to the figure of Head Director. He is responsible of the industrial design and drives the continuous generation of business culture towards the kitchen of the future. In the company, the Head Director has a complete vision of the business and from him depend a team of people in charge of product management, social and communication management, design and technology research.

QUALITY

The product quality is based on strength of experience because it allows understanding the materials and the energy requirements for the made-to-measure solutions. The business know how is expressed in the strong character of artisanship that characterizes the manufacturing of monobloc kitchens. The manufacturing phases are organized on work islands where the artisans can accomplish the entire processing from the base structure until the final realization of the monobloc.

In the company, the level of automation is not excessive and it does not preclude the product customization and the production flexibility. Conversely, the automation level has the scope to increase the quality, the solutions provided to the customers and the working process for the personnel but the kitchens remain with a strong trait of artisanship. It is always the artisan with his long experience to work the materials and to mold every components according to the final design approved by the customers/chefs.

The experience of the personnel working in the factory brings all chefs to reach the top, satisfying every requests. Skilled experts are always challenged on their product knowledge and capacities by those chefs that collaborated for the development of unique projects. Thus, the artisanship guarantees a quality consistency and a constructive flexibility.

The quality of the artisans sustains the ability of the company to imagine all the technical implications that the monobloc kitchen can have operationally during its installation and use.

THE CRITICAL FACTORS OF SUCCESS AND THE INCENTIVES TO INNOVATIONS

The comparative analysis based on the critical factors of success highlights a business strategy strongly based on the product differentiation and the brand recognition. The most interesting features that distinguish the factory in Pordenone from the general set of companies in the sector are the intangible quality represented by the identity of the brand, the customization level according to the customers' needs and the wide range of products and service that the company can offer.

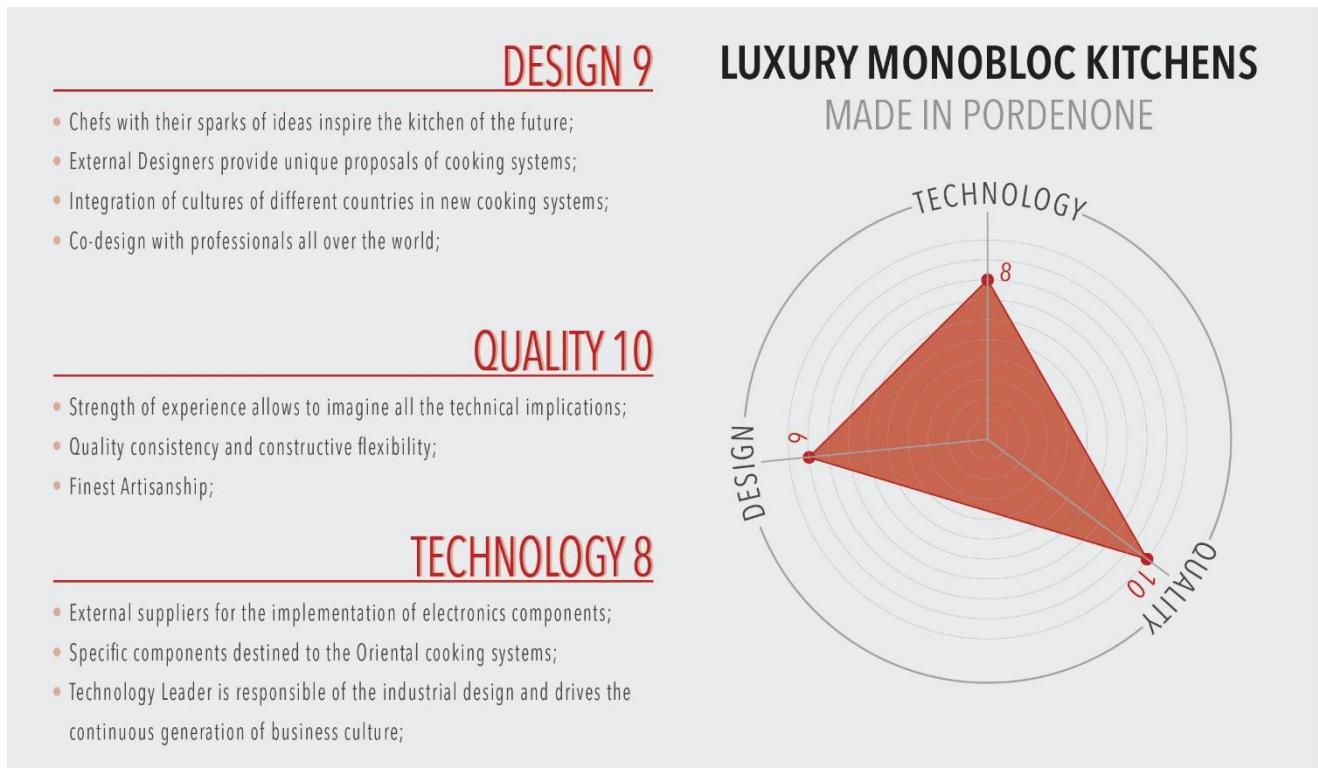
On the other hand, the competitors and the other firms in the sector are much more focalized in offering a product at affordable price, built on quality materials and totally integrated to the other products offered.

The innovative strategic model of the factory in Pordenone is based on the drivers of Design, Technology and Quality. They are boosted by three main incentives: the top manager's emphasis to make of the company a worldwide brand of success in the field of the luxury professional kitchen, and the strong motivation in affirming the craftsmanship as undisputed value of quality. Other incentives are the customers' dreams and needs that challenge the business know how towards new models of kitchens, and the new possibilities offered by the technology with the digitalization and the Internet of things.

Below, the table summarizes the activities implemented by the company in Pordenone for each strategic driver. In addition, the attachments section at the end of the dissertation provides the completed questionnaire with the entrepreneur.

Figure 6: Summary assessment on the three innovation drivers:

Monobloc kitchens made in Pordenone;



Berto's, the Italian culinary art in professional equipment for cooking

5.1. A company-flagship of the "Made in Italy"

Being the Italian cuisine loved around the globe and some of the world's best-known chefs are Italian, Berto's aims to transfer the Italian culinary art on manufacturing professional equipment that make it possible to replicate with excellent results the culinary delights.

Thus, Berto's is an Italian company specializing in manufacturing products for the professional caterer. Giorgio Berto founded the company in 1973 and already in a few years, it became famous throughout the world thanks to the design features and durability of its plates to warm sandwiches. In the 80's and up to the present, the company has continued to expand its range of products, beginning with the production of the first modular kitchens both gas and electrical, until today with a list made up of more than 500 products. Nowadays, after 40 years of success, Berto's is one of the top three names in producing large horizontal kitchen machines in Italy. Its mission continues to be the provision of professional kitchens distinguished for reliability, robustness and ease of use, appreciated by many chefs around the world.

In the 40-year history, the company has been able to build a solid know how that has enabled to tackle with determination the challenges of today and tomorrow, and to become an important reference point in the field of the professional cooking.

Today, Berto's has a factory of 20,000 square meters where work more than one hundred people. Altogether, the company produces along 12 production lines between 100 and 120 products per day that is nearly 30,000 pieces per year. In order to ensure a constant top quality level, Berto's applies the Toyota systems for the production of cooking lines. Although Berto's relies on a stable network of suppliers, the professional equipment are entirely designed and built in Italy and they make of the Berto's a company-flagship of the "Made in Italy".

In the recent years, Berto's is also moving in the premium segment by manufacturing professional equipment that have many technical features in common with the classic products (excellent value for money) but their unique design, a marketing approach focused on customers and an exclusive distribution channel ("a tailor-made suit") justify a different market positioning.

The Professional equipment manufactured at Berto's are customizable with more than 500 items and choosing the colored finishes. Configurable with any length desired in order to fit in any workplace, the modules can be positioned according to the customer's needs in island or stand-alone versions. The main components are gas stoves, solid top, electric cookers, infrared and induction cookers, boling pans, pasta cookers, gas and electric fryers, bain marie, etc.



Figure 7: Berto's LX900 TOP

Berto's distributes its products throughout the Europe and around the world through a network of importers located in their respective countries as well as to contractors or architects who are involved in the planning and building of restaurants or hotels. The company never sells to the end user because it is not able to guarantee installation and services 24 hours per 7 days. Because the distributors are generalists and not product specialists (they trade all components in a cooking environment), the company organizes specific training sessions on the benefits to have a catering equipment branded as Berto's. In doing so, distributors become an important means able to spread the Berto's catering equipment around the world, as well as providing a full support to end-users for the ordinary and extraordinary maintenance.

The company has always been export-oriented but in the last years, it has increased the export volume. Four years ago, Berto's achieved an annual turnover of around 60% through sales to customers abroad. Today, the export sales generate around 80% of the total turnover by distributing in 80 countries around the world.

The three most important markets for turnover generated are UE countries with 55%, after Asia with 23%, and last Italy (16%). The fastest growing markets is the Asian area, characterized by simple and cheap products. Instead, the European market is stable and remains the greatest size for numbers and quality; especially the North Europe where the demand is oriented on advanced products in safety, design, energy saving and finishes. The growth in total turnover is due mainly to Export, from Germany, France, Russia and Saudi Arabia.

In order to explain the company's continuous growth, an important contribution arrives from the investments made in the development of new products. The top managers and the Vice President Enrico Berto embody this innovative spirit by sustaining ongoing improvements of the machines: on their handling and functionality, and on the aesthetic design.

By pursuing product innovations and top quality, in the coming years the company aims to enhance its market position in the premium sector with new top range products. The goal is to increase the turnover gradually and constantly, enlarging the range of products, bringing them to more than 800 items and widening the distribution in more than 80 markets.

The improvement and development of products and services are the result of constant investments of profits in innovations of design, technological research and personnel training.

5.2. Design, technology and manufacturing aspects

Innovation is the keystone of doing business: for Berto's means keeping up with new trends in the industry, taking full advantage of the potential of new generations of technology and, most importantly, understanding professionals within the world of gastronomy in order to learn what their needs are and how to satisfy them. Each product combines the beauty with the most innovative technology. On the following section it will be declined the meaning of innovation driven by Design, Technology and Quality and in addition, there will be presented the processes implemented by Berto's in order to continue the path of strategic growth.

DESIGN

The aim of the Berto's design is to satisfy the needs for most of the requests through very flexible and versatile products. The products are distinguished by contemporary design, inspired by the essential elegance of shapes, simple and functional contours that combine aesthetics and ergonomics to create the ideal balance between the form and content of modern design.

According to these principles, the innovations driven by product design are based mainly on the evolution of existing products rather than on the research for new ideas and product concepts. Through an internal team of engineers, who think of innovative solutions, and the Toyota process of Lean thinking, the product development is the result of simplifications, increased reliability and a longer technical lifetime. At Berto's, the philosophy of "Lean thinking" applies the concepts of product reliability, ordinary maintenance and easy to access. Crucial in the domestic sector, nowadays, Berto's has decided to bring these concepts also in the world of professional equipment and to make them the distinctive features of its products.

In addition to the ideas that come from the implementation of the "Lean thinking" model and the improvements directly provided by the technical department, Berto's has formed a team of 10 people aimed to innovate in product design. The Project Manager together with the VP Berto, five Export area managers and three managers in charge for the domestic market are constantly on the road around the world seeking new feedbacks on the products, clues for market trends and developments in the culinary world, meetings with the distributors and, sometimes, with final customers.

The innovative Design of Berto's is also the result of a R&D laboratory equipped with the latest technology in order to ensure reliability, safety, low power consumption and healthfulness of its products. Here, the development of the best ideas leads to the creation of tailor-made solutions where each detail is carefully thought by expert designers to ensure very fast response to the user-friendly commands and to guarantee long-lasting perfect performance. The in-house lab is also used to test the products with relevant benefits for the product quality and the timing of entry in the markets.

The company enhances the innovations in design also through in-house seminars. Within the headquarter in Padua, Berto's has perfectly recreated the kitchen environment in order to

test the operations of its equipment. This is an opportunity to see how the cooking equipment work also with the collaboration of renowned chefs. Thus, the project "Cucina attiva" is part of the research process of innovations in design. Once the internal engineers have thought the improvements or the design of a new product, after the R&D laboratory has realized this innovation, and after the analysis of the second lab on the compliance with the certifications which Berto's adheres, the "Cucina attiva" hosts a chef (one Michelin Star) for the ultimate test of the equipment. In this situation, the chef uses the equipment with the same logic of the end-user, so he can give his point of view on the product and eventually some further indications for product development. The cooperation with an expert chef reduces the distance between the tests carried out in the laboratories and the practical experience of an end user of the cooking equipment.

The company organizes also several meetings with customers; around five-six times per year at Berto's headquarter. Even in these occasions, the chef works with the Berto's equipment by preparing some delights in line with the culinary culture of the visitors' country of origin. Thus, the Berto's equipment are tested on different culinary contexts in relation to the customer's country.

An important aspect linked to innovations in design is the appearance and style given to the professional equipment made at Berto's. The first purpose of the aesthetic design is to mark product functionalities: the minimal forms are designed to offer the maximum comfort for the operator through elegant and rounded lines, combining the beauty of the product with ergonomics and easy cleaning. In line with these principles, the company relies on external consultants and famous designers who deal with industrial design. In the first step, they provide the company with design proposals and, only in a second step, the company attempts to combine such proposals with the technical details and the marketing objectives associated to the specific product. The ultimate aim of the technical department is to draw a tailor-made suit to the professional equipment able to convey emotion to the product. For Berto's, the aesthetic design must be emotional, spectacular and impressing for the beauty, above all, in a time on which professional kitchens are brought more and more at the center of the restaurant with cooking solutions at sight. To demonstrate the extreme care for each detail, the company provides the logo Berto's serigraphy to the various components.



Figure 8: Berto's Monobloc, the highest level of personalization in the catering equipment

In addition, the company shows its capability to customize the product with a specific software of rendering, Masterchef. This software created and distributed by an IT company, is born from the needs to show what the kitchen is going to look like by means of graphic representations that are as realistic as possible. It consists of a module that adds on AutoCad automatic processes such as the access to libraries with the Berto's components. In designing a dining facility, customers are provided with solutions that put together the best company's know how and the customers' needs. Then, through this tool, customers are able to analyze in-depth the characteristics of the selected equipment installed in the facility, with hook-ups and costs.

In order to set a constant process able to fuel innovations in Design, Berto's participates to several culinary events like the "Creative cooking course" organized by the Chefs in Padua & Thermal Spas. At the International Chefs Congress, first congress devoted entirely to Italian haute cuisine and all high international confectionery, Berto's was chosen as operational heart of the event with its cooking system. Some photos portray international chefs like Cracco, Graham and Ducasse working on culinary delights with the Berto's equipment. Moreover, for the seventh edition of Taste in Scene in Venice, Berto's realized a baking plant to serve the Congress of gourmet cooking.

TECHNOLOGY

The world of professional cooking is characterized by a medium-low level of technology, in fact, for so many years, the latest technology presented at the most important fairs has remained the induction.

At Berto's, the technology research aims to provide a product of absolute reliability, ease of maintenance and delivery timing of spare parts within 24-36 hours via DHL. The after sale services of Berto's represents a valuable component in the product offer.

In the last years, the company has invested heavily in technological research for the general reduction of consumption of its equipment. The use of proper insulation, the precision of power distribution and its control allow energy saving and a reduced environmental impact. The progress achieved by the technology innovations of Berto's ensures to the products maximum advantages concerning economic efficiency and environmental protection. In addition, special attention is given to the eco-compatibility of products containing as much as possible the consumption of energy and raw materials. For example, in the gas stoves, the high thickness and high power burners allow an energy savings of 30% per year. All the lowest environmental impacts are guaranteed by the Berto's Ecofriendly brand, which certifies reduced consumption, power efficiency, the recyclability of products for more than 90%, and the conformity with the Rohs specification, which forbids the use of harmful substances.

The innovative technology applied at Berto's has led to the creation of more than 70 models belong to gas stoves, electric stoves, infrared and induction cookers with electronic control of the temperature, and so on. The innovative construction technology satisfies every request with a perfect balance of quality and creativity, with the usual distinctive strength of Berto's that makes each kitchen long lasting and able to withstand even the heaviest use.

The next goal in the innovations driven by technology is the development of a new software able to optimize the use of equipment available to the chef. The logic of this software is to move all the electric power only on those equipment that the chef requires, instead it cuts the electrical energy for those not in operation. The software interfaces with thermostats and sensors of the Berto's equipment and allows the chef to install a cooking system with a rated power greater than the fixed power set for the building-system. This software is always in the direction of the energy saving because it turns off that equipment that are not in operation.

QUALITY

All products are manufactured in Italy, from the spark of a new product concept to the completion and its distribution around the world. In the end of the manufacturing processes, the Berto's equipment become product recognizable and highly regarded on the international market for their quality, performance and character. With its catering equipment, the company represents the best of the "Made in Italy" concept, by matching the Italian culture of good food and the manufacturing of high-quality products able to fit the most different customer's needs.

The quality of the personnel working at Berto's and the spread of the company's know how are powered by the training sessions organized by the company each year. In 2013, the company did around 1.400 training hours for its personnel, involving topics about the working methods like the Lean manufacturing and the 5S but even the "soft skills" like leadership and innovative approaches in the human resources management.

The manufacturing includes 12 semiautomatic production lines with cutting laser and other automatic machines to work and shape the steel. The personnel in the production premises are able to use the most modern automatic machines that increase the production capacity and the quality of the processing. Moreover, the manufacturing complies with certifications for quality ISO 9001, security OHSAS 18001 and environment ISO 14001. They are an indication of the high levels of knowledge and competencies of the workers involved in the production. The control systems provide an inspection of all parts and each product is subjected to rigorous tests before being placed on the markets.

In Berto's, the rational organization of the work guarantees excellence: the manufacturing is based strictly on the developed methodology of lean manufacturing and lean thinking, on the constant identification and elimination of waste in order to produce higher quality with reduced resource consumption. The detection of problems in production triggers a process of investigation with the involvement of all business functions in order to study the specific case and to exclude possibility of replication. Once a week, the project Lean involves all departments of the company from the offices to the production, in order to improve the business processes.

The personnel training on the management materials and the organization of the work according to the principles of Lean production have made possible of adjusting the production capacity to the customers' demand, with significant reduction of costs per unit of output. In

addition, the mechanical working department has been enhanced in order to reduce the purchases of semi-finished products from suppliers and the execution of work outside. Today, the workers at Berto's accomplish most of the manufacturing processes with the use of latest technologies such as cutting lasers until the final realization of a tailor-made cooking system.

Always according to the Toyota model, the personnel have an active role in the manufacturing. The head of the production or the technical director can act as coach for the implementation of changes in the production premises. The frontline workers actively participate in the generation of ideas for improving the organization and working methods. This cooperation allows the constant generation of ideas and a widespread commitment of the people to a higher quality product.

THE CRITICAL FACTORS OF SUCCESS AND THE INCENTIVES TO INNOVATIONS

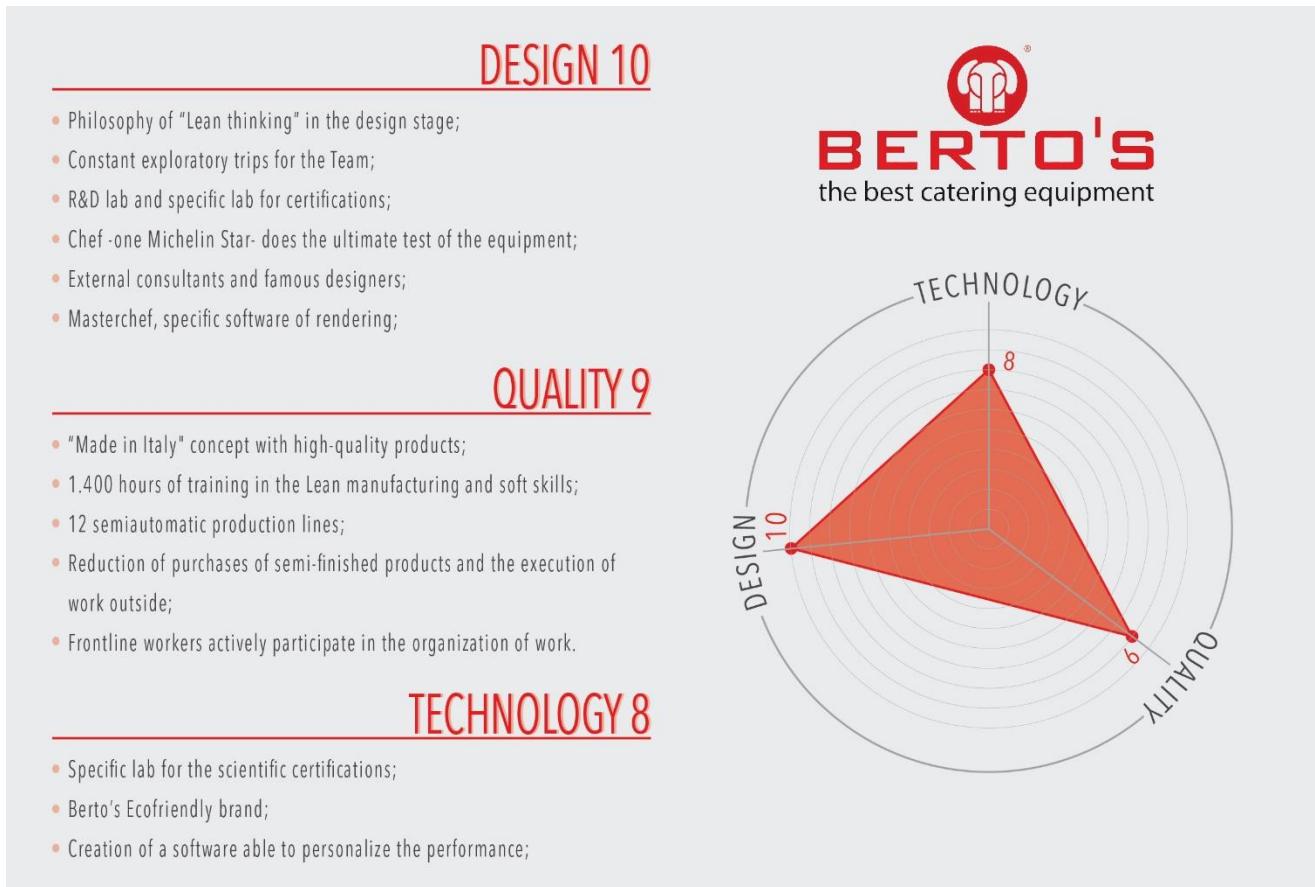
The company offering two product lines, the critical factors of success change whether the product is classic or premium. In the recent years, the Berto's strategy aims to growth in the premium segment because the barriers to entry are higher and a lower-price competition increases the sales margins for the company. Thus, the assessment on the critical factors takes in consideration only the segment of the premium product.

The most critical factors are the performance, the intangible qualities and the possibilities of customization. In line with the creation of premium products, all these aspects increase the recognition of the brand Berto's.

The product customization is built through configurations on request and it regards both technical functionalities and aesthetic features. At Berto's, the configuration required by the customers generates an industrial design from scratch with a different product concept. Those who buy premium products entrust the management to external consultants or architects in charge for the design of the entire place. The consultants and architects look for innovative solutions and the possibilities of customization provided by Berto's expertise justify their needs.

The Incentives to strengthen the strategic drivers of Design, Technology and Quality come also by customers' demand towards more energy efficient and more environmentally friendly products. As already happens in the domestic sector, now also in the professional field, the company has decided to introduce the concept of energy label, in order to map their products in classes appropriate energy.

Figure 9: Summary assessment on the three innovation drivers: Berto's S.p.a.;



Irinox, a pioneer in the Technology for the Refrigeration

6.1. Twenty years History of Steady Growth

In 1989, when Irinox was founded in Corbanese (Treviso), the blast chiller for food was an unknown product. The inventors of this technology were French but Florindo Da Ros, the founder of the company, exploiting his expertise in ovens for cooking, has studied and improved the technology, distinguishing the effects of the cold on different food. The ability to anticipate the future needs of the market and the business vision of the founders have inspired Irinox towards new concepts, products and working methods. These have made it possible to introduce to the world the concepts of rapid food chilling and freshness.

Driven by the pioneering vision of its founders, Irinox started with the production and it was the first one in Italy and abroad to propose high quality blast chilling systems and holding cabinets for restaurants, confectioneries, ice cream, artisan bakeries and small-medium food industry.

Over the years, Irinox has specialized itself in the production of blast chillers, becoming market leader and a benchmark for the quality of all its products. The company has expanded its offer through four different business units: professional (blast chillers, shock freezers, holding cabinets and proofing systems), electrical enclosures, home collection (since 2006), and Fresco (quick freezer for families). Regarding the most recent household appliances, the company has been able to exploit synergies of knowledge and expertise in the professional sector, providing high quality and top performing products for the domestic use.

During its twenty years of history, the company has become the preferred choice of internationally renowned chefs, groups of experts and schools working on the meal conservation and preparation. In addition, the company provides levels of customization in the product according to the different working processes required by the customers' needs (see the several demonstrations of specific recipes published on the website or the shows organized in the fairs). These levels of customization has allowed to the company to get the role of perfect partner for all the excellences in the artisan pastry-making, ice cream, catering, and small-medium food industries.



Figure 10: Irinox Blast chillers, certified technology able to freeze in 90 minutes

This increasing level of know-how in the field of the professional refrigeration for the food service is also shown by the technology able to freeze in 90 minutes compared to the six hours imposed by the European Community. The goal of the technology solutions developed by Irinox is to increase the performance and to facilitate the life of customers, giving to them the flexibility to manage in the work peaks, stocks, purchases, and to have consistent quality with the minimization of waste. In 2013, leveraging its unquestionable technology, Irinox launched its new blast chiller for families, Fresco. Irinox aims to make a cultural change also in the families' home through the benefits of an equipment with professional performance.

The professional equipment are entirely manufactured by 160 skilled people in the facilities in the province of Treviso. The production premises are characterized by a permanent laboratory for the scientific certification of the benefits of the Irinox technology. Moreover, the company observes the most stringent international production standards and qualified external authorities such as CE for the European Union, GOST-R to export to Russia, ETL (Electrical Testing Laboratories) that comply with North American safety standards.

Today, Irinox is a successful company and its results prove it: since the foundation, it has installed more than 40,000 advanced equipment in the world. The company delivers its equipment in over 80 countries thanks a distribution network that arrives in Brazil, Germany, US, Japan, Australia, and a network of professional chefs who spread the benefits of using blast chilling systems made by Irinox. Some of these blast chillers and shock freezers support the teaching of the Italian culinary art in the new kitchen of the Italian Cultural Institute in Paris.

In 2013, the turnover recorded a growth of 0.6% over the previous year, and fundamental were the relations with the foreign markets increasing by 6.8% compared to 2012. Looking at a time interval of mid-term, this positive trend is much more significant, in fact, since 2009, the company has always increased its turnover. In addition, the revenues from international markets has recorded the strongest growth until the peak in 2013, when for the first year, the turnover from export sales overcame the total turnover got in the domestic market.

The company is in a path of steady growth for five consecutive years. In order to maintain this trend, the business strategy highlights the importance of two key factors: the continuous growth of the market shares in strategic countries such as Russia, Brazil, and USA, and the constant research on innovative solutions to apply to the products. Examples of product innovations are the sixth generation of blast chillers and the multifunction equipment with blast chilling and slow cooking exhibited at Host in Milan, the international fair of the hospitality.

The next section focuses on the product innovations as principal explanation of the economic results got in the past, and for the future. According to the Irinox business model, it will be defined the strategic meaning of Design, Technology and Quality, and it will be presented a general analysis of the processes implemented by the company to strengthen a steady stream of product innovation at the level of Design, Technology, and Quality.

6.2. Irinox Technology, a world benchmark for innovation and research

In Irinox, the research for innovation drivers precedes the definition of business processes, in the narrow sense. It is in the company mission that Irinox explains the key factors on which to build the uniqueness of its products. From the website, the company believes "in customer satisfaction, technological development and the value of quality. The objective is to supply

products and services that have unmistakable technological value and that contribute to improve work and life of those who choose them. Irinox acknowledges the human and professional value of the people". Comparing the customer satisfaction to tailored products based on the customer's needs, the technological development to the advanced solutions provided by Irinox and, the product quality as value of the competencies rooted in the business, thus, Irinox confers a high added value to the strategic drivers of Design, Technology and Quality. The following paragraphs will attempt to explain the close interconnection between the company mission and the contributions of the strategic drivers to the product innovations.

DESIGN

Beginning with the first strategic driver, the customers' needs are the principal vector for the innovations in Design. In Irinox, such innovations are extremely important because besides generating new product concepts, they encourage the search of advanced technological solutions. The Irinox history is characterized by a constant effort to meet the continuously changing demands of markets. This commitment has led Irinox to innovate its product offer, and to become a reference point for technological innovations.

After having defined where the new concepts of design are born, it is important to understand how the company has been able to channel these ideas of design in a continuous flow of knowledge through the implementation of processes ad hoc.

As wrote before, the innovations driven by Design are the response of the company to the most recent customers' needs. To represent the changing demands of the markets, there is a panel of selected customers and a staff of experienced chefs with whom the company establishes a sort of relation of cooperation and, more in general, of exchange of information. This relation guarantees continuous improvements in the product features and performance.

Regarding the panel of customers, it is not possible to define standard procedures on which that specific customer might be consider relevant or not for his contributions to the development of new products. Therefore, most of the criteria used are qualitative.

In the case of Irinox, the creation of a panel of customers has been simplified by the development of its own commercial network. Through direct contacts and relationships with distributors and end users, Irinox was able to benefit of those customers interested to the continuous product development. More precisely, the panel includes those customers able to

bring on the table always new ideas of customized design and technical requests in line with the most recent market demands. Obviously, the product knowledge is a fundamental prerogative in order to be able to contribute to the innovations in design because the customers act as laboratory technicians: testing the products on the field and, in a second phase, they suggest the possible variants to be included in the future design.

Thus, the panel of selected customers represents the most important source of innovations driven by Design. To make effective this flow of knowledge and to transform it in design of new product concepts, the company needs a structure able to recognize and adopt these signs of innovation. The combination between the selected customers and “a receptive structure” inside the company is crucial in order to create a constant process over time of innovation.

Irinox has organized a receptive structure with teams of expert engineers and skilled chefs: these figures are in charge to work in close contact with the panel of customers for the co-design of the products. A successful example of such cooperation is Multifresh: the first and only machine in the world that can run operating cycles with temperature of +85°C to -40°C. For the design of Multifresh, all functions have been proposed and carefully tested with prestigious professionals, chefs, confectioners, ice cream makers and bakers. In addition, the possibility to cooperate with a panel of customers has allowed the company to establish for each type of food and production process the right temperature, the best ventilation and the ideal degree of humidity to ensure the perfect quality.

Another example of design concept strictly linked also to the Technological innovation is the Irinox Balance System®. Through numerous tests and studies based on the cooling curves and the use of sophisticated software, Irinox has determined the perfect size of the refrigerator components (condenser, evaporator and compressor). Thus, the panel of customers becomes witness and sponsor of this unique product design.

Always analyzing the innovation driven by Design, Irinox recognizes on its products a strong connotation of “Made in Italy”. For this reason, the company associates to the aesthetic design and the beauty of its blast chillers and shock freezers a high value added. The research of innovative proposals of aesthetic design are the task of a team of designers in the first phases of product development. In Irinox, the designers do not have a long work experience but are beginners in the refrigeration field or even they are at the first work experience. According to

the company's principles, the inexperience and willingness to change the tasks for the staff in charge for the industrial design ensure a constant contribution of new ideas of aesthetic design.

Several awards prove the success of the aesthetic design of Irinox products. In 2009, the company won the XXI Compasso d'Oro for Freddy, the innovative blast chiller for home use designed by Decoma Design. The aesthetic design is a product feature recognizes also abroad, in fact in 2010, the International Forum Product Design Award (IF) rewarded Freddy in the "Kitchen – Household" category. Later, in 2013, the company received the Top Pick award for Freddy and Zero in the Architectural Digest Home Design Show, New York (USA). These awards demonstrate that the aesthetic design becomes an important feature also in global markets.

TECHNOLOGY

The technological progress is a cultural trait of Irinox and it has represented a constant in the 20 years of history: from the 1990 with the first blast chiller sold in Italy until MultiFresh, the most recent machine. Multifresh can run operating cycles with temperatures from +85°C to -40°C, in addition, it is provided of a new touch screen interface named MyA that make the use of the machine easier and intuitive.



Figure 11: MultiFresh can run operating cycles with temperatures of +85°C to -40°C.

By pressing a button, it can blast chill, shock freeze, prove, thaw, regenerate, pasteurize and cook at low temperature.

The technology research is carried out in-house through a permanent laboratory that certifies scientifically the benefits of applying the technology Irinox. A well-equipped laboratory used for research purposes and testing in extreme conditions guarantees perfect operation of Irinox equipment and installations throughout the world.

Moreover, the company relies on a network of Italian suppliers in order to co-develop new technology solutions ad hoc and tailor-made components. The reliance on a network of suppliers supports the company when it does not own the necessary competencies or the production is not able to perform certain working processes at a desired quality level. This is the example of Irinox Balance System®, a system able to guarantee the fastest heat removal, also with boiling hot food, without damaging it in any way. Numerous tests and studies based on cooling curves and the use of sophisticated software have made possible to determine the perfect size of the main refrigerator components (condenser, evaporator and compressor). The evaporators and condensers involved are born from the drawings and specifications of the Irinox engineering office so that the product provides unbeatable performance. The strong specialization of a set of suppliers in support of the business processes can give identity to a territory with the dissemination of specialized companies.

The technological innovations developed by Irinox have application also for other products like in the holding system. They increase the customization of working processes for the intended use and the different type of food.

An important figure able to drive the technological progress in the medium and long term is the Technology Leader. In Irinox, this figure is a material/electrical engineer and is in charge to re-think the design and the manufacturing of blast chillers, shock freezers, and holding systems. Generally, this is an expert in the same sector of the company with a deep knowledge of the product. It should be a person sensitive to the customers' needs and to the new proposals of competitors. At the same time, to the Technology Leader is prompted a strong intuitive sense towards the future changes in the market and the advent of new technologies.

For the next years, the strategic focus in terms of technology research moves on the software of the Irinox products. The decision to innovate the software is because the hardware parts are easy to replicate and the performance of the refrigeration components has already achieved the best operating results. On the other hand, the software besides giving a meaning

to the performance of the machine, ensure a great development of the product. The contribution of the technology is always in the direction of product customization with benefits for the working processes and relevant simplifications for the customer's life.

Over the years, the constant commitment to technological research and innovation for food conservation has produced several patents such as the Irinox Balance System, Sanigen the sanitification system, the Safety Closing System for the perfect door closure, the MultiSensor that controls the right core temperature of food, and the HACCP Control Software for PC.

Irinox has received numerous awards for the innovative technologies implemented on its industrial blast chillers and shock freezers. These recognitions confirm the leading position of Irinox in the blast chilling, shock freezing and high-quality food preservation.

In 2000, the Italian Master Pastry Chefs Academy rewarded Irinox with the gold medal for the advanced blast chilling/shock freezing technology applied to food conservation. Irinox received the gold medal also in 2009 for the leading international role and ongoing commitment to technological research and innovation in the food conservation, and after in 2012 for the technological development of MultiFresh and to contribute to the preservation of the genuineness and good quality of desserts. The Irinox technologies was rewarded also on international level, in 2009 with the Kitchen Innovation Award (Chicago, USA) for its holding cabinets and, in 2010, for the blast chiller MultiFresh.

For Irinox these awards demonstrate publicly the product quality. The recognition is given by associations of the sector like the Italian Master Pastry Chefs Academy that often represent the target customers to which the company challenges its products.

QUALITY

Irinox complies with the world's most important certifications, aligning the product characteristics with the rules of the different market destinations. The certifying bodies controls the product quality and at the same time, they guide the workers on an increasing product knowledge and improve the working methods.

In Irinox, the organization of the work is based on the assembly of standard components along different phases in the manufacturing premises. This work organization does not limit the solutions of customization because through a modular design, Irinox can maintain high levels

of flexibility. The modularity guarantees the commonality of the different models along the production phases. Thus, for Irinox, the "real customization" sought by customers is related to the operating performance offered by the product, referring for example to the different processes required by bakers, or pastry chefs, or ice cream makers.

As described in the company's mission, Irinox recognized the professional value of its workers. In fact, to the experts in production is required an important contribution in the phases the initial development of product and along the manufacturing phases. They contribute for the solution of problems related to the manufacturing processes and they can suggest further technical applications. They are important figures for the constant commitment and improvement of the business know-how.

THE CRITICAL FACTORS OF SUCCESS AND THE INCENTIVES TO INNOVATIONS

The company pursues a strategy of differentiation and it is demonstrated by the critical factors on which Irinox invests: they differ from the industry average and, in particular, from the competitors.

The critical factors of reliability and performance of the product are supported by continuous technological innovations. The company has become a market leader thanks to its cutting-edge technologies, while competitors are considered as followers and try to replicate the Irinox products. Always according to a differentiation strategy, the company invests in the intangible qualities enclosed in the brand Irinox. Customers perceive Irinox as products with a high value in terms of quality, reliability and aesthetic design: the company wants to distinguish itself from the competitors also thanks the beauty of its products.

The collaboration with customers is another critical factor of success that competitors and other firms in the sector do not pursue. In fact, the modularity allows a flexibility in the manufacturing of different models while a customized operating service performs the type of process required by the customer.

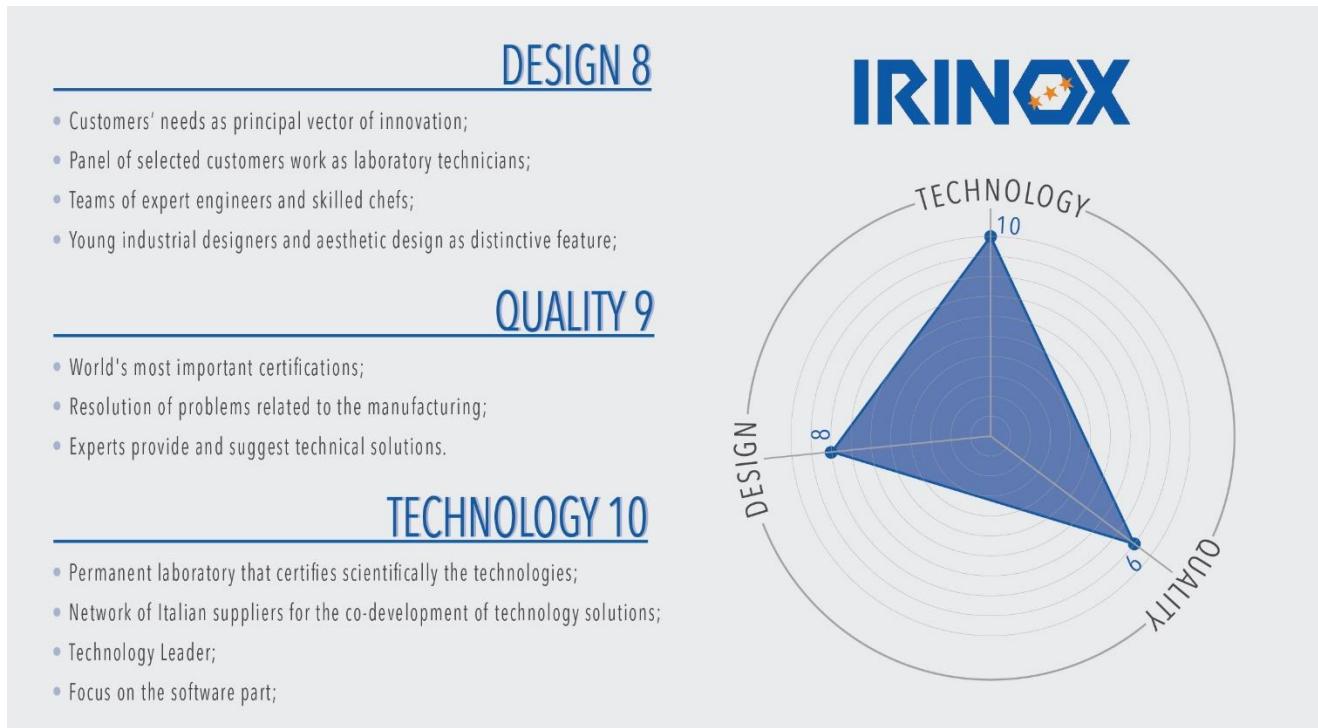
Regarding the incentives behind the strategic drivers of Design, Technology and Quality, the company looks at different forces for the growth and future development. Beginning from the successful history of Irinox, the first force is top managers' emphasis towards a continuous research of new products, working processes and, above all, new markets to explore for an increased level of internationalization of its products.

The customer requirements expressed by the panel of customers are another incentive towards the innovations in Design, Technology and Quality. For Irinox are also relevant the new possibilities offered by the Technology (see for example the touch screen interface) and the socio-cultural trend with the mission to improve the quality life of its customers.

The infographic below recalls the three strategic drivers and, through their declinations, aims to explain the excellent economic results of Irinox. In addition, the interviewee as spokesperson of the company gave an overall assessment for each strategic driver (also drawn in the chart).

For greater clarity, the questionnaire with all ratings will be proposed at the end of the dissertation. The scores highlighted in green are those to whom it have been given an explanation.

Figure 12: Summary assessment on the three innovation drivers: Irinox S.p.a.;



Hidden Champions for a new Model of Strategic Growth

Hidden champions are small and medium-sized enterprises unknown to the general public but through their strong specialization on a market niche, they are global leaders in their area of activity. They export most of their products, contributing significantly to the economy of their countries, and are more successful than the average.

The following pages aim to draw the proposal of an innovative model of strategic growth that is at the base of the Italian hidden champions, in the specific niche of Professional equipment for the Food service. In order to explain the success of the hidden champions, the lens has been placed on the product innovations distinguished on three drivers. The first one analyzes the ability to generate innovations by the product Design, the second driver assesses the implementation of cutting-edge Technologies, and finally, the third remarks the Quality and the uniqueness of product through skill and expertise of the personnel working in the manufacturing process.

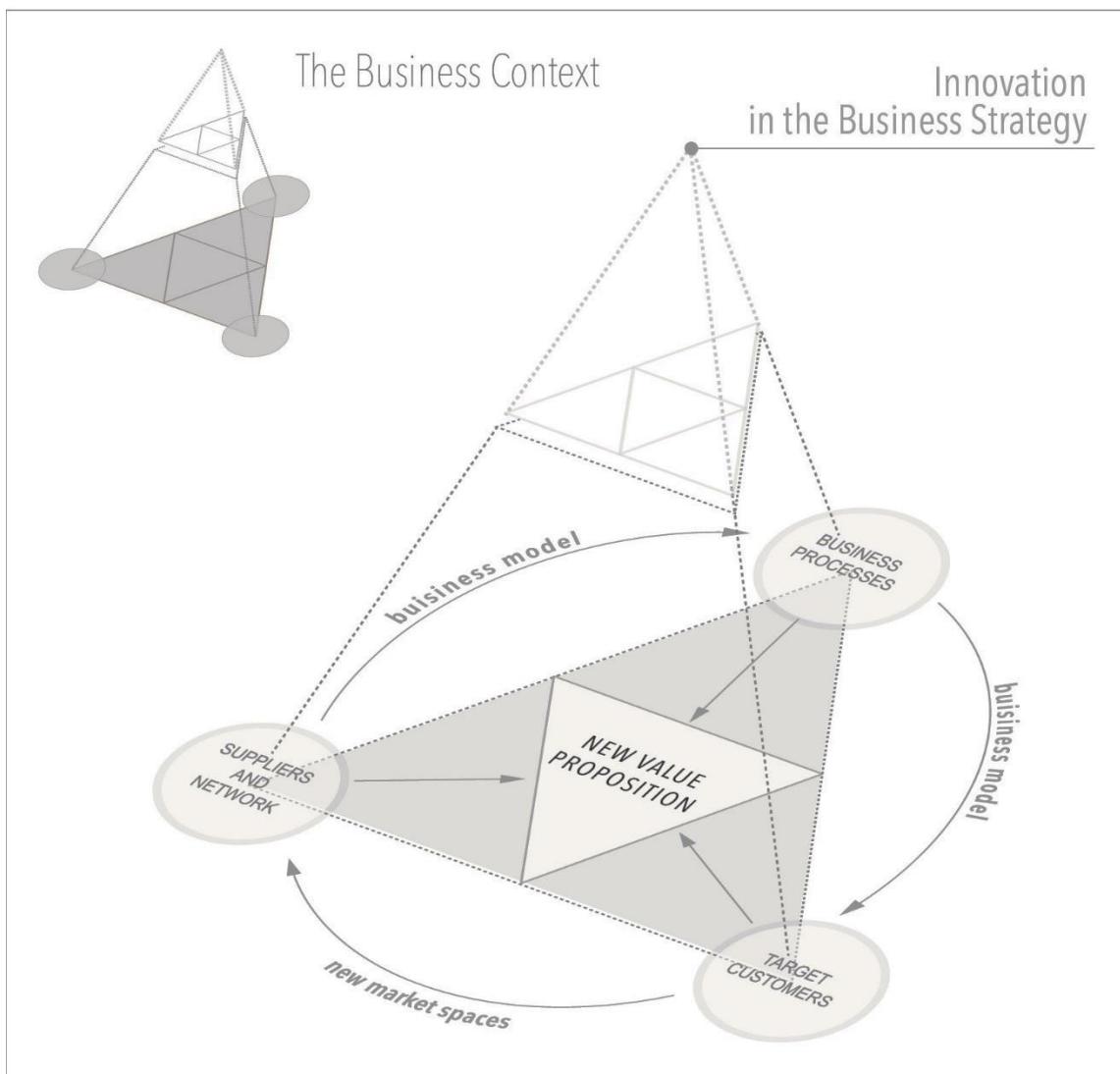
These innovation drivers influence the whole business ecosystem by shaping processes internal to the business's perimeter and taking advantages of external contributions from suppliers and target customers. In fact, the innovations in Design, Technology and Quality involve the upstream by building relationships with suppliers, often characterized by proximity in the territory, flexibility and high quality standards in the production. Then, the drivers come alive into the firm when experts put in practice creative ideas and they make unique products.

The ability to provide various possibilities of customization is a fundamental prerogative for the Italian companies. The strong know-how rooted in the hidden champions in question brings attention to the changing needs of the market and can satisfy even the most demanding specifications. Thus, the innovation drivers become the levers with which the company can

effectively get in touch with target customers and at the same time challenge its knowledge for new high-end products.

The following infographic describes the business context where is created the value proposition. Thus, the value proposition has to integrate itself with the business model and the market niche that the company pursues strategically. Only if it involves the entire business ecosystem, from suppliers to target customers, then the value proposition will become the leading vector on which building a model of strategic growth. Effectively, the hidden champions give to suppliers and above all, to customers a strategic role in their business models for the continuous generation of product innovations.

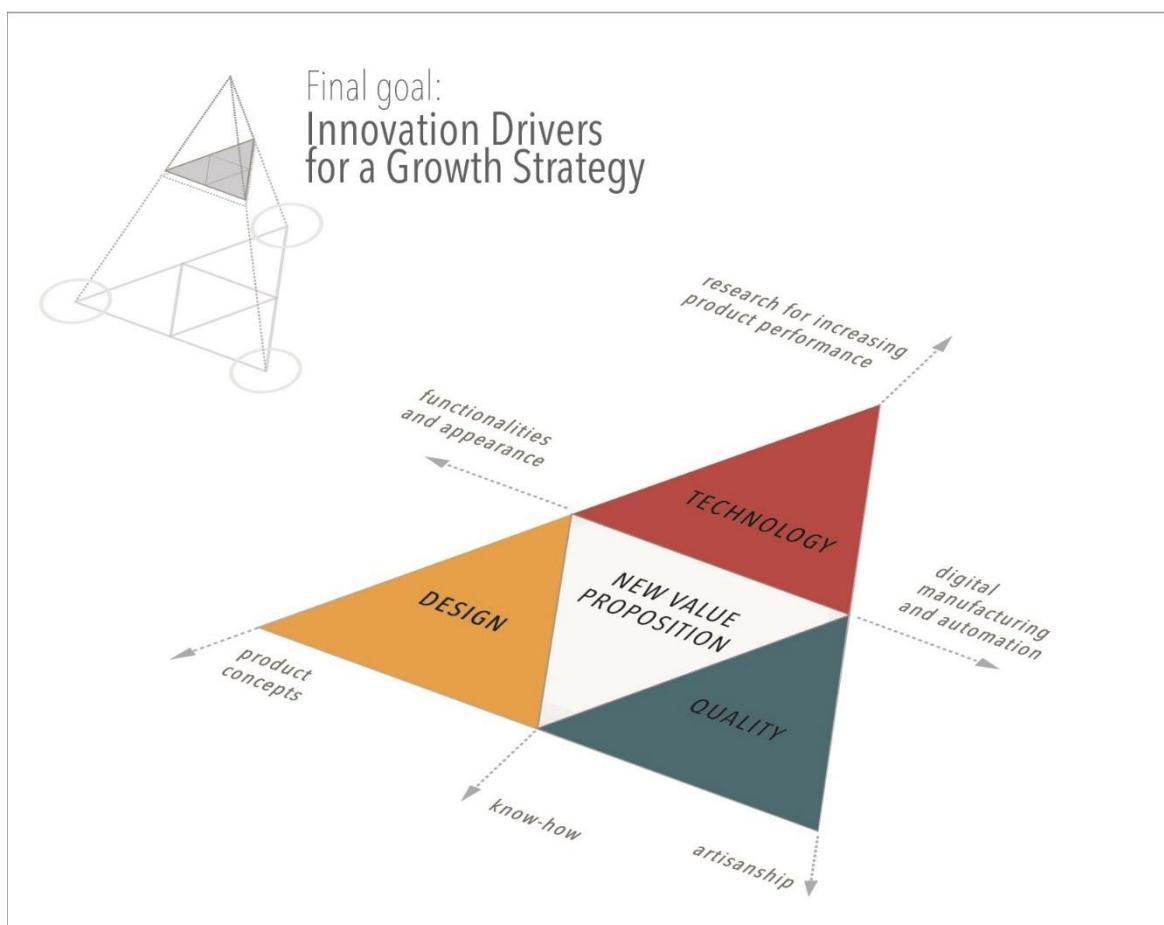
THE COMPANY



Looking at the business context as a starting point, the second layer of the three-dimensional triangle represents the innovation drivers on which the selected companies have built their value proposition. Therefore, the innovation drivers of Design, Technology and Quality become the pillars of an innovative strategy for the steady growth in the market niche at global scale.

In addition, the graphic representation shows how the selected hidden champions do not pursue separately each driver but look for their integration into the same product concept. The integration of the innovative Design, cutting-edge Technologies and manufacturing Quality leads to increasing knowledge and skills for the company with indisputable benefits for the uniqueness of the product.

The next paragraphs summarize the innovation drivers through the common features and the preferred processes implemented by the four hidden champions in order to re-create a constant flow of innovation. The goal of this summary is to set the bases for the formulation of a theoretical Model of Strategic Growth from which other companies can reach global leading position in their specific market niche.



The three pillars that bind the Hidden Champions

7.1. Design of Bespoke products with a strong Italian Style

Considering the path taken by the hidden champion analyzed, the Design refers exclusively to top range products in terms of technological contents, performance and environmental compatibility. Moreover, the product design is based on the concept to give back value to customers: the professional equipment of any category, from the Elektra espresso coffee machine to the blast chillers of Irinox, aim to the simplification of the customer's life through the improvements of the equipment' working processes.

Now, the effort is to understand the factors that lead the hidden champion to innovations in Design. The choice of the factors on which the company develops new concepts of Design is crucial in order to recreate a constant flow of innovation over time.

Customers have a central role in the product development, especially when their requirements are so different to each other and evolve quickly over time. The company must be able to build a biunique relational bond with target customers, paying attention to their needs and translating them in specific uses of the equipment. On the other hand, customers will depend on the hidden champion's products and they cannot easily change. The result will be a high-level of co-dependence between the manufacturer and his market niche.

The commitment to the customers can be interpret in two different ways. The first solution is to set activities of co-design for the product development and the company makes available to customers the technical department through the know-how of its engineers. In this case, the design is driven directly by the customer and the result is a product totally personalized and unique in the market. This strategy requires a relevant effort of the company and high-qualified personnel able to translate all requests in a well-defined project. An example is the monobloc of Berto's where the customer can decide even the distance between the cooking components.

The second solution applied mainly in all business cases provides a product design that starts from the customers in form of idea of new product concepts or as feedback on the current products. Based on this information, the R&D center and the laboratory tests develop a proposal of project or directly a new product able to satisfy the most recent market needs.

To fuel the innovations driven by design, another solution is to bring the tests of professional equipment in the hands of experts outside the company who use this equipment for their work. Because these experts occupy the same position of customers, they can become important vectors for innovations in product design.

The companies producing professional kitchens and refrigerators get closer to renowned Chefs in order to receive feedback and suggestions for future development of product. Through their use, the company can also attest the advantages and the quality of its equipment by showing specific applicability in a contest of marketing campaign. This is the case of the Berto's kitchens used for instance, in the project "Cucina attiva" or in the International Chefs Congress by renowned chefs like Cracco, Graham and Ducasse. Even the refrigeration equipment made by Irinox spend a period of tests in the working processes of specific customers. From the customer's tests born the evidences of the multiple uses and the different recipes that an Irinox's machine can perform. This type of commercial relationship with external experts can be enlarged through partnership with associations and training institutions, or also through sponsorship of competitions at international level.

An important aspect of the innovations driven by the Design is the demonstration of an unmistakable Italian style towards the beauty of the product. Strengths of the Italian manufacturing of professional equipment for the food service in the global market are the values of Italian design and Italian lifestyle. In this case, the "Made in Italy" evolves in the promotion of the Italian Lifestyle as distinctive element of quality that leverages on the values globally recognized of the best Italian Food.

The hidden champions analyzed are interested to increase the intangible parameters of design, brand and Italian Lifestyle because they convey a premium price, increase the product differentiation and strengthen their global leading positioning. Especially in the B2B sector, it is not common to find companies with personnel with skills different from those purely technical for the product development. Thus, these companies require staff with extensive experience in dealing with customers technical aspects and also the aesthetic features of the projects. Moreover, in some cases, companies rely on studies of industrial design in order to offer in the market new product lines or restyling solutions.

7.2. The Technological innovations aimed to increase the performance

One of the leading vectors for the future of the sector of professional equipment in Italy is the innovation driven by the technological progress. The companies analyzed are very proactive on this field, open to any possible application.

Usually, the ideas for advanced technology solutions start from activities carried out in-house in R&D centers and test laboratories. The decision to establish in-house R&D centers and laboratories refers first, to a cultural trait of the company and its history. In fact, when a company has built over the years a strong product knowledge, it aims to implement structures and processes in order to increase that *know-how* and to spread it on more business levels. The business *know-how* in addition to represent a cultural trait of the company's history, is also the first reason why managers decide to plan and organize technological research inside the company. The next challenge for the company is to increase the internal expertise, especially in the technologies applied to the products, through exclusive partnership and collaborations with suppliers and the employment of experts in the positions of technology leaders.

The internal activities of technological research can require the cooperation of all business functions because the implementation of cutting-edge technologies can concern different phases of the production. For instance, the technological innovations can employ personnel from the prototyping studies to the more advanced stages when the equipment are going to be manufactured and need only scientific certifications on performance and functionalities under different uses.

Moreover, the hidden champions analyzed rely on highly specialized suppliers and design studios to provide technological innovations. Although, this situation is triggered when the company does not own the competencies needed for the complete creation of the product, it maintains a central role in the project. In fact, the company commissions the creation of new technological solutions that it would apply to its products and then, the studio or directly the supplier provides a tailor-made technological component, in exclusive for the company.

The factors that push the innovations in technology are the need to deal on a market niche at global scale and to increase the product performance and functionalities. In addition, the selected companies base their technological research on the creation of products that are ergonomic and reliable under even the heaviest use.

According to these principles, emblematic innovations come out by the convergence between technologies from different fields, with resulting changes in the market. Some examples are the technological solutions of electronic components and software that require the cooperation with design studios and external suppliers.

As is occurring in other manufacturing sectors, the greatest benefits in terms of technological innovations come from the phenomenon of the digital economy. The convergence of the manufacturing sector of professional equipment and the digital world can lead to significant technological improvements and the development of killer applications. A relevant aspect on which companies can benefit from the digitalization of the products is the increased level of service that the most modern equipment for the food service can perform. The increased level of service (or “servitization”) implemented in the professional equipment integrates the offering of product and services. Technical services and personalization in the use of the equipment make the difference in the purchasing choices of consumers.

Some examples are the blast chillers of Irinox on which the customers can optimized the work cycle and keep temperature and humidity constantly controlled and gauged to develop a perfect texture for their delights. Also an Elektra espresso coffee machine hides a lot of technology such as the timer for the seconds of the coffee brewing, the temperature control of the delivery groups, and the integrated system for the management of consumption and utilization data.

Even when the digital economy is combined with socio-cultural trends of reduction of consumption and eco-sustainability of the products, influences innovative technological applications. The eco-compatibility of the products is a set of important values for consumers. Always more, the manufacturers are looking for solutions able to guarantee an efficient use and to manage the end of the life cycle of the equipment already in the early stage of product design. In this direction, for instance, Berto's developed its own label that certifies the energy consumption and the level of recyclability of its kitchens.

7.3. Quality innovation: coexistence of Artisanship and Digital manufacturing

The hidden champions earn their global leadership by working on proprietary processes that make hard for competitors to imitate their products. The quality of the manufacturing processes distinguishes the Italian Hidden champions in the market niche of Professional equipment for the Food service.

From the analysis of the business cases has emerged that the innovations of quality integrate the work skills of experts with the new paradigms of digital manufacturing. As part of the "production function", the most involved digital technologies are those related to industrial automation, which allows realizing automatic lines and digitized production processes.

The transformation of manufacturing towards the digital technologies (for example artificial intelligence, Internet of things, 3D prototyping and printing) is an incentive for higher product quality. In fact, the benefits from the new paradigm of advanced manufacturing are more flexibility in the production and increased capacity in the management of complexities. The production flexibility allows providing a rapid response to the market, particularly in new geographic areas, and providing customized solutions using products and standard components. Instead, the management of complexity refers to the integration and use of various enabling technologies ranging in advanced materials (metals, polymers and advanced ceramics), mechatronics, sensor, automation, and 3D printing.

The focal point is that the digitalization of the manufacturing should not exceed the exclusive workmanship that only some expert workers can accomplish. The cases of "digital factories" like the Merloni appliances, where only twenty employees produce more than one million washing machines in a year, remove the features of product uniqueness and exclusivity. Instead, the handmade workmanship done by experts gives meaning to the final product: they express a strong product knowledge and enables a continuum of the traditional work techniques applied long the company's history.

If the workmanship and more in general the artisanship add value to the product with also important benefits for the diffusion of the company's *know-how*, the new challenge is to make coexist the digital manufacturing with the workmanship of experts. The balance of these two working models depends greatly on the size of the company because often the growth of the

production volumes raises the levels of automation through the implementation of modern methods of production.

Generally, small companies have limited capability to make investments therefore the manufacturing is accomplished by skilled personnel with great experience and knowledge of the product as well as on the autonomous resolution of issues regarding the production phases. Examples are the business cases of Elektra and the factory in Pordenone where the artisanship is on the maximum level of the product.

On the contrary, when the production volumes are typical of a medium-size company, the personnel remains the protagonist in the manufacturing premises but their competencies move more on the working processes. The companies Berto's and Irinox train the personnel on product modularity, on the automation used in production, and finally, on improving the work environment through certifications to which the company has decided to comply.

Therefore, when both working models coexist in the same factory the company can take advantage of powerful innovations in the product quality. Customers will recognize the product's exclusivity through personalization created by the workmanship of artisans, and higher quality standard thanks the use of the most modern techniques of production.

The description of the three innovation drivers of Design, Technology and Quality wants to draw a theoretical model for the Strategic Growth of the Italian manufacturers of Professional equipment for the Food service, and not only.

The conclusive thought is that the innovation drivers of Design, Technology and Quality teach to the companies to focus on a specific sector or market niche of greatest expertise, and to go deep on it. Nowadays, it is useless to diversify in order to reach different market segments and target customers. To be competitive, companies need to be the best on their market niche. The hidden champions are companies with strategic objectives very ambitious, well-trained personnel, as well as a straight focus on customers. In this regard, it has been demonstrated that the cases of Elektra, Monoblocs made in Pordenone, Berto's and Irinox are illuminating hidden champions for the market niche of Professional equipment for the Food service.

Annexes

Annex 1

The identity of territories

The strong identity of territories can be considered as the geographical localization of high-qualified knowledge in well-defined fields. Over the years, the growth of expertise rooted in the culture of those people living in specific places has led to the developed first of small firms, after medium and large companies, until to the formation of industrial districts or clusters.

In Italy, after the World War II, the appliances industry has grown through the expansion of these clusters until becoming what it was renamed as the "*Factory of Europe*".

The expertise that makes the identity of territories (also called as clusters) is still today a distinctive feature for the entire sector. Conversely, younger appliance industries established in new low-cost countries such as Poland and Czech Republic lack of critical knowledge to develop value-added processes like R&D and product design. Thus, they specialize on activities at low value added like assembly and production because a lower labor cost makes them more efficient.

In Italy, the appliances industry has taken the form of clusters spread in several geographical areas. Although each territory has its own identity and reference "players", some common features characterized this industrial framework. In general, the Italian clusters fuel a continuous increase of knowledge through collaboration and competition between firms and a high level of service thanks the support of subcontractors and suppliers that work constantly alongside the mother factory.

The following clusters can be still considered at the base of the white goods sector in Italy.

Ancona. The territory of Ancona is characterized by important companies, one of them and certainly the most important is the Italian multinational Indesit Company S.p.A. with headquarter in Fabriano. In the last years, the presence of Indesit has triggered intensive activities of research and product innovation through collaborations on projects between the company and the Polytechnic University of Marche. The outcome of these efforts was the building in Fabriano that is the global R&D center for all Indesit products.

Caserta. Over the years, the two plants ex-Merloni (now Indesit) for the production of refrigeration and cooking systems have been promoters for the formation and the development of several production centers. Today, there is an important project to build a platform for the management of the equipment at the end of life, always in the area of Carinara – Teverola.

Marche. The districts of hoods and appliances in Fabriano and kitchens in Pesaro are the most important manufacturing sectors of the Region with 468 units and more than 12.000 workers. Confindustria Marche, Universities, Institutions, and other Associations collaborate in order to update the industry, focusing especially in the SMEs. The new strategic intent is to acquire skills for developing new products in line with the pervasive adoption of domotic technologies. In addition, the project Smiling aims to stimulate the creation of new hi-tech districts in the Region.

Monza and Brianza. Both Candy with production and headquarter in Brugherio and other several small-medium companies producing large appliances have fostered the development of an intensive network of suppliers of components that integrate the supply chain. The presence of firms at all stages of the value system has contributed to the manufacturing of appliances at "km zero".

Moreover, in the territory of Monza and Brianza, the global recognition of firms in the wood – furniture sector generates chances to exploit new synergies. Through the integration of the two different *value systems* and sharing the benefits coming from the Italian Lifestyle, innovative products of a new design concept and a technological standpoint can be realized.

Pordenone and Treviso. In the territory of Pordenone and similarly in the province of Treviso, there are leading companies in the sectors of large and small appliances, professional equipment, and refrigeration. In parallel, a significant network of suppliers has grown to support the entire industry.

The collaboration with the food service industry (the demonstration is the professional equipment sector) and with the furniture sector (for the large appliances) is strategic to strengthen the supply chain through synergies and to communicate in the world the excellence of the Italian manufacturers.

Different projects to enhance the territorial expertise have been actuated. For the improvement of productivity, Unindustria Pordenone and McKinsey have built a school of excellence for Lean Manufacturing. The Technological Center of Pordenone and the Regional Ecosystem of Innovation (Electrolux in one of the members) aim to support product and process innovation. In addition, Unindustria Pordenone promotes chain projects in R & D and technological aspects such as the ALL (Ambient Assisted Living), Home Automation, and the 3D Printing. The final goal is to make the Nord-East a “Special Manufacturing Zone”.

Electrolux and Unindustria Pordenone have agreed to enhance the Electrolux corporate assets, which are the GTC (Global Technology Center) and the GFC (Global Fabric Care), located in Porcia. In these facilities, 350 experts work with global responsibility in washing and textile care, in electronics, new materials, mechanics, and sensors for processes and applications.

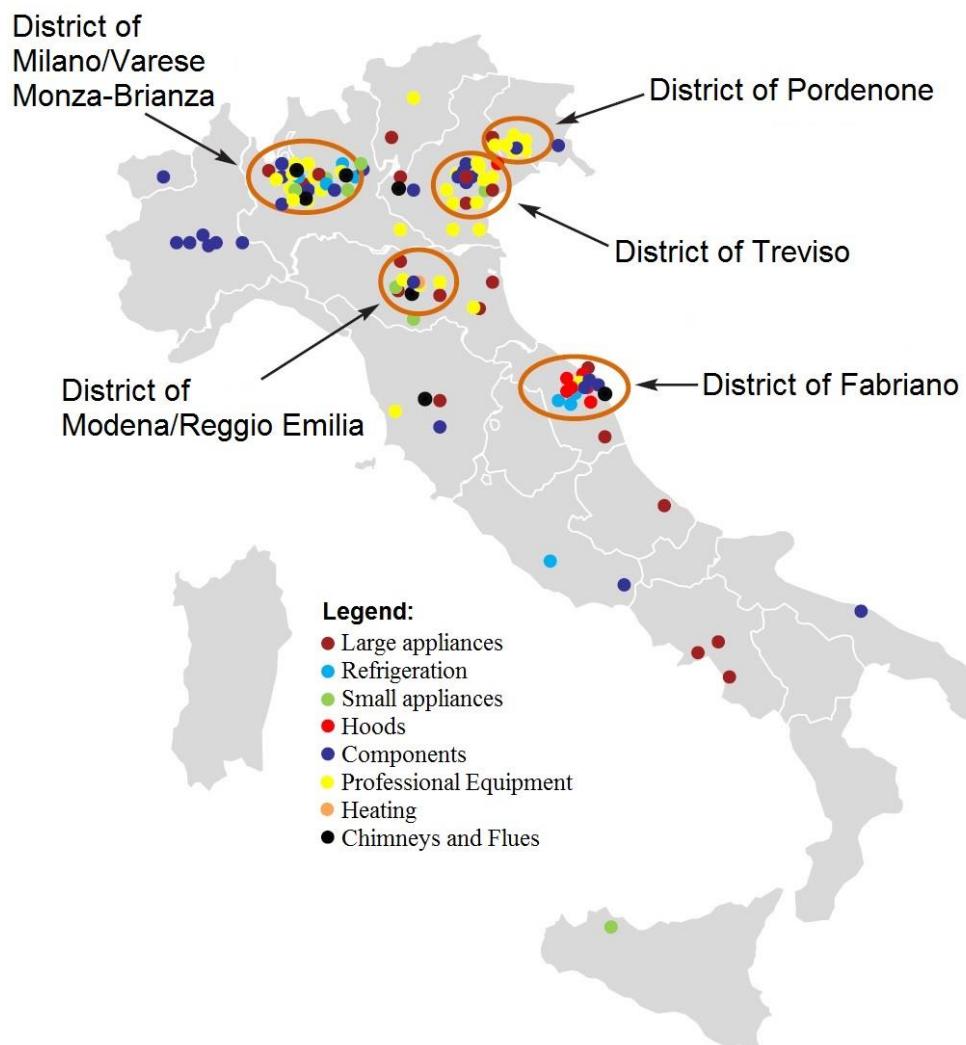
Reggio Emilia and Modena. Here, the industrial framework is characterized by medium-sized businesses, typically family-run, with strong local roots and strong specialization for cooking.

The strategies implemented are specialization in market niches, positioning in the upper-medium segment of the product range, internationalization, and investments in brand and design. The production is almost entirely in the territory with limited cases of outsourcing in the LCCs, thanks the benefits achieved with collaborations with the value systems of Agrifood, Ceramics and Furniture.

Varese. Skills of design and applied research are the distinctive competencies of the territory. Today, the cluster promotes the SiFood project (science & innovation food district) for the sustainability of the food chain. This project is a collaboration between the Region of Lombardy, University, Agrifood companies, companies in the appliance industry, and institutional organizations.

The graphic representation below represents the geographical distribution of all clusters where the manufacturing of white goods is expression of unique expertise of research and development, transformation processes and product management.

Figure: Sites and industrial districts in Italy



Source: Ceced Italia, Progetto Orizzonte, 2014

Annex 2

The Commodities codes of ATECO 2007

In order to build the Database, the research of manufacturers of Professional equipment was carried out on AIDA. The firms included in the Database are registered under the following commodities codes (between brackets the number of firms identified under each code ATECO):

- code 22.19.09: "Manufacture of other rubber products" (1);
- code 22.29.09: "Manufacture of other plastic products" (2);
- code 23.19.00: "Manufacture of other glass (including technical glassware)" (1);
- code 23.20.00: "Manufacture of refractory products" (1);
- code 23.99.00: "Manufacture of other products in non-metallic mineral" (1);
- code 25.00.00: "Manufacture of fabricated metal products (except machinery and equipment)" (2);
- code 25.11.00: "Manufacture of metal structures and assembled parts" (7);
- code 25.50.00: "Forging, stamping and roll forming of metal; powder metallurgy" (2);
- code 25.62.00: "Works of general mechanics" (4);
- code 25.71.00: "Manufacture of cutlery, flatware and weapons" (1);
- code 25.73.10: "Manufacture of manually operated tools; interchangeable parts for machine tools" (1);
- code 25.93.10: "Manufacture of products made by metal wires" (1);
- code 25.99.00: "Manufacture of other metal products" (1);
- code 25.99.19: "Manufacture of dishes, pots, tableware, kitchenware and other non-electrical equipment, metal items for the furnishing" (6);
- code 25.99.99: "Manufacture of other metal items and small metals" (1);
- code 27.00.00: "Manufacture of electrical and non- equipment for domestic use" (1);
- code 27.51.00: "Manufacture of appliances" (4);
- code 27.52.00: "Manufacture of non-electric domestic appliances" (4);
- code 27.90.00: "Manufacture of other electrical equipment" (2);
- code 27.90.09: "Manufacture of other electrical equipment" (4);
- code 28.00.00: "Manufacture of machinery and equipment" (1);

- code 28.14.00: "Manufacture of other taps and valves" (3);
- code 28.20.00: "Manufacture of other general-purpose machinery" (2);
- code 28.21.10: "Manufacture of ovens, furnaces and burners" (6);
- code 28.25.00: "Manufacture of non-domestic equipment for refrigeration and ventilation" (54);
- code 28.29.00: "Manufacture of other general-purpose machinery" (1);
- code 28.29.10: "Manufacture of scales and machines for retailers (including parts and accessories)" (3);
- code 28.29.30: "Manufacture of automatic machines for dosing and packaging (including parts and accessories)" (1);
- code 28.29.92: "Manufacture of cleaning machines (including dishwashers) for non-domestic use" (1);
- code 28.29.99: "Manufacture of other mechanical material and other machinery" (1);
- code 28.93.00: "Manufacture of machinery for the Food, Beverage and Tobacco industry (including parts and accessories)" (146);
- code 28.94.30: "Manufacture of equipment and machines for laundry and ironing (including parts and accessories)" (1);
- code 30.99.00: "Manufacture of other means of transport" (1);
- code 31.00.00: "Manufacture of furniture" (6);
- code 31.01.00: "Manufacture of furniture for office and shops" (2);
- code 31.01.20: "Manufacture of other furniture for offices and shops" (21);
- code 31.01.21: "Manufacture of other metal furniture for office and shops" (2);
- code 31.09.00: "Manufacture of other furniture" (2);
- code 31.09.40: "Manufacture of parts and accessories for furniture" (1);
- code 33.12.52: "Repair of scales and automatic machines for retailers" (1);
- code 43.21.01: "Electrical installation in buildings or other construction (including maintenance and repair)" (1);
- code 46.00.00: "Wholesale trade (except of motor vehicles and motorcycles)" (1);
- code 46.10.00: "Trade intermediaries" (1);
- code 46.14.01: "Agents of machines, equipment and systems for industry and commerce; material and electrical and electronic equipment for non-domestic use" (1);
- code 46.36.00: "Wholesale of sugar, chocolate, sweets and baked goods" (1);

- code 46.38.90: "Wholesale of other food products" (1);
- code 46.43.10: "Wholesale of household appliances, consumer electronics" (2);
- code 46.47.10: "Wholesale of furniture of any material" (1);
- code 46.49.90: "Wholesale of various non-food consumer products" (2);
- code 46.60.00: "Wholesale of other machinery, equipment and supplies" (2);
- code 46.69.00: "Wholesale of other machinery and equipment" (3);
- code 46.69.99: "Wholesale of other machinery and equipment for industry, trade, and navigation" (16);
- code 46.73.20: "Wholesale of construction materials (including sanitary)" (1);
- code 46.90.00: "Non-specialized wholesale" (1);
- code 47.91.10: "Retail sale of any kind of product made via internet" (1);
- code 56.10.30: "Pastry shops" (1);
- code 70.10.00: "Activities of holding companies engaged in management activities (operating holding companies)" (1);
- code 71.10.00: "Activities of architectural, engineering and other technical offices" (1).

Through these commodities codes of ATECO 2007, it has been possible to build a Database (DB) of national level of the manufacturers of Professional equipment for the Food service. The DB includes 341 limited companies (S.p.a. or S.r.l.) spread throughout the national territory and with a minimum turnover of € 1 million.

Due to the complexity and diversity of the commodities codes involved, the classification of ATECO 2007 does not represent a valid method for the distinction in product categories. For such purpose, see to the chapter two of the dissertation research.

Annex 3

Methodological notes: List of Italian manufacturers of Professional equipment

The analysis of the economic conditions in the sector of Professional equipment for the Food service was carried out by studying the financial statements of 341 firms in the interval time of 5 years, from 2009 to 2013. Here, the complete list of all firms included in the Database.

A.B.A. ARREDAMENTI S.p.A.; A.LINOX S.r.l.; A.S.I.T.-S.r.l.; ABERT S.p.A.; ABM COMPANY S.r.l.; ABO S.r.l.; AERTECNO 2 S.r.l.; AFINOX S.r.l.; ALCAS S.p.A.; ALDEGHERI FORNI S.r.l.; ALFA REFRATTARI S.r.l.; ALI S.p.A.; ALLFORFOOD S.r.l.; AMB FOOD TECH S.r.l.; AMITEK S.r.l.; ANFIM S.r.l.; ANGELO PO GRANDI CUCINE S.p.A.; ANTAREX S.r.l.; AREX S.r.l.; ARGENTA S.r.l.; ARISTARCO S.p.A.; ARMAC S.r.l.; ARNEG S.p.A.; ARREDOTREX S.r.l.; ARRIS CATERING EQUIPMENT S.r.l.; ARTIC S.r.l. (CLABO GROUP S.r.l.); ARTINOX S.p.A.; ATA S.r.l.; ATLAS MACCHINE ALIMENTARI S.r.l.; B.F.C. S.r.l.; B.L.M. S.r.l.; BAKE - OFF ITALIANA - S.r.l.; BALBONI INOX S.r.l.; BARATTA - S.r.l.; BECKERS ITALY S.r.l.; BEDA KOMA S.r.l.; BERTO'S S.p.A.; BEST.COLD S.r.l.; BETTI S.r.l.; BIEPI S.r.l.; BONETTO DANIELE S.r.l.; BOVO S.r.l.; BRAS INTERNAZIONALE S.p.A.; BRAVO INOX S.r.l.; BRAVO S.p.A.; BREMA ICE MAKERS S.p.A.; BREW SERVICE S.r.l.; BRICE ITALIA S.r.l.; BRX S.r.l.; BSD S.p.A. (official importer); BURLODGE S.r.l.; C B - S.r.l.; C.EL.ME S.r.l.; C.F. CENEDESE S.r.l.; C.I.M.A.V. S.r.l.; C.L.M. IMPIANTI SPILLATURA S.r.l.; C.S.C. S.r.l.; CAMURRI BREVETTI S.r.l.; CARIMALI S.p.A.; CAROTTI ICE S.r.l.; CASTA S.r.l.; CASTEL MAC S.p.A.; CASTELLI FORNI S.r.l.; CBC ROYAL FIRST S.r.l.; CEADO S.r.l.; CELLI S.p.A.; CEREDA ANITO S.r.l.; CIAM S.p.A.; CIANFANO SYSTEM S.r.l.; CIERRESESSE S.r.l.; CMA MACCHINE PER CAFFE' S.r.l.; CO.LI.P. S.r.l.; COLBERT S.r.l.; COLD LINE S.r.l.; COLUMBIA S.r.l.; CONTI S.r.l.; CONTI VALERIO S.r.l. (Eureka); COOL HEAD EUROPE S.p.A.; COSTAN S.p.A.; COVEN S.r.l.; CRIOCABIN S.p.A.; CUPPONE F.LLI S.r.l.; DAL SANTO S.r.l.; DALLA CORTE S.r.l.; DE BLASI S.p.A.; DE MANINCOR S.p.A.; DE RIGO REFRIGERATION S.r.l.; DOMINO S.r.l.; DR. ZANOLLI S.r.l.; EFFEDUE S.r.l.; ELANGRILL S.r.l.; ELECTROLUX PROFESSIONAL S.p.A.; ELEKTRA S.r.l.; ELFRA MO S.p.A.; ELMECO S.r.l.; EMAINOX S.p.A.; EMILIANO S.r.l.; EMMEDI S.r.l.; EMMEPI S.r.l.; ENOFRIGO S.p.A.; ENOMATIC S.r.l.; EPTA S.p.A.; ESMACH S.p.A.; ESSEDUE S.r.l.; EUROCEPPI S.r.l.; EUROCHEF S.r.l.; EUROCRYOR S.p.A.; EUROINOX S.r.l.; EUROPA S.r.l.; EUROTEC S.r.l. divisione COLGED and divisione MBM; EVERLASTING S.r.l.; EXPO' S.r.l.; F.A.C. S.r.l.; F.A.R.C. S.r.l.; FABA S.r.l.; FACEM S.p.A.; FAMA INDUSTRIE S.r.l.; FERBOX S.r.l.; FHIABA

S.r.l.; FIMAR S.p.A.; FIORENZATO M.C. S.r.l.; FIREX S.r.l.; FOGAL REFRIGERATION S.r.l.; FORCAR S.r.l.; FORNI CEKY S.r.l.; FRANCINOX S.r.l.; FRIGOMAT S.r.l.; FRIGOMECCANICA S.p.A.; FRIGOMECCANICA S.r.l.; FRIGONORD S.r.l.; FRIGOR BOX S.r.l.; FRIGOTECNICA ZAMBON S.r.l.; FRIMONT S.p.A.; FRISTEEL S.r.l.; FRONZA S.r.l.; G & P CENTER S.r.l.; G.I. GELATI S.r.l.; G.I.C.O. - S.p.A.; GAGGIA S.p.A.; GALBAR S.r.l.; GAM INTERNATIONAL S.r.l.; GARBIN S.r.l.; GEL-MATIC ITALIA S.r.l.; GELO MAX S.r.l.; GELOSTANDARD S.r.l.; GEMM S.r.l.; GENESI S.r.l.; GGF S.r.l.; GHIZZONI NEW CO. S.r.l.; GI.METAL S.r.l.; GIGA GRANDI CUCINE S.r.l.; GIME S.p.A.; GIORIK S.p.A.; GRUPPO CIMBALI S.p.A.; GRUPPO ZERNIKE S.r.l.; HEEGEN S.r.l. (Silfer Cooling Art); HOONVED S.r.l.; HORECATECH S.r.l.; HOTEK GRANDI CUCINE S.r.l.; IARP - S.r.l.; ICB TECNOLOGIE S.r.l.; ILSA S.p.A.; ILSA S.r.l.; IMAFORNI INT'L S.p.A.; IMPAR IMPIANTI - S.r.l.; IMPER COLD SYSTEMS S.r.l.; IMPERIA & MONFERRINA S.p.A.; INCERTINOS S.r.l.; INCOLD S.p.A.; INDEL B S.p.A.; INDUSTRIA FRIGORIFERI ITALIANA S.p.A.; ING. POLIN E C. S.p.A.; INOX MACEL S.r.l.; INOX-BIM S.r.l.; INOXTREND S.r.l.; INOXVENETA S.p.A.; INTERFRIGO S.r.l.; IRD S.r.l.; IRINOX S.p.A.; IRTECH S.r.l.; ISA S.r.l.; ITALBAKERY S.r.l.; ITALDECO' S.r.l.; ITALFORNI PESARO S.r.l.; ITALMODULAR S.r.l.; ITALSERVICE S.r.l.; IZZO FORNI S.r.l.; JKS REFRIGERATION S.r.l.; KAREL S.r.l.; KLARCO S.r.l.; KRUPPS S.r.l.; LA FELSINEA S.r.l.; LA MARZOCCO S.r.l.; LA PAVONI S.p.A.; LA SAN MARCO S.p.A.; LA SPAZIALE S.p.A.; LAFORGiarredi S.r.l.; LEVIGMATIC S.r.l.; LILLY CODROIPO S.r.l.; LOGIUDICE FORNI S.r.l.; LONGONI - DIVISIONE FREDDO S.r.l.; LOTUS S.p.A.; LP GROUP S.r.l.; M.C.E. MECCANICA S.r.l.; MACAP S.r.l.; MACH S.p.A.; MAGISTER SISTEMA CAFFE' S.r.l.; MANCONI & C. - S.r.l.; MARCHI S.r.l.; MARRONE S.r.l.; MARTELLATO S.r.l.; MAZZER LUIGI S.r.l.; MECNOSUD S.r.l.; MELCOM S.r.l.; MEPSYSTEM S.p.A.; MERLI ARREDAMENTI S.r.l.; METALCARRELLI S.r.l.; METAL'S S.p.A.; METALTECNICA PRODUZIONI S.r.l.; MINERVA OMEGA GROUP S.r.l.; MISA S.r.l.; MITTEL GROUP S.r.l.; MO.CA. S.p.A.; MODULAR PROFESSIONAL S.r.l.; MODULINE S.r.l.; MONDEL S.r.l.; MONDIAL FORNI S.p.A.; MONDIAL GROUP S.r.l.; MONELLETTA S.r.l.; MONOLITH S.r.l.; MORETTI FORNI S.p.A.; MOVING GLASS & METAL DESIGN S.r.l.; MUSSO S.r.l.; NEMOX INTERNATIONAL S.r.l.; NILMA S.p.A.; NORD-INOX S.r.l.; NTF - S.R.L. (NUOVE TECNOLOGIE DEL FREDDO); NUOVA SIMONELLI S.p.A.; OFFCAR THE GREAT COOKING S.r.l.; OFFICINE MECCANICHE PIETRO BERTO S.r.l.; OMAS S.p.A.; OR.VE.C.A. CONTRACT S.r.l.; OSCARTIELLE S.p.A.; PAN SERVICE S.r.l.; PASTORFRIGOR S.p.A.; PAVESI S.r.l.; PAVONI ITALIA S.p.A.; PEPPER STYLE by BISSETTI S.r.l.; PEVA SERVICE S.r.l.; PIAZZA EFFEPI S.r.l.; PINTI-INOX S.p.A.; PIRON S.r.l.; PRISMA S.p.A.; PRISMAFOOD S.r.l.; PROMAC Italia S.r.l.; PUGLIA INOX (IL LATTONIERE S.r.l.); QUAMAR S.r.l.; QUICK MILL S.r.l.; R. & C. SYSTEM S.r.l.; RANCILIO GROUP

S.p.A.; RATIONAL ITALIA S.r.l.; RATIONAL PRODUCTION S.r.l.; REAL FORNI S.r.l.; REFRATTARI VALORIANI S.r.l.; RINALDI SUPERFORNI S.r.l.; ROCAM LOSI S.r.l.; RONDO SCHIO S.r.l.; ROSSETTI EDIZIONI S.r.l. / BOCCINI S.r.l.; ROVIMPEX NOVALEDO S.r.l.; S & P S.r.l.; S.A.G.I. - S.p.A.; S.A.P. S.r.l.; S.P.M. DRINK SYSTEMS S.p.A.; S.T.I.M.A. S.r.l.; S.V. ITALIA S.r.l.; SA.CAR. FORNI S.r.l.; SAECO VENDING S.p.A.; SAMAREF S.r.l.; SAMBONET PADERNO INDUSTRIE S.p.A.; SAN REMO S.r.l.; SATRIANO S.r.l.; SCB BERNARDI S.r.l.; SCHWEITZER PROJECT S.p.A.; SERVICE-GEL S.r.l.; SEVEN FRIGO S.r.l.; SIGMA S.r.l.; SILANOS S.r.l.; SILIKOMART S.r.l.; SIREX S.r.l.; SIRMAN S.p.A.; SLAYER BLADES S.r.l.; SMART ICE ITALY by MABINOX S.r.l.; SODASTREAM PROFESSIONAL S.r.l.; SOGABE S.r.l.; SOTTORIVA S.p.A.; STAFF ICE SYSTEM S.r.l.; STARMIX S.r.l.; STEEL TIME S.r.l.; STEFANO FERRARA FORNI S.r.l.; STUDIO 54 S.R.L.; SUD FORNI S.r.l.; SWEDLINGHAUS S.r.l.; TAGLIAVINI S.p.A.; TECFRIGO S.p.A.; TECHFROST S.r.l.; TECHNOGEL S.p.A.; TECNO A S.r.l.; TECNO STEEL S.r.l.; TECNOARREDAMENTI S.r.l.; TECNOBANC S.r.l.; TECNOBAR CIMBALI S.r.l.; TECNODOM S.p.A.; TECNOEKA S.r.l.; TECNOFRIGO S.r.l.; TECNOINOX S.r.l.; TECNOSTEELS.r.l.; TECNOSYSTEM S.r.l.; TEKNA S.r.l.; TEKNOICE S.r.l.; TELME S.p.A.; THERMO GLASS DOOR S.p.A.; TOF S.r.l.; TOMASSONI S.r.l.; UGOLINI S.p.A.; UNIFRIGOR S.r.l.; UNOX S.p.A.; VELOX BARCHITTA S.r.l.; VEMA S.r.l.; VERONA FORNI S.r.l.; VIBIEMME S.p.A.; VIN SERVICE S.r.l.; VIRTUS S.r.l.; VITELLA S.r.l.; VITRIFRIGO S.r.l.; WEGA MACCHINE PER CAFFE' S.r.l.; WINTERHALTER ITALIA S.r.l.; ZAMBO - FRIGO S.r.l.; ZOIN REFRIGERAZIONE S.r.l.; ZORZI FRIGOTECNICA S.r.l.; ZUCCHELLI FORNI S.p.A.

Annex 4

Mapping the Professional equipment segment (2013)

Below, the table provides a split of the total turnover generated by 341 manufacturers of Professional equipment registered in the portal AIDA and then included in the DB. The total turnover 2013 (€ 4.64 billion) was split cascade per macro-region, region and finally provinces.

Macroregion	Region	Province	Turnover 2013 (k€)	%
NORTH-EAST		Bolzano	46.705	79,9%
		Trento	11.747	20,1%
	Trentino-Alto Adige		58.452	3,0%
		Gorizia	30.397	7,7%
		Pordenone	357.870	90,8%
		Udine	5.823	1,5%
	Friuli-Venezia Giulia		394.091	20,0%
		Belluno	264.733	17,4%
		Padova	512.394	33,7%
		Rovigo	27.424	1,8%
North-East Total		Treviso	333.327	21,9%
		Venezia	74.119	4,9%
		Verona	202.544	13,3%
		Vicenza	105.834	7,0%
	Veneto		1.520.376	77,1%
			1.972.919	42,5%
NORTH-WEST		Genova	2.328	100,0%
	Liguria		2.328	0,2%
		Alessandria	149.240	50,6%
		Asti	19.953	6,8%
		Cuneo	5.883	2,0%
		Novara	77.553	26,3%
		Torino	42.316	14,3%
	Piedmont		294.944	19,6%
		Bergamo	215.964	17,8%
		Brescia	76.625	6,3%
		Como	6.729	0,6%
		Cremona	6.758	0,6%
		Lecco	1.408	0,1%

	Lodi	9.417	0,8%
	Mantova	7.309	0,6%
	Milano	826.413	68,2%
	Pavia	12.317	1,0%
	Varese	48.416	4,0%
	Lombardy	1.211.356	80,3%
North-West Total		1.508.628	32,5%
CENTER-NORTH	Bologna	126.007	22,1%
	Ferrara	8.953	1,6%
	Forlì-Cesena	18.597	3,3%
	Modena	86.213	15,1%
	Parma	37.241	6,5%
	Piacenza	11.974	2,1%
	Ravenna	3.604	0,6%
	Reggio Emilia	100.074	17,6%
	Rimini	176.724	31,0%
	Emilia Romagna	569.386	53,0%
	Ancona	42.063	19,5%
	Ascoli Piceno	18.272	8,5%
	Fermo	2.762	1,3%
	Macerata	37.891	17,6%
	Pesaro Urbino	114.631	53,2%
	Marche	215.619	20,1%
	Arezzo	4.786	2,9%
	Firenze	69.620	42,8%
	Lucca	71.937	44,3%
	Massa-Carrara	8.448	5,2%
	Pisa	836	0,5%
	Pistoia	1.892	1,2%
	Prato	3.148	2,9%
	Siena	1.879	1,2%
	Tuscany	162.545	15,1%
	Perugia	125.964	100,0%
	Umbria	125.964	11,7%
Center-North Total		1.073.514	23,1%
CENTER-SOUTH	Teramo	16.910	93,3%
	Pescara	1.209	16,2%
	Abruzzo	18.120	32,0%
	Frosinone	7.464	19,3%
	Roma	31.129	80,7%
	Lazio	38.592	68,0%
Center-South Total		56.712	1,2%

SOUTH	Potenza	2.112	100,0%
	Basilicata	2.112	6,9%
	Bari	4.579	49,6%
	Taranto	4.659	50,4%
	Puglia	9.238	30,1%
	Avellino	8.794	45,4%
	Napoli	7.650	39,5%
	Salerno	2.916	15,1%
	Campania	19.359	63,0%
South Total		30.709	0,7%
SICILY	Messina	1.943	100,0%
	Sicily	1.943	0,0%
GRAND TOTAL		4.644.425	100%

In the table, the percentages at the side of the province's turnover represent the share of turnover in relation to the total turnover of the region concerned.

At the side of the total turnover per each region, it is computed the percentage of turnover in relation to the total of the macro region (North-East, North-West, Center-North, Center-South, South and Sicily).

The same criteria is used to represent the share of turnover per each macro region in relation to the total turnover 2013 of the sector of Professional equipment. Then, the data are reported synthetically in the map below.

NORTH-WEST	€ 1.509
LOMBARDY	€ 1.211
MILAN	€ 826
BERGAMO	€ 216
PIEDMONT	€ 295
ALESSANDRIA	€ 149
LIGURIA	€ 2



CENTER-NORTH	€ 1.073
EMILIA ROMAGNA	€ 569
RIMINI	€ 177
BOLOGNA	€ 126
MARCHE	€ 216
PESARO URBINO	€ 115
TUSCANY	€ 162
UMBRIA (PERUGIA)	€ 126

ISLANDS	€ 2
SICILY	€ 2

NORTH EAST	€ 1.973
VENETO	€ 1.520
PADOVA	€ 512
TREVISO	€ 333
FRIULI-VENEZIA GIULIA	€ 394
PORDENONE	€ 358
TRENTINO-ALTO ADIGE	€ 58

CENTER-SOUTH	€ 57
LAZIO	€ 39
ABRUZZO	€ 18

SOUTH	€ 30
CAMPANIA	€ 19
PUGLIA	€ 9
BASILICATA	€ 2

(*million euro)

Annex 5

Survey template for the selected Business cases

According to the chapter three on the study of the business cases, the snapshot illustrated below represents the survey used as a reference tool to highlights the product innovations implemented by the companies in terms of Design, Technology and Quality. After a first part focused on the general information about the specific company, the next questions go in detail on the business models built in order to implement and strengthen the three driver into the company's strategy. The conclusive part brings the interviewer to reflect on the critical factors of success for all firms in the sector, and afterward in particular for the specific company. Finally, the last questions analyze the motivations that push the company to adopt a strategy focused on product innovations concerning Design, Technology and Quality.

In blue are reported all notes included in the survey with the scope to simplify the understanding and to guide the joint compilation with the Experts of the selected companies.

Company name

Interviewee and position

Company mission and vision

Products

Target customers

Brief description of the leading Business processes

Taking in consideration the business processes accomplished by the people working in the company that make the difference or represent best practices for the value creation.

Performance assessment within the sector

1 = strongly negative, 2 = negative, 3 = neither negative nor positive, 4 = positive, 5 = best performer

Revenues Italy	
Revenues Exports	
EBITDA	
EBIT	
Total Performance	

Self-assessment of the business performance compared to the sector and/or the main competitors.

(*score by self-assessment; from 1=low to 10=best performance over its main competitors)

The Innovation is at the level of

1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree

The innovation in DESIGN leads to redefine the concept of products and it can be incremental or radical.

The survey splits the product innovation in three levels: Design, Technology and Quality. The answers should be based on the value proposition of the company therefore on the observation of the product offering.

DESIGN

(*score by self-assessment; from 1 = low to 10 = key driver in the firm's strategic plan)

1.a incremental innovation: improving existing products

Improving significantly features of utility or the external appearance or the packaging of an existing product. An example is the incremental innovations in energy saving for the appliances made by Electrolux.

1.b radical relative innovation: developing new products for the firm but already offered by others
Design of products already offered in the market by other companies and the firm starts to make by imitating and sometimes further improving them. An example is the start of production of inline skates for a company specialized in ski boots.

1.c radical absolute innovation: developing entirely new products

Design of products before unknown, totally new for the markets. An example is the introduction of the first Sony Walkman, the first tablet (Apple).

2.a researched and developed of design totally in-house

2.b collaboration/partnership with third parties for the joint development of the product

2.c researched and developed of design offshored to third parties (more than 80% of the process)

-> when the Design is done more than 80% in-house, the distinctive skills have been acquired through...

3.a training sessions in order to increase the existing competencies

3.b hiring new professionals even from other sectors, non-related to the firm's one

-> when company relies on partnerships or collaborations with external parties

3.c the external Design is applied only to specific parts where the companies has not knowledge

3.d the company capitalizes occasional projects from Universities and other research centers

3.e the company relies on external expertise also for a brand recognition

A famous chef or designer drives the creation of new products. Through marketing campaigns, they can promote and enhance the value recognition of the product. The company create specific product lines under the supervision of these external Experts.

4. product design is linked to different products or sectors (synergies)

An example is the combination between the design applied in the field of professional equipment for the food service and the furniture sector with the purpose to provide solutions for restaurants, hotels etc.

5. end users drive the product design and related innovations (bespoke products)

6. product design is driven by the leading companies

7. the company confers to the design an high value-added

The design is a value-added feature for the final price of the product. The target customers recognize the company's design and they are willing to pay a higher price.

Innovations in TECHNOLOGY derives from the scientific technology research and often they are of radical type.

TECHNOLOGY

(*score by self-assessment; from 1 = low to 10 = key driver in the firm's strategic plan)

1.a the company is in charge of most of the processes aimed to develop new technologies

The company develops new technologies in-house thanks a special department and qualified personnel (offices and/or production premises).

1.b technological innovations are the result of a continuous collaboration among supplier and the firm

A close collaboration between supplier and the company can be expressed through several meetings between the two parts and a constant flow of information in all phases of the process.

1.c technology solutions are proposed by external suppliers (more than 80% of the technology available)

The supplier is owner of the technology, it manages the technology proposed to the company and he is responsible for all processes of upgrading.

2. technology innovations adopted by the company have applicability in other products/sectors

-> when the company develops in-house technology innovations

3.a the company has patented several technology solutions in the last five years

3.b the company has trained specific personnel in the role of Technology Leader

"Keeping it all running and up-to-date; while looking down the road at the next upgrade in hardware and software – and doing all this on a shoestring budget." (Pantsari, 2003). The Technology Leader drives the company through the implementation of cutting-edge technology solutions.

-> when the technology innovations are carried out and developed by external entities

4.a most of the technology applied in the products comes from foreign providers

4.b the technology solutions are provided by a network of Italian suppliers

5. the company is a follower of technology innovations presented by leading companies

6. technology innovations are based on customers' requests left uncovered by other companies

7. technology innovations are aimed to adding features and extra options to the products

The technology innovations become a means to increase the products prices because they add no-essential features and extra options for customers.

8. the company has qualified personnel able to ensure post-sales services for technology issues

9. the technology is the most important component in the total product cost

10. in the next years, the firm expects to gain a competitive advantage through technology innovations

Innovations in QUALITY leads to raise the standards of the product through the use of different materials, new production processes, increasing levels of functionalities and makes longer the products life. The product quality is closely tied to the professionalism of the personnel in the company.

QUALITY

(*score by self-assessment; from 1 = low to 10 = key driver in the firm's strategic plan)

1. the production processes are in series and constituted by the assembly of standard components

2. the company is able to guarantee high flexibility in the production processes

3. the manufacturing activities are accomplished manually without the use of automated processes

<i>The production activities do not present significant levels of automation. More than half of the activities are carried out manually and they are of direct responsibility of the person involved.</i>	
4. in the production premises, the seniors are recognized for high levels of expertise and knowledge <i>A company with a range of customizable products needs a high level of flexibility in the manufacturing and probably also workers with high expertise and product knowledge.</i>	
5. the expertise allows to use different materials and transform them through new technologies <i>In the manufacturing, experts are able to manage different processes and work different raw materials using the new technologies like digital manufacturing, 3D project tools, automatic machines, etc.</i>	
6. the seniors accomplish the production process autonomously until the realization of the product <i>The senior workers are able to accomplish autonomously most of the activities in the manufacturing processes because they have a deep knowledge of the product and the processes.</i>	
7. the expertise acquired in the production increases the product quality <i>There is product quality when the product features are in line with the most recent solutions provided in the market and they respond to the latest customers' needs.</i>	
8. the senior workers are also involved in the product innovations and the prototyping processes	
9. customers perceive the quality level so they are willing to pay a value-added	
10. the quality is also an expression of the cultural concept of "Made in Italy"	
11. the superior quality derives from the company's history and a strong knowledge of product <i>For instance, through the widespread use of storytelling, the company demonstrates a faraway knowledge and a historic specialization in the product field. These aspects increase the feeling of quality in the customers' mindset.</i>	

The Critical Factors of Success are:

1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree

	<i>for all firms in the sector</i>	<i>for the firm over its competitors</i>
1. a competitive price		
2. reliability	<i>(product lifetime and efficient support services)</i>	
3. performance	<i>(functionality, power consumption, ergonomics and comfort, simplicity and usability, size and weight, aesthetic and sensory aspects such as noise, smell, touch and taste)</i>	
4. always the latest product		
5. the tangible qualities	<i>(raw materials and technology)</i>	
6. the intangible qualities	<i>(image, style, prestige, elegance, symbolic values, status, sustainability)</i>	
7. wide range of products		
8. customization		
9. collaboration with customers	<i>(for the co-creation of the product)</i>	

The incentives behind the three strategic drivers are:

1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree

1. the top managers' emphasis for the exploration of new products, processes and markets	
2. the willingness to react or anticipate the strategic actions of competitors	
3. the degrowth of business performance like turnover, profit, etc.	
4. customers' requirements (changing needs, increased price sensitivity, etc.)	
5. new possibilities offered by the Technology (implementation of sensors, Internet of things, etc.)	
6. emerging socio-cultural trend (orientation to sustainability, reduction of consumption, etc.)	

Company name

Elektra S.r.l.

Interviewee and position

Performance assessment within the sector

1 = strongly negative, 2 = negative, 3 = neither negative nor positive, 4 = positive, 5 = best performer

Revenues Italy	3	
Revenues Exports	5	
EBITDA	4	
EBIT	4	
Total Performance	4	(*score by self-assessment; from 1 = low to 10 = best performance if compared to the main competitor)

The Innovation is at the level of

1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree

DESIGN	10	(*score by self-assessment; from 1 = low to 10 = key driver in the firm's strategic plan)
1.a incremental innovation: improving existing products		5
1.b radical relative innovation: developing new products for the firm but already offered by others firms		2
1.c radical absolute innovation: developing entirely new products		1
2.a researched and developed of design totally in-house		5
2.b collaboration/partnership with third parties for the joint development of new products		2
2.c researched and developed of design offshored to third parties (more than 80% of the process)		1
-> when the Design is done more than 80% in-house, the distinctive skills have been acquired through...		
3.a training sessions in order to increase the existing competencies		3
3.b hiring professionals even from other sectors, non-related to the firm's one		2
-> when company relies on partnerships or collaborations with external parties		
3.c the external Design is applied only to specific parts where the companies has not knowledge		4
3.d the company capitalizes occasional projects from Universities and other research centers		1
3.e the company relies on external expertise also for a brand recognition		3
4. product design is linked to different products or sectors (synergies)		2
5. end users drive the product design and related innovations (bespoke products)		3
6. product design is driven by the leading companies		1
7. the company confers to the design an high value-added		5

TECHNOLOGY	9	(*score by self-assessment; from 1 = low to 10 = key driver in the firm's strategic plan)
1.a the company is in charge of most of the processes aimed to develop new technologies		4
1.b technological innovations are the result of a continuous collaboration among supplier and the firm		2
1.c technology solutions are proposed by external suppliers (more than 80% of the technology available)		1
2. technology innovations adopted by the company have applicability in other products/sectors		2
-> when the company develops in-house technology innovations		
3.a the company has patented several technology solutions in the last five years		5
3.b the company has trained specific personnel in the role of Technology Leader		3
-> when the technology innovations are carried out and developed by external entities		
4.a most of the technology applied in the products comes from foreign providers		1
4.b the technology solutions are provided by a network of Italian suppliers		4

5. the company is a follower of technology innovations presented by leading companies/multinationals	1
6. technology innovations are based on customers' requests left uncovered by other companies	3
7. technology innovations are aimed to adding features and extra options to the products	4
8. the company has qualified personnel able to ensure post-sales services for technology issues	2
9. the technology is the most important component in the total product cost	3
10. in the next years, the firm expects to gain a competitive advantage through technology innovations	4

QUALITY	9	(*score by self-assessment; from 1 = low to 10 = key driver in the firm's strategic plan)
1. the production processes are in series and constituted by the assembly of standard components	1	
2. the company is able to guarantee high flexibility in the production processes	5	
3. the manufacturing activities are accomplished manually without the use of automated processes	5	
4. in the production premises, the seniors are recognized for high levels of expertise and knowledge	4	
5. the expertise allows to use different materials and transform them through new technologies	3	
6. the seniors accomplish the production process autonomously until the realization of the product	3	
7. the expertise acquired in the production increases the product quality	2	
8. the senior workers are also involved in the product innovations and the prototyping processes	2	
9. customers perceive the quality level so they are willing to pay a value-added	5	
10. the quality is also an expression of the cultural concept of "Made in Italy"	5	
11. the superior quality derives from the company's history and a strong knowledge of product	5	

The Critical Factors of Success are:

1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree

	for the firm over its competitors	for all firms in the sector
1. a competitive price	2	4
2. reliability	4	3
3. performance	5	4
4. always the latest product	3	5
5. the tangible qualities	4	4
6. the intangible qualities	5	3
7. wide range of products	3	5
8. customization	4	2
9. collaboration with customers	3	1

The incentives behind the three strategic drivers are:

1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree

1. the top managers' emphasis for the exploration of new products, processes and markets	5
2. the willingness to react or anticipate the strategic actions of competitors	2
3. the degrowth of business performance like turnover, profit, etc.	1
4. customer requirements (changing needs, increased price sensitivity, etc.)	4
5. new possibilities offered by the Technology (implementation of sensors, Internet of things, etc.)	4
6. emerging socio-cultural trend (orientation to sustainability, reduction of consumption, etc.)	4

Company name

Monobloc kitchens made in Pordenone

Interviewee and position

Performance assessment within the sector

1 = strongly negative, 2 = negative, 3 = neither negative nor positive, 4 = positive, 5 = best performer

Revenues Italy	4	
Revenues Exports	5	
EBITDA	5	
EBIT	5	
Total Performance	5	(*score by self-assessment; from 1 = low to 10 = best performance if compared to the main competitor)

The Innovation is at the level of

1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree

DESIGN	9	(*score by self-assessment; from 1 = low to 10 = key driver in the firm's strategic plan)
1.a incremental innovation: improving existing products	5	
1.b radical relative innovation: developing new products for the firm but already offered by others firms	5	
1.c radical absolute innovation: developing entirely new products	2	
2.a researched and developed of design totally in-house	5	
2.b collaboration/partnership with third parties for the joint development of new products	4	
2.c researched and developed of design offshored to third parties (more than 80% of the process)	2	
-> when the Design is done more than 80% in-house, the distinctive skills have been acquired through...		
3.a training sessions in order to increase the existing competencies	4	
3.b hiring professionals even from other sectors, non-related to the firm's one	4	
-> when company relies on partnerships or collaborations with external parties		
3.c the external Design is applied only to specific parts where the companies has not knowledge	4	
3.d the company capitalizes occasional projects from Universities and other research centers	1	
3.e the company relies on external expertise also for a brand recognition	5	
4. product design is linked to different products or sectors (synergies)	5	
5. end users drive the product design and related innovations (bespoke products)	3	
6. product design is driven by the leading companies	1	
7. the company confers to the design an high value-added	5	

TECHNOLOGY	8	(*score by self-assessment; from 1 = low to 10 = key driver in the firm's strategic plan)
1.a the company is in charge of most of the processes aimed to develop new technologies	4	
1.b technological innovations are the result of a continuous collaboration among supplier and the firm	3	
1.c technology solutions are proposed by external suppliers (more than 80% of the technology available)	1	
2. technology innovations adopted by the company have applicability in other products/sectors	3	
-> when the company develops in-house technology innovations		
3.a the company has patented several technology solutions in the last five years	1	
3.b the company has trained specific personnel in the role of Technology Leader	4	
-> when the technology innovations are carried out and developed by external entities		
4.a most of the technology applied in the products comes from foreign providers	3	
4.b the technology solutions are provided by a network of Italian suppliers	3	

5. the company is a follower of technology innovations presented by leading companies/multinationals	2
6. technology innovations are based on customers' requests left uncovered by other companies	5
7. technology innovations are aimed to adding features and extra options to the products	5
8. the company has qualified personnel able to ensure post-sales services for technology issues	5
9. the technology is the most important component in the total product cost	3
10. in the next years, the firm expects to gain a competitive advantage through technology innovations	4

QUALITY	10	(*score by self-assessment; from 1 = low to 10 = key driver in the firm's strategic plan)
1. the production processes are in series and constituted by the assembly of standard components	1	
2. the company is able to guarantee high flexibility in the production processes	5	
3. the manufacturing activities are accomplished manually without the use of automated processes	3	
4. in the production premises, the seniors are recognized for high levels of expertise and knowledge	4	
5. the expertise allows to use different materials and transform them through new technologies	3	
6. the seniors accomplish the production process autonomously until the realization of the product	5	
7. the expertise acquired in the production increases the product quality	4	
8. the senior workers are also involved in the product innovations and the prototyping processes	4	
9. customers perceive the quality level so they are willing to pay a value-added	5	
10. the quality is also an expression of the cultural concept of "Made in Italy"	5	
11. the superior quality derives from the company's history and a strong knowledge of product	5	

The Critical Factors of Success are:

1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree

	for the firm over its competitors	for all firms in the sector
1. a competitive price	3	5
2. reliability	4	3
3. performance	4	4
4. always the latest product	4	4
5. the tangible qualities	4	5
6. the intangible qualities	5	2
7. wide range of products	4	5
8. customization	5	2
9. collaboration with customers	5	3

The incentives behind the three strategic drivers are:

1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree

1. the top managers' emphasis for the exploration of new products, processes and markets	5
2. the willingness to react or anticipate the strategic actions of competitors	3
3. the degrowth of business performance like turnover, profit, etc.	1
4. customer requirements (changing needs, increased price sensitivity, etc.)	4
5. new possibilities offered by the Technology (implementation of sensors, Internet of things, etc.)	4
6. emerging socio-cultural trend (orientation to sustainability, reduction of consumption, etc.)	5

Company name

Berto's S.p.A.

Interviewee and position

Performance assessment within the sector

1 = strongly negative, 2 = negative, 3 = neither negative nor positive, 4 = positive, 5 = best performer

Revenues Italy	4	
Revenues Exports	5	
EBITDA	5	
EBIT	5	
Total Performance	5	(*score by self-assessment; from 1 = low to 10 = best performance if compared to the main competitor)

The Innovation is at the level of

1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree

DESIGN	10	(*score by self-assessment; from 1 = low to 10 = key driver in the firm's strategic plan)
1.a incremental innovation: improving existing products	5	
1.b radical relative innovation: developing new products for the firm but already offered by others firms	3	
1.c radical absolute innovation: developing entirely new products	1	
2.a researched and developed of design totally in-house	5	
2.b collaboration/partnership with third parties for the joint development of new products	4	
2.c researched and developed of design offshored to third parties (more than 80% of the process)	2	
-> when the Design is done more than 80% in-house, the distinctive skills have been acquired through...		
3.a training sessions in order to increase the existing competencies	5	
3.b hiring professionals even from other sectors, non-related to the firm's one	2	
-> when company relies on partnerships or collaborations with external parties		
3.c the external Design is applied only to specific parts where the companies has not knowledge	4	
3.d the company capitalizes occasional projects from Universities and other research centers	1	
3.e the company relies on external expertise also for a brand recognition	4	
4. product design is linked to different products or sectors (synergies)	3	
5. end users drive the product design and related innovations (bespoke products)	2	
6. product design is driven by the leading companies	1	
7. the company confers to the design an high value-added	5	

TECHNOLOGY	8	(*score by self-assessment; from 1 = low to 10 = key driver in the firm's strategic plan)
1.a the company is in charge of most of the processes aimed to develop new technologies	4	
1.b technological innovations are the result of a continuous collaboration among supplier and the firm	4	
1.c technology solutions are proposed by external suppliers (more than 80% of the technology available)	1	
2. technology innovations adopted by the company have applicability in other products/sectors	3	
-> when the company develops in-house technology innovations		
3.a the company has patented several technology solutions in the last five years	2	
3.b the company has trained specific personnel in the role of Technology Leader	4	
-> when the technology innovations are carried out and developed by external entities		
4.a most of the technology applied in the products comes from foreign providers	3	
4.b the technology solutions are provided by a network of Italian suppliers	3	

5. the company is a follower of technology innovations presented by leading companies/multinationals	2
6. technology innovations are based on customers' requests left uncovered by other companies	5
7. technology innovations are aimed to adding features and extra options to the products	2
8. the company has qualified personnel able to ensure post-sales services for technology issues	5
9. the technology is the most important component in the total product cost	2
10. in the next years, the firm expects to gain a competitive advantage through technology innovations	3

QUALITY	9	(*score by self-assessment; from 1 = low to 10 = key driver in the firm's strategic plan)
1. the production processes are in series and constituted by the assembly of standard components	4	
2. the company is able to guarantee high flexibility in the production processes	5	
3. the manufacturing activities are accomplished manually without the use of automated processes	1	
4. in the production premises, the seniors are recognized for high levels of expertise and knowledge	3	
5. the expertise allows to use different materials and transform them through new technologies	4	
6. the seniors accomplish the production process autonomously until the realization of the product	3	
7. the expertise acquired in the production increases the product quality	4	
8. the senior workers are also involved in the product innovations and the prototyping processes	4	
9. customers perceive the quality level so they are willing to pay a value-added	5	
10. the quality is also an expression of the cultural concept of "Made in Italy"	5	
11. the superior quality derives from the company's history and a strong knowledge of product	5	

The Critical Factors of Success are:

1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree

	for the firm over its competitors	for all firms in the sector
1. a competitive price	2	4
2. reliability	4	3
3. performance	5	4
4. always the latest product	4	5
5. the tangible qualities	4	5
6. the intangible qualities	5	3
7. wide range of products	3	5
8. customization	5	3
9. collaboration with customers	3	2

The incentives behind the three strategic drivers are:

1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree

1. the top managers' emphasis for the exploration of new products, processes and markets	5
2. the willingness to react or anticipate the strategic actions of competitors	3
3. the degrowth of business performance like turnover, profit, etc.	2
4. customer requirements (changing needs, increased price sensitivity, etc.)	4
5. new possibilities offered by the Technology (implementation of sensors, Internet of things, etc.)	4
6. emerging socio-cultural trend (orientation to sustainability, reduction of consumption, etc.)	5

Company name

Irinox S.p.A. - Professional

Interviewee and position

Performance assessment within the sector

1 = strongly negative, 2 = negative, 3 = neither negative nor positive, 4 = positive, 5 = best performer

Revenues Italy	3	
Revenues Exports	5	
EBITDA	5	
EBIT	5	
Total Performance	4	(*score by self-assessment; from 1 = low to 10 = best performance if compared to the main competitor)

The Innovation is at the level of

1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree

DESIGN	8	(*score by self-assessment; from 1 = low to 10 = key driver in the firm's strategic plan)
1.a incremental innovation: improving existing products		5
1.b radical relative innovation: developing new products for the firm but already offered by others firms		4
1.c radical absolute innovation: developing entirely new products		1
2.a researched and developed of design totally in-house		3
2.b collaboration/partnership with third parties for the joint development of new products		5
2.c researched and developed of design offshored to third parties (more than 80% of the process)		1
-> when the Design is done more than 80% in-house, the distinctive skills have been acquired through...		
3.a training sessions in order to increase the existing competencies		4
3.b hiring professionals even from other sectors, non-related to the firm's one		1
-> when company relies on partnerships or collaborations with external parties		
3.c the external Design is applied only to specific parts where the companies has not knowledge		4
3.d the company capitalizes occasional projects from Universities and other research centers		4
3.e the company relies on external expertise also for a brand recognition		4
4. product design is linked to different products or sectors (synergies)		1
5. end users drive the product design and related innovations (bespoke products)		4
6. product design is driven by the leading companies		1
7. the company confers to the design an high value-added		5

TECHNOLOGY

10

(*score by self-assessment; from 1 = low to 10 = key driver in the firm's strategic plan)

1.a the company is in charge of most of the processes aimed to develop new technologies	4
1.b technological innovations are the result of a continuous collaboration among supplier and the firm	4
1.c technology solutions are proposed by external suppliers (more than 80% of the technology available)	1
2. technology innovations adopted by the company have applicability in other products/sectors	4

-> when the company develops in-house technology innovations

3.a the company has patented several technology solutions in the last five years	4
3.b the company has trained specific personnel in the role of Technology Leader	5

-> when the technology innovations are carried out and developed by external entities

4.a most of the technology applied in the products comes from foreign providers	1
4.b the technology solutions are provided by a network of Italian suppliers	5

5. the company is a follower of technology innovations presented by leading companies/multinationals	1
6. technology innovations are based on customers' requests left uncovered by other companies	5
7. technology innovations are aimed to adding features and extra options to the products	5
8. the company has qualified personnel able to ensure post-sales services for technology issues	5
9. the technology is the most important component in the total product cost	5
10. in the next years, the firm expects to gain a competitive advantage through technology innovations	5

QUALITY	9	(*score by self-assessment; from 1 = low to 10 = key driver in the firm's strategic plan)
1. the production processes are in series and constituted by the assembly of standard components	4	
2. the company is able to guarantee high flexibility in the production processes	5	
3. the manufacturing activities are accomplished manually without the use of automated processes	4	
4. in the production premises, the seniors are recognized for high levels of expertise and knowledge	5	
5. the expertise allows to use different materials and transform them through new technologies	1	
6. the seniors accomplish the production process autonomously until the realization of the product	1	
7. the expertise acquired in the production increases the product quality	5	
8. the senior workers are also involved in the product innovations and the prototyping processes	3	
9. customers perceive the quality level so they are willing to pay a value-added	5	
10. the quality is also an expression of the cultural concept of "Made in Italy"	5	
11. the superior quality derives from the company's history and a strong knowledge of product	5	

The Critical Factors of Success are:

1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree

	for the firm over its competitors	for all firms in the sector
1. a competitive price	4	5
2. reliability	5	5
3. performance	5	4
4. always the latest product	2	5
5. the tangible qualities	4	2
6. the intangible qualities	5	1
7. wide range of products	4	5
8. customization	4	2
9. collaboration with customers	5	2

The incentives behind the three strategic drivers are:

1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree

1. the top managers' emphasis for the exploration of new products, processes and markets	5
2. the willingness to react or anticipate the strategic actions of competitors	2
3. the degrowth of business performance like turnover, profit, etc.	1
4. customer requirements (changing needs, increased price sensitivity, etc.)	5
5. new possibilities offered by the Technology (implementation of sensors, Internet of things, etc.)	5
6. emerging socio-cultural trend (orientation to sustainability, reduction of consumption, etc.)	5

Charts, Tables and Figures

Chart 1: Manufacturing of Domestic and Professional appliances in Italy from 1980 to 2011;

Chart 2: Manufacturing of "white goods" (000 units) by segments from 1965 to 2011;

Chart 3: Percentage variation in the final demand of Domestic appliances in Western Europe, from 2007 to 2011;

Chart 4: Export Share of Italian industry of appliances from 1990 to 2010;

Chart 5: Penetration shares of Italian products on the total imports of domestic appliances, by geographical area (comparison 2000-2010);

Chart 6: Trade balance in the white goods sector in Italy (2012);

Chart 7: Profitability assessment (% EBIT on the Net Revenue) in relation to the average level of the Italian manufacturing, from 2000 to 2010;

Chart 8: Operational Profitability (% EBITDA on Revenue) of the Italian manufacturers of Domestic and Professional appliances, from 1990 to 2011;

Chart 9: Levels of production relocation in the Italian industry of appliances (comparison 2007-2010, by segment);

Chart 10: Distribution of production by Segment (2013);

Chart 11: Normalized trade balance by product group, from 1990 to 2010 [(Export - Import) / (Export + Import)];

Chart 12: Net Revenues (index 100 = 2000) by product group, from 1990 to 2010;

Chart 13: Operational Profitability (% EBITDA on Net Revenue) by product group, from 1990 to 2010;

Chart 14: Total Turnover and Sales Revenues of Italian manufacturers of Professional equipment for the Food Service, (2009-2013);

Chart 15: EBITDA in absolute value and % of the Total Turnover (2009-2013);

Chart 16: History of the sector and Years from the foundation of the firms;

Chart 17: Weight (%) of Total Turnover (2013) distributed by SBA;

Chart 18: Weight (%) of EBITDA (2013) distributed by SBA;

Chart 19: Average size of firms per SBA – (Number of employees / Number of firms);

Chart 20: Dimensional characteristic of firms distributed by SBAs (2013);

Chart 21: Growth (%) in Total Turnover split by SBA, (2009-2013);

Chart 22: Operational margins split by SBA, (2009-2013);

Chart 23: Average Growth (%) in Total Turnover (2009-2013) and % EBITDA (2013) split by SBA;

Table 1: Trend of prices between 2008 and 2013;

Table 2: Summary of the Assessment made by Segment;

Table 3: Variation in Turnover for the segments of Professional equipment and Pellet and biomass stoves, comparing 2011 and 2013;

Table 4: Accounting in the Professional equipment sector (2013);

Table 5: Numbers of the sector of Professional equipment in Italy (2009-2013);

Table 6: The major industrial firms operating in Italy (2013);

Table 7: Total Turnover splits by SBA, (2009-2013);

Table 8: Sales Revenues splits by SBA, (2009-2013);

Table 9: % EBITDA split by SBA, (2009-2013);

Figure 1: World Export of domestic appliances and professional equipment in 2000 and 2010;

Figure 2: Geographical distribution of Manufacturers of Professional equipment (2013);

Figure 3: Belle Epoque in copper and brass, hand crafted one by one for over 60 years;

Figure 4: Elektra Kup, essential Italian Design with bodywork sides enlightened by led lights;

Figure 5: Summary assessment on the three innovation drivers: Elektra S.r.l.;

Figure 6: Summary assessment on the three innovation drivers: Monobloc kitchens made in Pordenone;

Figure 7: Berto's LX900 TOP;

Figure 8: Berto's Monobloc, the highest level of personalization in the catering equipment;

Figure 9: Summary assessment on the three innovation drivers: Berto's S.p.a.;

Figure 10: Irinox Blas chillers;

Figure 11: MultiFresh can run operating cycles with temperatures of +85°C to -40°C;

Figure 12: Summary assessment on the three strategic drivers: Irinox S.p.a.;

Figure 13: A new Growth Strategic Model: The Business context;

Figure 14: A new Growth Strategic Model: The Innovation Drivers;

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