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**Italian consumer attitudes toward products for well being:
The functional foods market**

Azzurra Annunziata, Rosa Misso, Riccardo Vecchio *
*Department of Economic Studies
University "Parthenope" of Naples*

Abstract

Many researches in literature highlight how today the consumer is more concerned about self-care and personal health and is seemingly demanding more information on how to achieve better health through diet. Consequently, the development and marketing of a growing spectrum of products called functional is a major trend in today's food industry. Despite the great interest of the food industry and the assumed outlook of a bright future for functional foods, only a few papers have reported empirical studies of European and Italian consumer acceptance based on primary data collection. The current paper investigates the factors which influence Italians' behaviour towards functional food products and verifies the opportunities for further expansion of these products through a survey with a sample of 340 consumers responsible for family shopping. Findings show that there is a large number of factors that influence consumer purchasing behaviour. The empirical analysis emphasizes that, although Italian consumers are rather confused on the exact meaning of the term functional foods, their high interest on the bond between diet and health can be a potential element for the development of the demand of these food products. The work also provides a segmentation of the sample to verify the existence of homogeneous groups of consumers characterized by a different propensity towards functional foods.

Keywords: Functional foods; Italian consumers; Market segmentation.

1. Introduction

Consumer interest in the relationship between diet and health has increased substantially in Europe over the last decades. Many researches in literature highlight how today the consumer is more concerned about self-care and personal health and is seemingly demanding more information on how to achieve better health through diet.

Trends in population demographics and socio-economic changes also point to the need for foods with added health benefits. An increase in life expectancy, resulting in an increase in the number of elderly and the desire for an improved quality of life, as well as increasing costs of health care, have stimulated governments, researchers, health professionals and the food industry to see how these changes can be managed more effectively. As a result today foods are not intended only to provide necessary nutrients for humans but also to prevent

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nutrition-related diseases and improve physical and mental well-being of the consumers (Menrad, 2003; Roberfroid, 2000).

Consequently, the development and marketing of a growing spectrum of products such as *nutraceuticals*, *medifoods*, *vitafoods* is a major trend in today's food industry.

However, the term functional food has become the predominant one even though several organizations have attempted to differentiate this emerging food category¹. The heterogeneity of definitions used internationally to classify functional foods enables to collect homogenous statistic data on this market (Goldberg, 1994; Sheeby *et al.*, 1998; Roberfroid *et al.*, 2002; Gray *et al.* 2003). Information on total turnover and volume of commercialized goods often do not match, but overall they describe a business in rapid growth. According to a Euromonitor survey, Japan is the world's largest market, US is the second market while the European market is less developed. The major European markets are UK, Germany, France, and Italy (Bech-Larsen & Scholderer, 2007).

Despite the economic opportunities, functional foods have not as yet been defined by legislation in Europe and there is broad consensus that there needs to be a regulatory framework in the EU that will protect consumers, promote fair trade and encourage product innovation in the food industry.

Consumer acceptance of the concept of functional foods, and a better understanding of its determinants, are widely recognised by the economic literature as key success factors for market orientation, development, and successfully negotiating market opportunities (Gilbert, 1997; Grunert *et al.*, 2000; Weststrate *et al.*, 2002).

The competitive environment for functional foods has been reported to suffer from a lack of data and understanding of consumer market segments (Gilbert, 1997). Undeniably, despite the vast interest of the food industry and the alleged prospect of a bright future for functional foods, only a few papers have reported empirical studies of European and Italian consumer acceptance based on primary data collection (Hilliam 1996, 1998; Poulsen 1999; Niva 2000; Bech-Larsen *et al.*, 2001; Makela & Niva 2002; Verbeke W. 2005, 2007; Saba 2008).

Based on the previous considerations the main intention of the current paper is to investigate the factors which influence consumer behaviour towards functional food products and verify the opportunities for further expansion of this segment in order to subsequently develop appropriate consumer communication strategies based on market segmentation.

For this purpose the first part of the work carried out an overview of the development projections and market potential of functional foods in the international, European and national scale. This section is followed by a critical analysis of the state of legislation in the European Union, with particular reference to the rules governing the use of nutritional claims. Subsequently the work provides a brief review of the literature on consumers attitudes towards functional foods as a preamble to the empirical part of the study, where the results of a direct survey are presented in order to offer some indications to developers and marketers as well as government bodies that are interested in designing consumer communication

¹ Typically, a food marketed as functional contains added, technologically developed ingredients with a specific health benefit (Niva, 2007). Although the term "functional food" has already been defined several times (Roberfroid, 2002), so far there is no unitary accepted definition for this group of foods.

strategies and effective health programs. The final section concludes with a discussion of the implications of the results and suggests some future research avenues.

2. Economic opportunities in the functional foods market

The lack of an official definition is one of the main constraints for the analysis and monitoring of functional food markets (Menrad, 2003), as well as for their growth (Castellini *et al.*, 2002). Hence whether a broader or a more specific classification is applied a variety of different estimations on the global and regional markets values have been formulated. Nevertheless, academic researchers and professionals agree that the functional foods market is continuously growing worldwide (Shah, 2001; Menrad, 2003; Verbeke, 2005; FAO, 2007). Some of the most reliable estimations of the functional foods market valued the industry 7 billion Euros in 2000, considering only USA, Japan and Europe markets (Weststrate *et al.*, 2002), while taking into account the global market evaluations vary from 33 billion US\$ (Hilliam, 2000), to 32 billion Euros (Urala *et al.*, 2003) and up to 47.6 billion US\$ (Sloan, 2002). Other even brighter estimations report that the global market is currently worth around 60 billion US\$ per annum (Anon, 2007).

Japan, regarded as the birthplace of functional foods and world leader in the development of related technologies, is the largest market in the world and has the highest per capita consumption with around US\$166.00 per annum (World Nutraceuticals, 2006). Japanese functional foods market has exhibited a steady average growth rate of 9.6% per year for the past decade, and in 2003 its functional food industry was estimated to have a total turnover of around of 11.7 billion US\$² (Euromonitor, 2004).

The United States currently possesses the second largest and most rapidly expanding functional food and nutraceutical market in the world. Estimations of the industry's value, in 2003, range from US\$10.5 billion (Euromonitor, 2004) to US\$21.3 billion (Datamonitor, 2007)³. In total, approximately, functional foods have a market share of around 2-3% in the US food market (Menrad, 2003) and it is constantly increasing. This growth can be explained by the legislative framework that was, and still is, more favourable than in Europe (Hilliam, 1998; Side, 2006).

Important markets for functional foods are also Canada, India, China, Brazil and Europe. The Canadian industry of functional foods totalized revenues for C\$2.9 billion in the year 2004 (Statistics Canada, 2005). In India the most common forms of functional foods and nutraceuticals are available as traditional Indian Ayurvedic Medicines⁴, these are marketed under different brand names (Patwardhan *et al.*, 2005). For this reason it is quite difficult to estimate the exact value of the market, some researchers worth the national industry in US\$10 billion per annum with exports of US\$1.1 billion making a significant contribution to the export market (Singh *et al.*, 2003). Functional foods and nutraceuticals are also part of the traditional Chinese diet and are a large component in the traditional Chinese medicine, total functional foods market is approximately US\$6 billion per year (FAO, 2007). In Brazil, the sector is relatively young, but grows rapidly, sales value is projected to reach US\$1.9 billion by 2009 (FAO, 2007). The functional food market in the European Union has grown over the last years from about \$1.8 billion in 1999 (Kleter *et al.*, 2001) to between US\$4 and US\$8

² Other estimations valued the Japan market 5 billion US\$ in 2003 (Side, 2006) and total turnover around 14 billion US\$ in 1999 (Hilliam, 2000).

³ While Hufnagel (2000) estimated the market value, in 1999, around US\$15.5 billion and the Nutrition Business Journal US\$31 billion in 2006.

⁴ Ayurveda is a system of traditional medicine native to India, and practiced in other parts of the world as a form of alternative medicine.

billion⁵ in 2003 depending which foods are regarded as functional (Menrad, 2003; Datamonitor, 2007). According to results derived from these studies Europeans consumers in general are far more critical with new products and technologies (e.g. GMO food, irradiated food) compared to American consumers (Bech-Larsen & Grunert, 2003; Lusk *et al.*, 2004; Lusk & Rozan, 2005). Europeans are not only suspicious of the safety of novel foods, but they are also critical of the whole process through which food production becomes more and more anonymous and distanced from the everyday life (Poppe & Kjærnes, 2003). Therefore, it can be hypothesized that Europeans' acceptance of functional foods is less unconditional, better thought-out, and with more concerns and reserves as compared to the US consumers⁶. Furthermore the demand of functional foods inside the Union borders varies remarkably from country to county mainly due to alimentary traditions and cultural heritage (Castellini *et al.*, 2002) and in general the interest of consumers in functional food in the Central and Northern nations is higher than in Mediterranean countries (Van Trijp, 2007). The 2003 Euromonitor estimation values the biggest European markets as United Kingdom (US\$2.6 billion), Germany (US\$2.4 billion), France (US\$1.4 billion), and Italy (US\$1.2 billion). Although many other European markets are experiencing great growth rates, such as Netherlands (Makinen-Aakula, 2006) and Spain (Monar, 2007), plus Euromonitor forecasted that value sales for functional foods will rise moderately from 2005 to 2009 in the newly emerging markets of Hungary, Poland and Russia (Benkouider, 2005).

In Italy the demand for functional foods is constantly increasing due to mounting scientific validation of their effectiveness, population aging and lifestyle changing. In addition, Italians over the past 40 years have robustly reduced daily calories (from 2600 kcal to 2200 kcal per day, in particular reducing fatty foods, animal protein and wine – Italian Ministry of Health, 2007) and are paying rising attention to foods that can combine nutrition and health. Industry reports show that over 4000 products have been reformulated by reducing or eliminating saturated fats, cholesterol, salt, fatty acids to fulfil the demands of national consumers and nowadays functional foods cover around 17% of total sales of food in the country (Censis, 2007). Several nationwide surveys also illustrate that Italian families, especially those with children, are searching for quality and healthiness of food products, ahead of price (Ac Nielsen, 2007) in contrast with the general decrease of food purchases, and as well highlight that at the end of 2007 30% of families claimed to consume functional foods (ISMEA, 2007; Nomisma-Demetra, 2008).

Moreover functional foods are experiencing a wide success thanks to the recent introduction of new EU laws that have improved Italian consumers' confidence in labels and advertising information related to the nutritional and health virtues of food products. However the escalating demand for health-related foods is stimulating companies and farmers associations to offer new products currently, on the Italian market, the only functional foods noteworthy in terms of value, are yogurts, dairy products and beverages and energy drinks. As a result the Italian market, with plenty of underdeveloped functional food categorizes, offers interesting growth opportunities for food businesses involved in supplying products with enhanced nutritional and healthy compounds. At present, the market, as elsewhere worldwide, is dominated by large multinationals that are able to afford to pay for R&D and marketing efforts required for success in this area (Menrad, 2003; Thompson & Moughan, 2008), though there is an increasing number of small national companies focusing on a specific product or health need that are starting to achieve brilliant results.

⁵ Some other recent studies estimate this value to be around US\$15 billion in 2006 (Kotilainen *et al.*, 2006) and 9 billion Euro in 2009 (Nomisma-Demetra, 2008).

⁶ This may also originate from the recent sequence of food safety scares (Verbeke, 2005).

3. The European normative for functional foods

The actual normative for functional foods is the result of an evolution of the European regulation from a situation of scrappy and irregularity among the different countries of the Union to a system of harmonic reference (Bech-Larsen & Scholderer, 2007; Kuhn, 2007).

In absence of specific dispositions on European level, at the beginning, States members adopted norms and other provisions to control the use of the indications appearing on the labels of the alimentary products that not only proliferated in terms of number but also in type. This determined different approaches and numerous discrepancies that were substantially translated in barriers to the guarantee of an elevated level of the consumers' guardianship and of the public health, creating as many obstacles to the free circulation of the alimentary products and to the correct operation of the inside market.

A first step toward the harmonization of the normative concerning the nutritional and health indications provided on the alimentary products, counting the dietary supplements too, has been completed with the 2003 European Committee proposal⁷. Particularly, such proposal formulated a new normative regarding the use of the nutritional and health indications used for the labeling, presentation and publicity of the alimentary products. It subordinated the authorization of such indications to rigorous conditions, to an independent scientific evaluation and to the concession of a community authorization. The proposal foresaw then the attainment of different objectives not only tied to the increase of the human health's guardianship level and to the protection of the consumers' affairs but also to the increase of the free exchange of good in the inside market, to the increase of the juridical certainty for the economic operators, to the guarantee of a loyal competition in the sector of the food items and, finally, to the promotion and guardianship of the innovation in the food items sector.

Besides, the 2003 proposal suggested the adoption of a list of allowed indications describing the role of a nutrient substance or of other type for the growth, the development and the normal physiological functions of the organism⁸. The compilation of the list would have regarded the job developed in the Consensus Document on Scientific Concepts of Functional Foods in Europe, prepared in the context of the action orchestrated of the Committee on the science of the functional foods in Europe (FUFOSE)⁹.

Such program, coordinated by the International Life Sciences Institute (ILSI) Europe, has developed, through an European multidisciplinary net, an approach based on scientific evidences to give a definition of alimentary products with beneficent effects on a specific biological function, on health and on its own well-being, or, on the reduction of illness risk. As matter of fact, the scientific document underlines that (...) *a food can be considered functional if it is shown in a satisfactory way that it is able to influence in a positive way one or more functions of the organism, in a way that is remarkable or to improve the health and the well-being or to reduce the risk of pathologies. The functional foods have to remain foods and they have to show their own effects if consumed in quantity, considered normal, during a diet: they are not pills or capsules, but just a part of a normal food regime (...)* " (FUFOSE, 1999). Besides, the scientific areas analyzed in the FUFOSE have been the followings: growth, development and cellular differentiation, basal metabolism, oxidizing mixtures' defended, functional foods and cardiovascular system, gastrointestinal physiology and

⁷ Commission of the European Communities (2003), Proposal for a Regulation of the European Parliament and of the Council on nutrition and health claims made on foods - COM/2003/0424.

⁸ These kinds of indication should be subject to a different type of assessment and approval of their use in the labeling, presentation and advertising of food products.

⁹ *Scientific Concepts of Functional Foods in Europe - Consensus Document* - British Journal of Nutrition (1999), 81, S1-S27.

functionality and foods' effects on the behavior and on the psychological profile. Since the FUFLOSE project's principles haven't still found a full implementation, a new program of Concerted Action has been started up by the European Commission, the project "Process for the Assessment of Scientific Support for Claims on Foods" (PASSCLAIM), whose objective is to resolve some of the actual problems related to the validation, to the scientific confirmation of some claims and to the consumer's communication. Particularly, such project aims to establish common criteria to evaluate the health claims' scientific foundation, providing some regulations to prepare scientific dossiers to support such claims.

Anyway, based on such programs, the European Parliament and the European Council have adopted a regulation to use the nutritional and healthy indications written on the food items. Particularly, on December the 30th 2006 has been published on the European Community Official Journal the EC law 1924/2006 which will protect the consumer from false and misleading affirmations about the products' ownerships¹⁰. In the past time, were often used, for the labeling and for the publicity of the foods, indications reported to substances whose beneficent effects hadn't still scientifically been shown, just to increase the sales and to create consumer's psychological dependence. Such practice, in truth, also screeched with the orientations about the use of the mentioned indications, hired by the Codex Alimentarius since 1979. The principles at the base of such orientations, in particular, foresee that any food items can be described or introduced in a false or deceptive way compared to the same product's features. Besides, they established that the responsibility to prove the provided indications it's up to who introduces the product on the market.

With the 2006 Regulation, the European Union will confirm the rules of the 2003 bill, forbidding the nutritional and healthy indications, false, deceptive and not scientifically verified that invite the consumer to purchase the product. The European legislation, besides has foreseen a list of such indications and the authorization conditions of them for the whole Union fixing, substantially, common criteria to allow the consumers to do informed nutritional selections and to eliminate the obstacles to the commerce within the Union. Particularly, relatively to the nutritional indications, wordings like "light", "source of calcium", "high content of proteins" and so many others could be exposed – on the label and publicity of the foods – with the condition that the products have distinctive features communicated in the right way. It achieves the prohibition to boast nutritional features of the products applying different type of criteria or formality (es. "90% without fat"), because potentially misleading.

Concerning the indications related to the health, the 2006 community regulation foresees the editing by the European Commission of a list of all the consolidated information certifying the correlation among specific foods or substances in them contained, and beneficent effects for the consumers' health. About what previously said, every food operator who intends to promote further healthy virtues, in comparison to those already insert in the community list, should activate a special procedure of authorization¹¹.

¹⁰ The regulation applies to all nutrition and health communications, including a commercial character (labelling, presentation and advertising campaigns), trademarks and trade names that may be regarded as nutrition or health. The regulation also applies to claims involving any type of food for the final consumer, including food for the supply of hospitals, canteens and the like, food is not packaged or in bulk. The regulation, however, does not apply to claims which relate to the effects of a product.

¹¹ The authorization procedure is applicable in the case of technological innovations themselves (eg new enzymes probiotics and other ingredients), or in the case of new discoveries about the virtues of traditional foods and substances (e.g. anti-inflammatory properties of phenols and minor components extra-virgin olive oil).

4. Consumers attitudes towards functional foods

Several studies have demonstrated that key success factors for market orientation and development of functional foods are consumer acceptance of the concept and a better understanding of its determinants (Gilbert, 1997; Grunert *et al.*, 2000; Weststrate *et al.*, 2002). Consequently in the last years several papers have reported empirical studies of consumer acceptance based on primary data collection, especially in the U.S.A. (Childs & Poryzees, 1997; Gilbert, 2000; IFIC, 2007) and in the EU (Bech-Larsen *et al.*, 2001; Makela & Niva 2002; Van Kleef *et al.*, 2002, 2005; Verbeke, 2005, 2006; Urala & Lahteenmaki, 2006, 2007; AC Nielsen, 2007) providing insight in the profile of functional food consumers.

A common result derived from literature is that functional foods from the consumers' points of view are not perceived as being one homogenous group (Urala & Lahteenmaki, 2003). Consequently some authors (de Jong *et al.*, 2003) conclude that the generalisation of the characteristics of the functional food users is not legitimate, because there are clear differences between the users of different functional food products.

The majority of these studies have demonstrated that cognitive, motivational and attitudinal determinants of consumer acceptance of functional foods vary considerably in different countries. In particular the European market¹² is characterized by a high heterogeneity of demand, linked to the existence of marked regional differences in the perception and willingness to use functional foods that derive mainly from socio-demographic differences, the existence of dissimilar dietary habits, the different national policies for the promotion of public health, but also differences related to cultural traditions (Castellini *et al.*, 2002).

Referred to consumer demographic characteristics, for example, the literature shows that female consumers are a more promising target group for functional foods than men (Urala, 2005), partly because they show more interest in health in general (Childs & Poryzees, 1997; Bogue & Ryan, 2000). Moreover, functional food users are often more educated (Anttolainen *et al.*, 2001; de Jong *et al.*, 2004). Concerning age, Poulsen (1999) mentions that relatively older participants in his research (i.e. older than 55 years) showed a greater intention to buy functional foods. On the contrary, earlier results by Childs and Poryzees (1997) implied that the elderly show less intention to buy a food that prevents a disease compared to younger consumers. This trend seems to be confirmed in the Italian market where the "old generation", is more oriented towards the so-called mature products, while young people prefer healthy foods (Ismea, 2007). Furthermore, Verbeke (2005) mentions that consumer attitudes towards functional foods do not depend on their socio-demographic characteristics. These contradictory findings might suggest that there should not be a generalization in the demographic profile of functional food consumers.

Otherwise the main factors that influence the purchasing behaviour with relation to functional foods can be distinguished in lifestyle variables, health consciousness and attitudes towards healthier products (Cox *et al.*, 2004; Urala & Lahteenmaki, 2004) and variables closely related to the product's extrinsic and intrinsic attributes (Jonas & Beckmann, 1998; Urala, 2005; Verbeke, 2006).

With reference to the life style variables, an important factor for the consumption of functional foods is the preservation of good health status (Urala, 2005) and how much consumers perceive functional foods to contribute to this aim. European consumers consider food healthiness to be an important factor affecting their overall nutrition choices (Lappalainen *et al.*, 1998). The research by van Kleef, van Trijp, and Luning (2005) showed that the relation between the health condition of a consumer and the type of a product's health

¹² Some studies show, for example, as in the countries of Central and North Europe, the interest of consumers towards functional foods is higher than in Mediterranean countries, where, undoubtedly, there is less familiarity to them (Menrad, 2003; Van Trijp, 2007).

claim affects the intention to buy the product. Also, Frewer, Scholderer, and Lambert (2003) emphasised that consumers risk perceptions may have an important role in the acceptance of functional foods.

Verbeke (2005) found that believing in the health effects of functional foods is the most crucial factor affecting the consumers' acceptance and Cox *et al.* (2004) found that the perceived efficacy accounted well for the intention to consume functional foods that were said to improve memory. Another important factor is the presence of specific health problems, Verbeke (2005) reports that the existence of a family member with a particular health difficulty affects positively the acceptance of functional foods.

With reference to the product attributes, relevant for purchasing behaviour are: the knowledge and familiarity with the functional ingredients (Herrmann & Roeder 1998; Rams 2002), as well as food safety (Bech-Larsen & Grunert 2001; Verschuren 2002), convenience (Poulsen 1999; Rams 2002; Verschuren 2002; Pettinger *et al.* 2004) and type of the base product (Poulsen 1999, Rams 2002). Furthermore, organoleptic attributes, especially taste, are some of the most important factors that affect consumers' choice of functional foods (Jonas & Beckmann, 1998; Urala, 2005; Verbeke, 2006) as well as the perception that functional foods could be less natural compared to conventional foods (Frewer *et al.*, 2003; Cox *et al.*, 2004).

Urala (2005) supports the view that trust in functional foods is affected by the type of base product (carrier) whose attributes have been improved. Bech-Larsen and Grunert (2003) agree that the type of base product contributes to how much the consumers perceive the functional foods to be healthy. In addition, van Kleef and colleagues (2005) add that the potential buyers tend to trust the health claims more when the basic carrier has a positive overall image, as well as a history in health claims (e.g. yogurt, juices, etc.). Moreover it is much easier to gain people acceptance for a product enriched with more familiar ingredients, such as vitamin C, calcium, omega-3, than it is for unfamiliar ones, such as selenium (Bech-Larsen and Scholderer, 2007).

Nevertheless, another important issue is how to communicate the health effects of functional foods reliably to consumers (Poulsen, 1999) as consumers might not necessarily trust marketing campaigns. The role of the information is crucial because consumers cannot perceive the benefit directly from the product, unlike for instance taste and other sensory characteristics. The type of information and the trust in it regarding the effect of a particular product on health constitute additional factors of functional foods' success (Urala, 2005). According to Tuorila and Cardello (2002), information concerning the health benefits of a food can increase the likelihood of its consumption. However, due to the limited consumers' knowledge and awareness of the health effects of newly developed functional ingredients, there are strong needs for communication activities (Wansink *et al.*, 2005; Biacs, 2007; Salminen, 2007). To ensure reliable information transfer, only legally correct parameters for benefit communication should be used (Henning, 2007).

Taking into account the Italian market only a few papers have reported empirical studies of consumer acceptance based on primary data collection.

An interesting study (Saba, 2008), investigating the perception of Italians towards derivatives modified grain to increase health, shows that consumers perceive these products healthier but less pleasing than conventional ones and tend to show little willingness to accept the derivatives of functional cereals. In addition, consumers tend to be influenced more by the health message that refers to the reduction of disease risk in assessing the wholesomeness of products (Messina *et al.*, 2007).

5. Italian consumers attitudes toward functional foods: an empirical analysis

5.1 Objectives and procedures

The main purpose of this paper is to investigate the factors which influence consumer behaviour towards functional food products and verify the opportunities for further expansion of this segment in order to subsequently develop appropriate consumer communication strategies based on market segmentation. From the available studies, socio-demographic characteristics, cognitive and attitudinal factors emerged as potential determinants of consumer acceptance of functional foods.

Based on the evidence that emerged from literature in this research it is hypothesized that consumers' attitude toward functional foods is affected by other different factors including knowledge, consumers' trust of the health claims as well as trust in regulatory bodies.

Consequently, the research intends to explore consumers' general attitudes about food, nutrition and health; consumers' awareness and interest in functional foods; motivation to buy this type of food or to refuse it respectively; knowledge and beliefs about specific benefits of foods. In addition, the analysis pays particular attention to the various ways in which information about functional foods is conveyed to consumers, trying to identify possible strategies to improve its effectiveness. Whilst in recent times, in Italy, there is a growing interest in adopting an identification mark for "health foods", to help consumers recognize them and clearly distinguish their benefits¹³.

To this purpose a quantitative survey was conducted to explore Italian consumers' knowledge and attitudes toward functional foods. To collect data a questionnaire was developed and administered to a randomly selected sample of 340 consumers, responsible for family shopping, living in three different cities Bologna, Rome and Naples, respectively located in the North, Centre and South of Italy¹⁴. Face to face interviews were conducted from July to September 2008 at different outlets so as to include in the sample the different typologies of consumers. Specifically, 125 interviews have been conducted in the North, 100 in the Centre and 115 in the South.

The questionnaire used during the survey consists of 34 questions, mostly multiple choices, divided into five sections that examine, respectively: consumers' knowledge of the link between food choices and health issues; purchasing habits and consumption of the interviewed; perception and willingness to purchase functional foods; their views about the current level of information available, their socio-demographic characteristics and lifestyle. The analysis of the collected data was conducted in two phases. The first, purely descriptive, is an overview of the frequency of responses, based on the construction of contingency tables, through which there were early indications on the degree of association between two or more characters. Recognizing that knowledge of the distribution of consumer preferences forms the basis for product differentiation and market segmentation (Green & Srinivasan, 1990; Green *et al.*, 2001), the second phase of analysis provides a market segmentation identifying different profiles of consumers, through the use of PCA and Cluster Analysis applied to qualitative data. PCA enables to carry out a simultaneous analysis of the complex information provided by a large number of variables and turns the initial variable into a reduced number of artificial variables or factors explaining a high percentage of the information included in the

¹³ The National Consumers Union has proposed to adopt a brand that identifies "health food" to help consumers distinguish and recognize the benefits provided by these. The brand should be under the close supervision of the Antitrust authority, to ensure the accuracy of the claims used and the completeness of the information, including contraindications written on the food.

¹⁴ Rome is the first Italian city as number of inhabitants, approximately 2,726,593, Naples is the third city with a population of 1,226,594 citizens, while Bologna has 374,057 inhabitants (ISTAT, 2007).

original variables. After extracting the main components the statistical units can be aggregated through the CA aimed at classifying the statistical units identified in a set of “exclusive and exhaustive” clusters so as to maximise the internal homogeneous nature and the external heterogeneous nature.

5.2 – Main results from explorative analysis

Socio-demographic analysis of the interviewed sample displays the predominant presence of women (66.6%) aged between 35-45 years (35.5%) and between 25-35 (27.7%), married with children (36.4%), with an average level of education, in fact most of them hold a high school degree (58.8%), but the sample also includes university graduates (27.2%). Considering respondents’ profession housewives and employees are prevalent.

With reference to the grade of healthy eating habits and lifestyle of the surveyed sample (verified by a set of specific questions) it appears that in most cases (36.4%) the first can be considered intermediate healthy, while with regard to the lifestyle prevailing are average healthy habits (40.7%). It should be noted that there is also a significant incidence of low healthy habits (26.6%) linked to the fact that many of the interviewees have a sedentary life style¹⁵.

Table 1 - Demographics

	male	33,4
gender	female	66,6
	18-25	9,8
	25-35	27,7
age	35-45	35,5
	45-55	18,2
	55-65	5,9
	>65	2,7
	single	24,6
	married with children	36,4
marital status	married	28,6
	divorced	8,1
	widower	2,4
	Master degree	6,6
	Bachelors degree	27,2
education	High school degree	58,8
	Middle school degree	5,9
	other	1,5
	employee	31
	self employee	12,2
	Doctor/Paramedic	3,9
occupation	housewife	18,5
	retired	4,8
	student	12,5
	trader	4,5
	unemployed	3,9
	other	8,7

However, respondents appear satisfied with their diet, 40% stating they are mildly satisfied with their choices and consider them quite healthy. The analysis of food style has been further deepened by verifying the existence of any specific needs that may affect purchasing decisions and that can potentially lead to a greater propensity towards functional foods. About 51% of respondents claim to be influenced in their food choices from specific requirements

¹⁵ For the evaluation of dietary habits we asked consumers to indicate the frequency with which they consume fruits and vegetables, legumes and cereals, fried foods, carbonated drinks, snack between meals, high-fat products, white meat and organic products. For the evaluation of the lifestyle of the interviewees we asked how often they watched TV, did physical exercise, controlled their health, if they consulted a nutritionist, or attended health centres, if they had a work that forces them to stay a long time sitting. The replies were analyzed and summarized in an indicator of health ranging from 1 = not at all healthy to 5 = very healthy.

related primarily to specific medical disorders (22% overweight, allergies/intolerances 8%, heart problems 8%, diabetes 5%) but also ethical reasons (vegetarian diet 3%) and sports (5%).

Regarding the awareness of the link between food style and health issues the analysis of the results gives clear evidence on how the respondents are quite aware of the fundamental role played by their food choices in the determination of health status (52% of the sample, in fact, strongly agree with this statement) and of the availability of specific products that have significant health properties. Moreover, they show complete disagreement (in 27.7% of cases) with the statement that they can monitor their health independently from their food choices, but do not always declare their willingness to give up to the foods they like to improve their health status. It follows that even though respondents are conscious of the close relationship between diet and health, their choices lead towards the pleasure of consumption rather than wellbeing¹⁶.

This trend is confirmed from the analysis of the variables related to shopping habits, as a validation that the respondents tend to be influenced in their food choices mainly by taste, pointed in the majority of cases (59%) as the most important attribute. Significant sensitivity is attributed also to the nutritional aspects, selected in 36% of cases as quite important; while the price and the brand are perceived on average as important attributes, respectively in 44.5% and 45.7% of cases. The attributes less important are in absolute the indication of the origin (18.2%) and the presence of quality certification (12.4%). Consumer's attention to nutrition is also confirmed by the interest shown by respondents to the nutrition information on labels, indeed 35% claim they read it usually, particularly in relation to specific products.

Taking into account consumers' propensity towards functional foods the research has tested the level of knowledge of such products by the respondents and their purchase frequency (see the chart n.1). The analysis of data shows that consumers are not greatly informed on the concept of functional foods.

Undoubtedly the terminology "functional foods" is still not very common in the everyday language, and in many cases, generates confusion with the light and dietary products (20%), or functional food is incorrectly associated with food for those who have health problems (16%). In many cases respondents are not able to give a definition (24%). This finding confirms the results from other studies developed in different European countries that consumers often do not know the term "functional food" or similar phrasing, but show a rather high agreement to the concept¹⁷.

The lack of familiarity with the concept of functional foods is more evident when considering that most consumers (44%) were not able to provide an example of functional foods or gave incorrect examples (26%) while less was the proportion of those who indicated one or two examples (24%) and the lowest share was of those who indicated more than two (6%).

With respect to the frequency of consumption, 30% of respondents stated that they had never consumed these products, mainly because they do not know their properties (32%) but also because they are doubtful about their potential benefits (17%), or consider these products only for sick people (15%) or simply because they are not interested in this kind of product (15%).

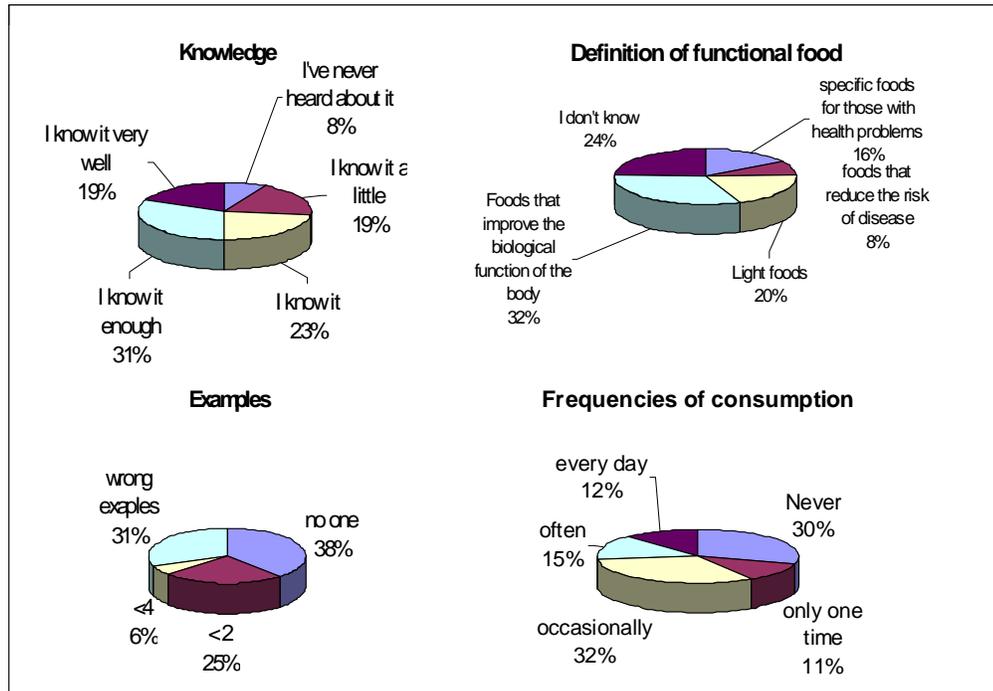
In order to highlight the characteristics of this segment of consumers a cross analysis was made with the social demographic variables and the variables related to food habits and

¹⁶ This phenomenon is known as "optimistic bias" in the health behaviour literature, that is, people's general tendency to see only others at risk from lifestyle diseases, but not themselves (Frewer *et al.*, 2003).

¹⁷ In the United Kingdom, France and Germany, up to 75% of the consumers have not heard about the term "functional food", but more than 50% of them agree to fortify functional ingredients in specific food products (Hilliam, 1999). Another study found that while in Belgium 49% of the consumers is familiar with the term of functional food, this ratio in Poland is only 4% (Krygier, 2007). In Hungary the expression of "functional" proved to be unknown for about 70% of the respondents, according to a market survey at the University of Kaposvár, Hungary (Szakal *et al.*, 2004).

lifestyle. The analysis shows that there is no significant relationship between the frequency of consumption and the socio-demographic variables although there is a significant relationship with respect to dietary habits and lifestyle. Particularly this group is characterized by the highest concentration of individuals with eating habits at all healthier (10.7%) or little healthier (34%), which does not have specific food needs (61%) and with a low level of healthiness lifestyle (41.9%).

Graph 1 - Knowledge and propensity for consumption of functional foods



Once deleted this segment of consumers from the sample the survey focused on those who said they consumed functional foods, even though with different levels of frequency. Among these prevail the occasional consumers (32%), followed by those reporting a higher frequency of consumption (15%) and those reporting a daily consumption of these products (12%). The lower absolute incidence is of those who say they have tested only once functional foods (11%). In 83% of cases consumers bought these products at modern distribution chain outlets (as supermarkets and hypermarkets), the products more consumed are the probiotic yoghurt (29%), vitamin enriched/omega-3s milk (21%) and enriched breakfast cereal (15%) followed by ready to drink (11.5%), vitamins fruit juice (10%) and fortified biscuits (6%). Among the less consumed there are butter / margarine low in cholesterol (5.3%) and energy drinks (2.2%). The main reasons that lead consumers to purchase these products are improving the state of their personal well-being and of their family members (23%), the need to reinforce the immune system (18%), the need to improve their gastrointestinal functions (15%). However there are also those who consume functional products just for curiosity (14%) or without a specific reason (6%).

Analyzing the variables that affect the perception of functional foods is quite apparent that the sample interviewed considers such products useful for improving their health status (42%) even if they declare that they are not always able to fully understand the effects that these products can determine (29.6%). Nevertheless it should be noted that 15% of respondents strongly agree with the statement that these products are intended only for those who have

health problems, while 11% believe that they can determine side effects and 9% consider them simply a passing tendency.

Table 2 shows that consumers do not perceive these products less tasty than conventional; undoubtedly point the finger at their higher costs and consider limited the current available variety. Moreover, respondents say that there are some difficulties in distinguishing the functional products from traditional products, denoting the complexity of the information contained in the label. Consistent with findings from other studies, the existence of a smooth flow of information between businesses and consumers, allowing a proper assessment of the benefits that may result from the consumption of functional foods, plays a central role in determining the greater or lesser success of these products (Wansink *et al.*, 2005; Biacs, 2007; Salminen, 2007).

Table 2 - Perception of functional foods

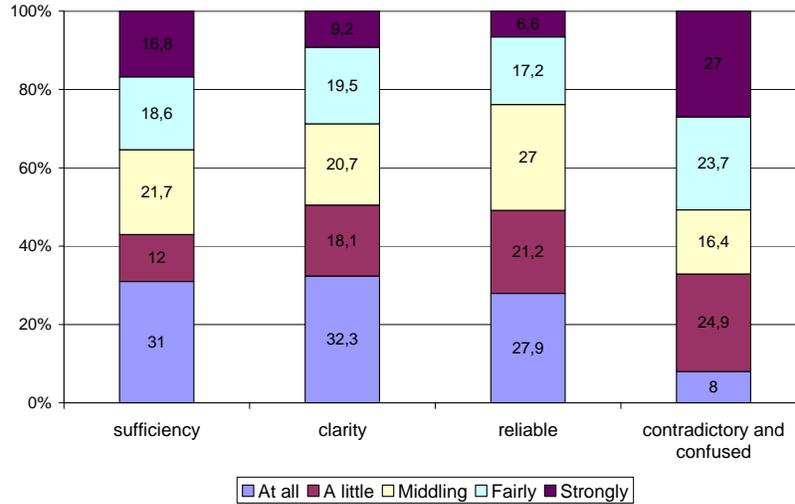
<i>Degree of agreement</i>	<i>At all</i>	<i>A little</i>	<i>Middling</i>	<i>Fairly</i>	<i>Strongly</i>
I fear that these foods may have side effects	16	40,2	17,7	14,6	11,5
These products are simply a passing tendency	19	45,1	16,4	10,2	9,3
Are intended only for those who have healthy problems	10,2	32,2	27	15,6	15
I do not believe their property	22,6	55,3	13,7	3,1	5,3
I do not understand their effects but also consumption	8	16,1	25,4	20,8	29,6
Consuming these foods improve my state of health	0,9	12,8	19	25,2	42
Tasty less	35,8	41,5	12,8	4,4	5,3
They are more expensive	5,3	11	12	18,2	53,5
It is not easy to find these products	11,5	36,2	26,2	11,1	15
The range on the market is limited	8,9	34	19	12	27
It's difficult to distinguish functional from conventional foods	10,2	26,1	25	15,5	23,4
The information in the label are difficult to understand	7,5	29,6	20,3	13,7	28,7

Following the above arguments, the last part of the survey analyzes the different ways in which information on functional foods is conveyed to consumers, trying to identify possible strategies to improve their effectiveness. Specifically, were tested the opinions expressed by respondents regarding the adequacy, clarity and reliability of the information; the degree of importance and trust attributed to the different sources of information, and finally, possible ways of improving these information.

In this regard, from the analysis of the results summarized in Chart n. 2, it is clear that consumers express a negative opinion towards the current level of information available, since in more than 30% of the cases information are considered inadequate and not simple to understand, as well as contradictory and confused, showing also some scepticism about their reliability. The results show also that the main sources from which consumers obtain information are advertising (32%) and products' labels (27%), followed by doctors / nutritionists (15%) and television programs (8 %). At the end of the ranking there are Internet (6%), world of mouth (6%) and specialized press (5%), while only 1% of the information is acquired through public information campaigns.

These results are very remarkable whereas the sources to which respondents have more confidence are the doctor and the Public Bodies, to which respectively 63% and 49% of consumers show plenty of trust, while a lesser degree of confidence is given to producers and labels, for which 42% and 46% say they do not know whether to trust or not. Resulting that the respondents place greater trust inherent to the sources from which they receive less information, therefore these sources need to be strengthened.

Graph 2. – Consumers’ opinions on current available level of information



Finally, we asked to the respondents to express their opinion with respect to the need to improve the current level of information and also indicate the possible ways to do so by giving them several options. The data show that almost all of the consumers would like more information (only 5.4% said they did not need more information) considering necessary the implementation of information campaigns and public education (23%) and the improvement of the statements in the nutritional labels (25.5%), but also introducing a logo / symbol that somehow recalls their attention to the health benefits of the product (22.2%).

5.3 – Segmentation Analysis

Traditionally the segmentation of the sample includes the breaking-down of the statistical units identified based on the social-demographic features; however to develop a profile of the consumers based on their higher or lower propensity to functional foods, the description analysis highlighted that there are many different variables that seem to be correlated and play key roles in influencing consumers’ behaviour.

Through the Principal Components Analysis, we tried to verify the existence of latent factors that summarize consumers’ attitudes towards functional foods in a smaller set of underlying dimensions which explain the inter-relations amongst an original, large set of metric variables. The choice of the variables to submit to factorial reduction was made on the basis of the analysis of the correlations existing amongst the original variables, verified using Bartlett’s test for sphericity while the choice of the factors was made on the basis of the eigenvalue criterion, as well as the consideration of the cumulated variance explained by the factors considered together. The analysis of principal components (varimax rotation method) reveals the existence of four factors which together explain 72% of the original variance. Table n. 3 summarizes the matrix of rotated components from which it emerges that the first factor summarizes five variables related to the degree of sufficiency, clarity and reliability of information available to consumers on functional and about the labels of these products, so we can consider the first factor as *information*.

The second factor, however, summarizes a number of variables related to the perception that consumers have of a number of attributes that are intrinsic and extrinsic of functional foods

and their opinion about the usefulness of the same, therefore this factor expresses the *image* that consumers have of functional foods.

Analyzing the third column of the matrix of rotated components it is possible to describe the third factor as *shopping habits*, whereas summarizes several variables that indicate the degree of importance attributed by respondents to various attributes in their food choices. Finally, the fourth factor summarizes a number of variables used to measure the healthy consciousness of respondents and their awareness about the links between diet and health, therefore may be called *health in food choices*.

Table n. 3 - Matrix of rotated component

Variables ¹⁸	Factors				com ¹⁹
	Factor 1	Factor 2	Factor 3	Factor 4	
Degree of importance attributed to quality mark	-,288	-,239	,158	,229	,740
Degree of importance attributed to the brand	-,134	-,038	,835	,132	,590
Degree of importance attributed to the indication of the origin	-,134	-,045	,777	,154	,696
Degree of importance attributed to the price	-,143	,044	,772	,059	,665
Degree of importance attributed to the taste	,584	,113	,893	,063	,767
Degree of importance attributed to nutritional attributes	,598	,231	,653	,038	,757
I'm careful in the consumption of these products	,484	,866	-,069	,162	,625
These products are simply a passing tendency	,501	,751	-,014	,055	,637
Are intended only for those who have healthy problems	,034	,783	-,140	,295	,686
I do not believe their property	-,259	,791	-,080	,112	,652
I do not understand their effects but also consumption	,479	,239	-,054	,349	,711
Consuming these foods improve my state of health	,304	-,743	-,108	,018	,709
It is not easy to find these products	,562	,807	,021	,263	,643
The range on the market is limited	,431	,837	,081	-,003	,790
It's difficult to distinguish functional from conventional foods	,532	,704	-,130	,255	,810
The information in the label are difficult to understand	,825	,633	-,131	,295	,851
The information about functional foods are sufficient	-,774	,173	-,143	,299	,854
The information about functional foods are clear and simple	-,784	-,099	,139	-,172	,832
The information about functional foods are truthful	-,788	-,096	,006	-,193	,534
The information about functional foods are confuse	,847	-,111	,004	,202	,722
My food choices affect my health	,203	,235	-,102	,651	,697
I have the control of my health no matter what I eat	,018	,333	,069	,728	,668
I don't want to give up the foods that I like	,042	-,104	,067	,509	,526
I do not need to worry what I eat	,062	-,066	,432	-,748	,762
Degree of healthiness in food choice	-,111	-,065	,389	,842	,645
Degree of healthiness in lifestyle	-,152	,333	,209	,826	,646
Eigenvalue	5,574	2,579	2,059	1,716	
Variance %	23,33	19,11	15,9	13,5	
Total variance %	23,3	42,41	58,3	71,81	

Extraction method: principal component analysis. Rotation Method: Varimax with Kaiser normalization.

Based on these four factors, a segmentation of the sample was created, to verify the existence of homogeneous groups of consumers characterized by a different propensity towards functional foods. For this purpose a cluster analysis was applied, using the K-means method, which is a non-hierarchical algorithm, constructing three different groups of consumers.

The first cluster groups together 83 individuals, 38% of respondents, showing less interest in functional foods confirmed by the high concentration of occasional consumers who are

¹⁸ All the variables including in factorial reductions are expressed by a Likert scale from 1 to 5.

¹⁹ Extraction communalities are estimates of the variance in each variable accounted for by the factors (or components) in the factor solution.

unfamiliar with functional foods. In the cluster, in fact, there is a greater percentage of consumers who say they know them only vaguely, they are unable to give any example of these products or they tend to indicate incorrect examples (respectively 36.5% and 37.7% in the cluster). This group also has a propensity to buy functional products just for curiosity or without a specific reason, so this segment can be defined as *curious consumers*. Evaluating purchasing and consumption habits should be emphasized that the curious consumers show less sensitivity to the nutritional properties, as confirmed by the low frequency of reading nutritional labels, and give more emphasis to extrinsic attributes such as brand and price. In addition, this group concentrates several individuals who claim to have control of their health despite their food choices and declare they are not willing to reject their favourite foods for health reasons. We can argue, then, that these consumers show less attention to the impact that their food choices can have on their health status. This is confirmed by the negative relationship with the factor health in food choices. Finally, with regard to socio-demographic variables (although as indicated in the appendix there are no statistically significant differences in the cluster) it is interesting to see how this group is the only one that is characterized by higher incidence of men, which represent 38% of the total.

Table n. 4 – Final cluster centres

	Cluster 1	Cluster 2	Cluster 2
<i>Information</i>	,25509	-,48592	-,43395
<i>Image</i>	,21162	-,79976	,58661
<i>Shopping habits</i>	,27613	,56911	,26723
<i>Health in food choice</i>	-,41633	,28902	,79994

The second cluster includes 32% of respondents that are characterized by the strong interest in nutritional aspects, as the high importance assigned to this attribute demonstrates, compared to others, and the strong awareness about the links between diet and health issues. This is also confirmed by concentration of individuals who have both food habits and lifestyle fairly healthy and from the high presence of individuals who have a special diet for health problems. Despite this characteristic these consumers do not have a clear idea of the concept of functional foods. Compared to the other two groups the consumers included in cluster n. 2 tend to confuse the functional products with light or dietetic products or consider these products as special food for people with specific health problems. This confusion is also reflected in consumers' propensity towards functional foods, in fact, this group is quite cautious towards these products because they fear might have side effects. Furthermore, this group of consumers state to have some difficulties in finding these products since it is not easy to distinguish functional from conventional foods and moreover they consider functional foods limited in range. Another interesting element that distinguishes this cluster is the negative opinion expressed towards the information currently available, which is considerate contradictory and confused mostly, weak and not always reliable. Negative opinion is expressed also with regard to the labels of functional foods, defined quite incomprehensible. Based on this evidence it is possible to classify this cluster as the *confused and sceptical consumer*.

Finally, the third cluster made of 30% of respondents groups individuals with a greater propensity towards functional foods, particularly attentive to the health aspects in the choice of food and aware of the link between nutrition and health, and therefore can be called *healthy consumers*. This group is characterized by the increased presence of individuals who claim a daily consumption of functional foods, and that really show a good level of knowledge of these products, confirmed by the high incidence of individuals who not only have provided a correct definition but who also have been able to offer correct examples. In addition, we can

affirm that this group aggregates consumers with a good level of awareness of functional foods, whereas the responses indicated there is a lower incidence of generic reasons of consumption. However, these consumers also complain that there are some difficulties in distinguishing these products from conventional and in interpreting the labels. Finally, it should be highlighted in relation to socio-demographic variables, that this group is characterized by a higher incidence of women with a high level of education (compared to the other groups, as there is a greater concentration of university graduates or individuals holding a master degree).

6. Discussion and conclusions

Numerous studies show that functional foods represent a market segment in rapid development and particularly promising. This phenomenon is largely due to the significant changes occurred in recent decades in the society such as increased life expectancy, increases in health costs related to diseases upcoming from incorrect dietary habits, which have led to an increasing food demand oriented to products with strong health connotations.

Consumer acceptance has regularly being identified as the decisive factor in the successful marketing of functional foods, thus relevant papers explore cognitive, motivational and attitudinal determinants of consumer acceptance of functional foods in different countries (Bech-Larsen & Grunert, 2003; Cox *et al.*, 2004; Urala & Lahteenmaki, 2004; Verbeke, 2005). However, with particular reference to the European market, most research in literature focuses on the Nordic countries, which represent the most developed European markets; while surprisingly little research has actually been conducted in Mediterranean countries.

Specifically, despite interesting growth opportunities for food businesses involved in supplying products with enhanced nutritional and healthy compounds offered in the Italian market, only a few papers have reported empirical studies of Italian consumer acceptance based on primary data collection (Stewart-Knox *et al.*, 2007; Messina *et al.*, 2007; Saba, 2008).

The empirical analysis conducted in this study was, therefore, constructed to investigate the factors which influence Italian consumers behaviour towards functional food products and verify the opportunities for further expansion of this market segment.

The analysis is not a representative of the national reality, given the small sample interviewed; although it provides interesting considerations to functional food developers and marketers as well as government bodies that are interested in designing effective health programs.

From a critical analysis of the results it is possible to say that Italian consumers, despite having a marked awareness of the link between diet and health and a high level of interest in the nutritional and health aspects of their consumption choices, are rather confused on functional foods. Similar findings were found in other studies conducted in different European countries (Bech-Larsen & Grunert, 2003; Bech-Larsen & Scholderer, 2007; Krygier, 2007; Urala & Lahteenmaki, 2007). Italian consumers often do not know the term functional food or similar phrasing, but show a rather high agreement to the concept, substantiating the results from other previous studies. The analysis explain that the degree of knowledge of these foods is quite poor demonstrated by the fact that in many cases consumers have problems to define and distinguish them from other types of similar products. This confusion is reflected clearly on the frequency of consumption which appears predominantly occasional; indeed only in 12% of cases respondents reported a daily consumption.

Multivariate analysis has highlighted that there is a large number of factors that influence the consumers' propensity towards functional foods, related not only to their socio-demographic characteristics, but also attitude variables, as well as health in food choices and personal

motivations to engage in health preservation behaviours confirming the findings from other similar academic works (Ares & Gambero, 2007; Hailu *et al.*, 2008). The image that consumers usually have of these products, relative to their taste, cost, availability on the market also plays an important role in determining the greater or lesser propensity to purchase such products as the type of and amount of trust in health-related information, consistent with the findings from other similar researches (Urala, 2005; Tuorila & Cardello, 2002).

The cluster analysis based on these four factors revealed the existence of three different groups of individuals which show a different degree of interest in functional foods and in relation to which it would be necessary to build different marketing strategies to capture the best opportunities offered by the Italian market.

In particular, the results show that only the consumers included in the last cluster (30% of respondents) defined healthy consumers, show a good knowledge of functional foods and thus a greater propensity to consume these products, unlike the first two clusters characterized instead by a concentration of individuals who appear quite confused and skeptical about these products (cluster 2, 32% of respondents) or who say they buy them mainly for curiosity (cluster 1, 38% of respondents).

Interesting is how the three clusters, although showing a different degree of inclination towards functional foods, denote deficiencies in the level of information available about these products, considered by all three segments, inadequate and often difficult to understand. Another element to highlight is the skepticism expressed by many respondents about the reliability of information, with particular reference to those conveyed through corporate advertising and through labeling.

As confirmed by exploratory analysis almost all of the consumers would like more information considering necessary the implementation of information campaigns and public education; the improvement of the statements in the nutritional labels but also introducing a logo / symbol that somehow recalls their attention to the health benefits of the product.

Considering these findings we can state that to define medium/long-term prospects of the functional products market two factors become crucial: the existence of a proper and clear flow of information between businesses and consumers, enabling a correct evaluation of the benefits that may result from the consumption of the products in exam; and full consumers' confidence in companies and bodies called to protect consumption.

Communications that consider the consumer perspective can help all food and nutrition communicators better connect with consumers and guide them to make informed and healthful food choices. Therefore, more clearly defined policies need to be developed for functional foods to avoid false health claims in marketing them.

The results of the analysis suggest the opportunity to focus mainly on education campaigns and public communication, whereas consumers attribute a high degree of confidence to the information conveyed by public authorities but they are still scantily used in the national scene. However, as underlined by Bech-Larsen and Scholderer (2007), such activities require enormous resources and may yield effects only after considerable lengths of time; hence, actors in the food chain and the public health administrations will have to join forces to reach critical mass.

Finally, considering that consumers need to understand the benefits, not the science behind the product (Leathwood *et al.*, 2007), more efforts seem necessary to improve the clarity of the messages in the nutrition label, as indicated by respondents, labels should use a less medical - scientific language trying to highlight more clearly the potential benefits associated with the consumption of these products.

The latter necessity, as an overview of the European regulation reveals, has issued a new strategy regarding the use of nutritional and health indications employed for labeling, presentation and advertising of food products. This strategy subordinates the authorization of

such indications to rigorous conditions, such as an independent scientific evaluation and the concession of a European Community authorization. The strategy, in fact, intends to achieve different objectives not only tied to the increase of human health's guardianship level, but also linked to the protection of consumers' affairs, the increase of free exchange of goods in the European market, the increase of juridical certainty for economic operators, the guarantee of loyal competition in the food sector and, finally, the preservation and promotion of innovation.

The current work has also confirmed that the existing opportunities for functional foods manufacturers that operate in Italy require further consumer studies to target product development and marketing efforts to specific consumer groups. Therefore, our paper suggests new research avenues that should focus on identifying the needs and wants of Italian functional foods users and try to detect the most effective instruments that deliver simple and valuable information to the final purchaser. Other interesting results provided by the present study (as the importance of taste in purchasing a functional food, or the consumers' interest in a specific logo for these products) would benefit from additional qualitative and quantitative research methods to extend findings legitimacy.

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Appendix

Comparison between clusters' averages

Variables showing significant differences with a probability level of 95%	Clust. 1	Clust. 2	Clust.3	Tot.	Sig.
Importance of nutritional properties	3,7	4,8	4,3	4,4	,002
Importance of quality marks	2,8	3,5	3,8	3,4	,000
Importance of brand	3,6	2,5	3,3	3,1	,000
Importance of price	4,2	3,1	2,8	3,3	,002
Importance of origin	2,7	3,5	3,7	3,3	,000
Frequency of nutrition labels reading	3,2	3,3	3,7	3,4	,023
Monitoring my health indep. from what I eat	3,3	2,9	2,6	2,9	,012
I don't give up the foods I like	3,8	3,5	2,8	3,3	,000
I fear they may have side effects	2,4	3,06	2,2	2,6	,005
Passing trend	2,8	2,4	2,2	2,4	,033
Intended only for those who have health problems	3,3	2,6	2,3	2,8	,001
I do not believe their properties	2,4	2,1	1,9	2,1	,026
Not always understand but I consume them	2,9	3,6	3,5	3,3	,003
Difficult to find	1,9	3,6	3	2,8	,000
Less tasty	2,04	2,9	1,9	2,2	,018
Limited in range	1,9	4,05	3,6	3,1	,000
Difficult to distinguish	2,33	3,9	3,4	3,2	,000
Incomprehensible labels	2,7	4,05	3	3,3	,000
Clear and simple information	2,5	1,8	3,3	2,5	,000
Truthful and reliable information	2,4	1,9	3,3	2,5	,000
Satisfactory information	2,8	1,9	3,5	2,7	,000
Confusing and contradictory information	3,1	3,8	2,5	3,1	,000

Comparison between qualitative variables

Variables	Clust.1	Clust.2	Clust.3	Sig.	
Functional foods knowledge	I know them vaguely	27,3	14,5	10,8	,038
	I know them enough	21,6	23,2	18,5	
	I know them	32,5	38,6	38,5	
	I know them very well	18,6	23,2	32,2	
Functional food definition	Specific foods for health problems	7,2	8,4	4,1	,016
	Reduce the risk of disease	18,7	20,1	26,1	
	Light foods	12	18,2	5,8	
	Improve the organism functions	40,8	45,2	58,2	
Number of correct examples	Do not know	21,3	8,1	5,8	,162
	No example	36,5	21,6	13,2	
	<2	21	28,4	34,8	
	<4	4,8	4,5	25,3	
Consumption frequency	Wrong examples	37,7	45,5	26,5	,414
	Once	28,1	16,2	13	
	Seldom	55,8	48,2	31,9	
	Often	11,3	29,7	45,3	
Consumption reason	Daily	4,8	5,9	9,8	,062
	Increase my health	26,1	24,3	12,3	
	Strengthen the immune system	16,9	17,6	24,8	
	Prevent cardiovascular diseases	1,2	4,3	5,4	
	Improve gastrointestinal functions	10,1	9,5	25,3	
	Follow nutritionist's advice	1,2	4,1	7,2	
Consumption reason	Curiosity	19,5	12,2	4,3	
	No specific reason	5,4	2,3	0	

Comparison of socio-demographic variables in clusters

Variables		Clust. 1	Clust. 2	Clust. 3	Sig.
Age group	18-25	4,8	14,9	8,7	,554
	25-35	25,3	24,3	27,5	
	35-45	43,4	39,2	31,9	
	45-55	20,5	13,5	21,7	
	55-65	4,8	5,4	5,8	
	>65	1,2	2,7	4,3	
Education	Master	4,8	7,2	9,5	,032
	Bachelors degree	23,2	27	31,3	
	High school	57,8	60,8	59,4	
	Middle school	4,8	2,7	5,8	
	Other	1,2	4,3	0	
Gender	Men	37,3	32,4	24,6	,244
	Women	62,7	67,6	75,4	
	Employee	21,7	29,7	33,3	
Occupation	Self employed	14,5	10,8	8,7	,840
	MD/paramedical	3,6	5,4	4,3	
	Housewife	21,7	18,9	23,2	
	Retired	2,4	5,4	5,8	
	Student	14,5	13,5	11,6	
Origin	Nord Italy	32,5	43,2	31,9	,601
	Centre Italy	27,7	23	27,5	
	South Italy	39,8	33,8	40,6	
Specific diet	No	42,1	40,6	49,2	,026
	Yes – health problems	53,1	57,3	42,7	
	Yes- ethical reasons	4,8	2,1	8,1	
Lifestyle	Shortly healthy	22,8	18,2	14,4	,256
	Average	63,4	63,2	61,4	
	Very healthy	13,8	18,6	24,2	
Eating habits	Low healthiness	24,5	18,9	15,7	,200
	Enough healthy	75,5	73	81,4	
	Very healthy	0	8,1	2,9	