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Consumers' behaviours and attitudes toward healthy food products: The case of Organic and Functional foods

Annunziata Azzurra[1], Pascale Paola[2]

[1]University of Naples "Parthenope", Department of Economics, Naples, Italy.
[2] UniCeSV - Centre for the strategic development of the Italian wine sector, University of Florence, Italy.

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Abstract. *Over the last decade consumers' health consciousness is becoming an important factor driving the agro-food market. Healthier food products have entered the global markets with force in the past years and rapidly gained market share. Consequently, the food industry has reacted to this trend by developing a growing variety of new products with health-related claims and images, including organic and functional foods that are selected by consumers for their health-promoting properties. Currently, the healthy foods and drinks market is performing well, in terms of innovation and market penetration; healthy foods in Europe have a turnover of € 5.7 billion. Different researches conclude that a better understanding of consumers' perception of healthy foods and its determinants are key success factors for market orientation and development and for successfully negotiating market opportunities. The research proposes a survey of 300 Italian consumers in order to understand attitudes towards healthy foods, with particular reference to organic and functional products, through the implementation of a cluster analysis. The main aim of this paper is to derive indications that may contribute to better strategic and tactical marketing decisions. The findings of this study are also important for government bodies interested in designing public health programs.*

Keywords: functional foods, organic products, cluster analysis.

1. Introduction

Recent trends in final food demand show that the concept of food has undergone a radical transformation in recent years to the point to assign to food, in addition to their nutritional and sensory properties, also an important role in the maintenance of health, on psycho-physical well-being and prevention of certain diseases. Today foods are not intended to only satisfy hunger and to provide necessary nutrients for humans but also to prevent nutrition-related diseases and improve physical and mental well-being of the consumers [(1;2)].

Numerous studies in literature have tried to estimate the value of *health* for individuals under different conceptualizations. Olsen (2006) and Sparks et al. (2001) refer to the 'health-conscious self-identity' as the extent to which health is an important component of a person's self-concept. Likewise, Maddock et al. (1999) use 'involvement in healthy eating' to evaluate the importance of healthy eating to individuals. Other authors measure health concern to capture individuals concerns about food and health-related issues or use *health interests* to evaluate the value of health for an individual person [(3; 4; 5)].

The importance of concerns about health can be interpreted as a consequence of a number of factors not just related to socio-demographic changes occurred in society over recent years, but also to the important progress made in terms of scientific knowledge about the interactions between diet and health.

On the one hand, therefore, the increase in life expectancy, augmented occurrence of diseases correlated to incorrect dietary habits, including the chronic diseases such as osteoporosis, cancer, cardiovascular diseases, hypertension, and diabetes, that are linked to significant increases in sanitary costs, which have made health an increasingly important buying motivation in food choices [(6)].

Moreover, there are many scientific studies that have shown over the past decade, with an abundance of experimental data, the close connection between diet and health, particularly in relation to chronic diseases, and have encouraged the development of a growing spectrum of products such as *nutraceuticals*, *medifoods*, *vitafoods*.

It follows that the attention of consumers towards healthy eating is no longer exclusively focused on the reduction or elimination of substances that are considered negative, but tends to move towards attributes that characterize the product in positive terms, such as freshness and naturalness. Shifting demand towards products with a strong healthy image, as confirmed by several market research conducted at international level [7;8].

Currently, the healthy foods and drinks market is performing well, in terms of innovation and market penetration; according to A.C. Nielsen data (2007) the healthy foods in Europe have a turnover of € 5.7 billion. This trend is fully confirmed when referred to the Italian market, where demand for health products has, over the five-year 2002/06, the highest growth rate in terms of purchase volumes.[9]

In this context, there are new prospects for the development of organic agriculture[1] as an integral part of a of sustainable agriculture system that is able to respond fully to the new consumers expectations, as confirmed by the rapid development of organic foods occurring in national and international market in recent years. In the last ten years, organic agriculture worldwide has been growing 15-20 percent per year while the overall food industry is growing 4-5 percent per year[10]. The organic food supply chain is a typical consumer driven sector, with world sales increasing by over five billion US Dollars a year. Organic Monitor estimates international sales to have reached 46.1 billion US$ in 2007[11].

Similar trends apply also to functional foods[2], even if the heterogeneity of definitions used internationally to classify functional foods enables to collect homogenous statistic data on this market[12]. Based on a definition of functional food by which ingredients with an additional health value have been added to foods (and this is announced to the consumers), the global market is estimated to be nearly 61 billion US$[13] and the three dominant markets, United States followed by Europe and Japan, contribute over 90% of the total sales. In particular the European market[3] 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[14].

Different researches conclude that a better understanding of consumers' perception of healthy foods and its determinants are key success factors for market orientation and development and for successfully negotiating market opportunities[15]. Consequently in the last years several papers have reported empirical studies of consumer acceptance of healthy foods based on primary data collection, especially in the EU providing insights in the profile of functional[16;17;18;19;20] and organic[21;22;23] food consumers.

At the same time it is essential to consider that healthy attributes are credence goods and therefore cannot be checked directly by consumers, consequently the process of consumer decision-making is largely influenced by the level and quality of information he possesses and which is supplied on the market.

So health information has been proved to influence choice and other attitudinal and intentional variables in food science studies. Some evidence exists that health information increases consumer awareness or expectations about the healthiness of a product and produces more positive attitudes towards it[24;25]; likewise, health claims influence consumers' preferences[26] and increase their intention to purchase the product[27]. In the same time providing food quality or safety information to consumers may result in considerable welfare effects [28]. Information is most likely to be efficient and effective when it manages to meet specific needs of the target audience so it has long been acknowledged that understanding consumers' information seeking behaviour and information processing are crucial to making better marketing decisions. Based on the previous considerations the main intention of the current paper is to investigate the factors which influence consumer behaviour towards organic and functional food products and verify the opportunities for further expansion of these segments in order to subsequently develop appropriate consumer communication strategies based on market segmentation.

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[1] Organic agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved.

[2] A food can be regarded as "functional" if it is satisfactorily demonstrated to affect beneficially one or more target functions in the body, beyond adequate nutritional effects, in a way that is relevant to either an improved state of health and well-being and/or reduction of risk of disease. Functional foods must remain foods, and they must demonstrate their effects in amounts that can normally be expected to be consumed in the diet. They are not pills or capsules, but part of a normal food pattern.

[3] 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.

2. Consumers' attitudes toward organic and functional foods: some empirical evidences

2. 1 Research objectives and methods

The main aim of this paper is to derive indications that may contribute to better strategic and tactical marketing decisions. This study will add a contribution that helps both the firms and the policy maker to be aware of the current situation of healthy foods demand and to forecast the future for these markets. The findings of this study are also important for government bodies interested in designing public health programs.

The specific objectives of this research can be summarized in the following topics:

- analyze consumers' propensity toward a healthy lifestyle,
- evaluate the degree of orientation towards healthy foods consumption,
- understand attitudes towards healthy foods, in particular organic and functional products,
- explore consumers' level of confidence in different sources of information,
- verify the existence of different groups with diverse attitudes towards healthy foods.

For the purpose of this study we conducted a survey on 300 Italian consumers, living in three different cities Bologna, Rome and Naples (respectively located in the North, Centre and South of Italy), aged over 18 years and responsible for ordinary domestic shopping, The face to face interviews were carried out in different days and in different outlets such as, open markets, traditional shops and supermarkets; all interviews were completed between January and April 2009.

A pilot test on 30 consumers was conducted in order to ensure that the statements were clear and to identify redundant variables and questions that were difficult to understand. According to the pre-test results some questions were removed, others were modified. The other benefit of the pre-test was that it provided a clear idea on the time needed to fulfill the questionnaire. The final questionnaire included 30 close-ended questions and it is structured in four specific parts.

The first part of the questionnaire aims to assess the propensity of consumers to a healthy lifestyle and, furthermore, verify whether and how this tendency is reflected in their food purchasing and consumption habits. In particular, this part of the survey takes into account the healthy conscience of respondents, the degree of healthiness of their diet and lifestyle, the existence of special needs related to health problems and / or ethical reasons that could lead them to a specific diet. Other variables considered in this part of the questionnaire are related to the attributes of products and processes that most affect consumers during the food purchasing process and the interest of interviewed to the nutritional information on the label. The second part of the questionnaire aims to analyze the attitudes of consumers towards organic products and functional foods. In particular, by building a set of questions related exclusively to organic products first and then to the functional ones, we wanted to verify the level of knowledge, the consumption frequencies, the categories of product consumed and the main reasons to use these products. In addition, considering a number of quality attributes of food, we tried to understand how consumers perceive the two categories of products compared to conventional foods. The third part of the survey attempts to analyze the different ways in which the information about functional foods and organic products is conveyed to consumers, trying to comprehend on the one hand the sufficiency, clarity and reliability of the information and the level of awareness towards the health aspects of these products, and on the other to identify some possible strategies for improving the efficiency of information flows.

Detailed socio-demographic information was also collected on the following parameters: gender, age cohort, education, employment status, marital status, number of people in the household. For the purpose of this study, a quantitative approach was adopted in order to identify the differences among the respondents concerning their attitudes, purchasing behavior, knowledge and perceptions. Qualitative responses were coded numerically to facilitate statistical analysis. Levels of importance or concerns were, for example, numerically coded using a 5-point Likert scale to reflect the relative levels of importance of, or concern for, various perceived attributes or disadvantages.

Data generated were analyzed twice. First, data were submitted to a descriptive analysis through the Frequencies procedure that provides statistics and graphical displays useful for describing many types of variables. Moreover, the Cross-tabs procedure forms (two-way and multi-way tables) were useful to find the shared relations between the variables and provide a variety of tests and measures of association for two-way tables. The second stage regards multivariate analysis, conducted in order to group individuals into segments with similar qualities. The statistical approach used to perform this analysis has two different steps: PCA and cluster analysis. The factor scores are used to realize a cluster analysis with K-

means method. The profiles of each cluster are obtained from variables included in the analysis such as demographic and attitudinal variables. One-way ANOVA is performed to test for differences between the identified clusters. All analyses were conducted with the SPSS 15.0 statistical analysis program.

2.2 Explorative analysis

The analysis of the main socio-economic variables shows that respondents are predominantly women (51.8%), mostly included in the age group between 31 years and 40 years (35.5%). Regarding the educational level of respondents the data show that nearly 2/3 of consumers have a high school diploma or a degree. As for the marital status of the buyers of these products, the data reveal a predominant amount of married people (50%) living in families with a number of components between 2 and 4 (respectively 26.1% and 27.9%). Finally, with regard to occupation, 23% of respondents are employed, followed by a 21% of independent professionals. A good percentage is also represented by the category of housewives (18%)

Health in food choices

The first part of the questionnaire was designed to assess healthy awareness of respondents and observe whether and how this is reflected in their purchasing habits and consumption of food. Overall, respondents appear aware of the essential role played by their food choices in determining their state of health, in fact more than 48% say they strongly agree with this statement while only about 2% of respondents do not in agree (see Table 1) and in 50% of cases are aware that the consumption of certain foods can result in beneficial effects on their health. In addition, the interviewed mainly state to not agree at all (24,6%) or to agree a little (30,5%) with the statement that it is possible to have control over their health status despite their food choices.

The table also shows that in many cases the respondents say they always prefer the healthier alternative regardless of price; however, they do not always declare to be willing to give up their favourite foods to improve their health status. It follows, then, that despite being aware of the close connection between diet and health, the respondents are not willing to renounce to the pleasure of what they consume. 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 [(29)].

Table 1 - Healthy awareness of the respondents

Degree of agreement	*At all*	*A little*	*Middling*	*Fairly*	*Strongly*
My food choices are important in affecting my health	0,3	1,79	19,7	30,15	48,06
I always choose the healthiest option although it is more expensive	5,0	13,2	31,8	20	30,0
Some foods have a beneficial effect on my health	0,3	2,99	12,8	35,5	48,4
I have the control of my health no matter what I eat	14,6	20,6	31,04	23,8	9,8
I don’t want to give up the foods that I like	5,4	18	24,2	24,2	28

The analysis is continued by asking respondents to indicate their opinion with regard to the healthiness of their diet and level of satisfaction expressed with respect to the same. 40% of the consumers define middling healthy their food style and 35% of them are quite satisfied of their food choices. Through a series of specific questions we tried to provide an assessment of the degree of healthy eating habits by asking consumers to indicate the frequency with which they consume fruits and vegetables, legumes and cereals, fried foods, soft drinks, snack meals; products high in fat, white meat, fish and other seafood.

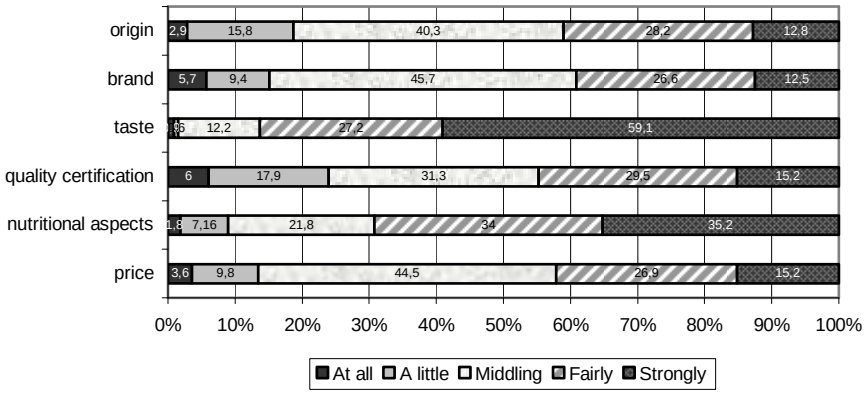
Similarly the lifestyle was analyzed by asking respondents how often they watch television and do physical exercise, control their health, if they consult a nutritionist or if they attend health centres, if they have a work that forces them to stay a long time seated. The replies were analyzed and summarized in an indicator of health ranging from 1 (not at all healthy) to 5 (very healthy).

Concerning the first aspect from the analysis emerges that in most cases (36.4%) the eating habits of the respondents may be considered fairly healthy, while concerning to the second aspect, although on average prevails a style of healthy life (40.7%), it records a higher incidence of low healthy habits (26.6%).

In order to analyze the existence of motivations that can influence food choices of respondents was also verified the subsistence of any specific needs related to health problems and / or ethical reasons, which may lead to a greater attention to the healthiness and food safety. About 51% of respondents claimed to be influenced in their food choice from specific requirements related primarily to specific medical

disorders (22% overweight, allergies / intolerances 8%, cardiac problems 8%, 5% diabetes) but also ethical reasons (vegetarian diet 3%) and sports (5%).
Finally, regarding the evaluation of purchasing habits was asked consumers to indicate the attributes of products and processes that most affect them during the process of buying food. As shown in chart No. 1 consumers state to be particularly influenced by the taste in the choice of food products, considered as the most important attribute in 59% of cases. Remarkable sensitivity is attributed also to the nutritional aspects, considered in 36% of cases quite important, while freshness, price and brand of the producer are perceived as mildly important attributes (respectively 46.4%, 44.5% and 45.7% of the cases). Finally, the attributes less influential in absolute are indication of origin, presence of quality certifications and packaging.

Chart n. 1 – Degree of importance assigned to different attributes of process and product

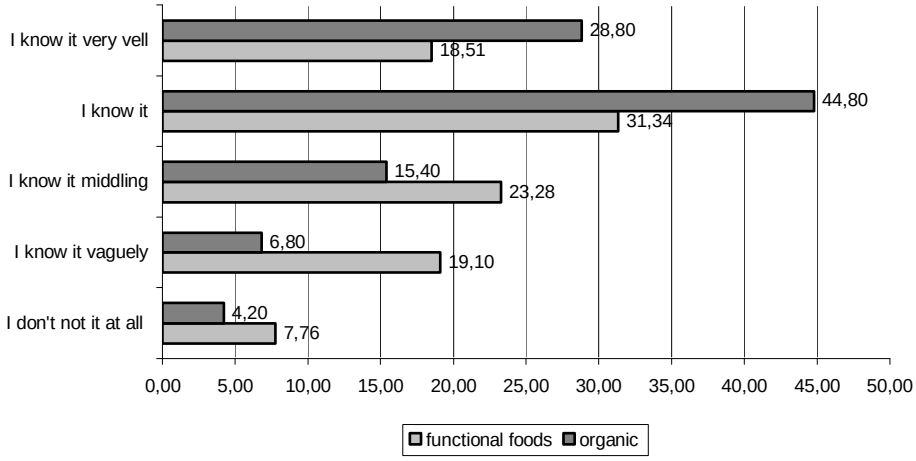


The attention to nutritional features is also confirmed by the considerable interest shown by respondents to the nutrition information on the label. Taking into account that only 11% of respondents declare that they never read them, while 18% read them only in the first purchase, 25% say they read every time they have the opportunity and 35% claim to read it normally, particularly in relation to specific products. Later we tried to understand which of the nutritional information contained in the nutritional label, are considered more important by consumers in making their choices of consumption. Specifically information that is considered most important is the indication of fat.

Attitudes toward functional and organic products

The propensity to consume healthy food, with special reference to organic and functional foods, was analyzed by establishing, first, the degree of knowledge of such products by the respondents and the frequency of purchase. Comparing the degree of knowledge of these products chart n. 2 shows how organic products are more familiar to consumers than functional foods. In fact organic food are known by approximately 45% of respondents while functional by 31%, moreover 8% of respondents claim to don't know at all functional foods while regarding organic products, this percentage is limited to just over 4%.
To better understand the degree of real knowledge that consumers have with respect to these products we have asked respondents to indicate a definition of both the functional and the organic products providing a range of alternative options. Relating to the first type of products, analysis of data shows that consumers are less informed to the concept of functional foods, undoubtedly the terminology is still not very common in everyday life, and in many cases creates confusion with light and dietary products (20% of cases), or they have an idea of functional food that is incorrectly associated with food intended only for those who have health problems (16% of cases), and in other cases, however, respondents are unable to give a definition (24% of cases).
As for organic products, in most cases (61%) respondents have a good knowledge, giving the correct definition; on the contrary, 20% defined organic as having less food fat, 10% as traditional and 7% defined organic as foods made from biotechnology; while only a small percentage have not been able to indicate a preference (2%). These results confirm the previous hypothesis, that the degree of consumers' knowledge is greatest in the case of organic products, while still much uncertainty is expressed with respect to functional products. Probably this difference is determined by the fact that, unlike organic products, functional foods can be considered quite innovative, having entered the Italian agri-food market only in recent years.

Chart n. 2 - Comparison between degree of knowledge of functional and organic



After verifying the level of knowledge of organic and functional foods, the frequency of consumption of these products has been analyzed, in relation to specific categories. With reference to the functional products 21% of respondents say they do not consume any product. Among consumers that declare to consume functional foods prevail the occasional consumers (34%), followed by those who say they consume at least once a week (20.3 %) and those who buy them only rarely (20%). The lower absolute incidence are those reporting a daily consumption of functional products (4.18%).

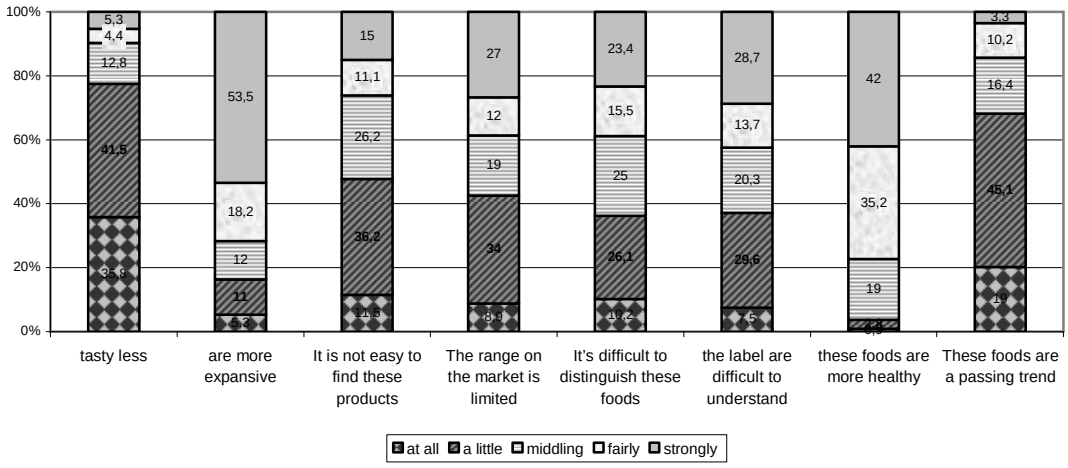
For organic products the percentage of those who declare that they never consume them is undoubtedly less than the functional products (16%), and there is a particularly high incidence of those who say they eat organic at least once a week (36%). And unlike functional foods, there is a greater incidence of daily consumption of organic (10%) and a lesser presence of consumers who say to consume them only occasionally (20%). It follows that by analyzing the frequency of consumption a better attitude towards organic produce is clear.

To verify the types of product consumed was asked to the interviewed, for functional and organic, which kind of products they purchased more frequently. The analysis of results shows that, as can be seen from the graph below, in both cases, milk, yoghurt and dairy products are the most consumed. For functional food consumers say they consume probiotic yogurt predominantly (29%), milk vitaminized / enriched (21%), whereas in the case of organic as much as 40% of respondents said to buy the dairy category, yogurt and cheese. Especially consumed in both categories are also cereals and legumes, respectively in 15% of cases for functional products and 12.7% for organic. Moreover, in the functional market well positioned is also the ready to drinks (11.5%) and fruit juices (10.2%) while among the organic particularly consumed are fruit and vegetables (29%), oil (24%) and eggs (27%).

With reference to the main motivations that lead respondents to consume these products prevails, in the case of functional, improving the state of personal well-being and their family members (40%), the need to strengthen the immune system (24%), the need to improve gastrointestinal function (15%). However, some respondents also claim to consume only out of curiosity (14%) or without a specific reason (6%). Compared to organic products, however, the reasons that consumers assign greater importance are not only the wholesomeness of the product (43%) and the absence of residues of pesticides and chemicals in the same (24%), but also the preservation of the environment (19%) and the absence of GMOs (14%). Finally, we tried to understand how consumers perceive the two categories of products on a number of attributes compared with conventional products.

As can be seen from the chart below, respondents consider organic and functional healthier than the conventional, in 42% of cases, not considering the same as a passing trend and not thinking that they are less tasty, whereas in 41.7% of the cases declare to agree with that assertion. In contrast, respondents perceive both the functional and organic foods more expensive than the conventional, but also difficult to find and limited in variety shoppers. Also complained of some difficulty to differentiate them from the conventional ones and great difficulties interpreting their labels.

Chart n. 3 - Perception of functional and organic products compared with conventional products



Information available to consumers

In order to analyze the level and quality of information available to consumers of organic and functional foods, in the last part of the questionnaire were included a number of specific questions trying to identify possible strategies to improve the effectiveness of the communication strategies. First we tried to understand how respondents perceive the current level of information available regarding the adequacy, clarity and reliability of the information.

With respect to this point from the analysis of the results 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 (32,3%), as well as contradictory and confused (42,3%), showing also some scepticism about their reliability (27,9%).

It was also tested the degree of importance and trust attributed to the different sources of information.

The results show 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. At the same time analyzing the degree of trust attributed to different sources we understand that the sources in which respondents have more confidence are the doctor and the Public Bodies, in which respectively 63% and 49% of consumers show a high level of trust. While a lesser degree of reliability 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 into the sources from which they receive less information, therefore these sources need to be strengthened.

Finally, we asked to the respondents to express their opinion on the need to improve the current level of information and also indicate the possible ways to do so by giving them several options. Almost all of the consumers would like more information for both organic and functional foods, for which, in fact, only 6.2% and 5.4% of respondents do not consider necessary to improve the information available on the market. The results show that consumers consider necessary the implementation of information campaigns of public education (23%) and the improvement of the statements in the nutritional labels (25.5%), but also the introduction of logo / symbol that somehow recalls their attention to the health benefits of the product (22.2%).

2.3 Factor and cluster analysis

Having analysed consumers' general attitudes on functional and organic products the study was deepened through the application of the factorial analysis.

Through the Principal Components Analysis, we tried to verify the existence of latent factors that summarize consumers attitudes towards functional and organic 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) has allowed us to synthesize 27 variables in three considered factors which explain 57% of the variance. Table n. 3 summarizes the matrix of rotated components. Specifically, the three factors identified can be interpreted as follows:

1. *Healthy conscience* - This factor summarizes a number of variables used to measure the awareness of healthy respondents and their awareness about the links between diet and health. Specifically combines not only variables used to assess directly the sensitivity of respondents to the links between diet and health, but also variables that reflect the importance given to nutrition in the choice of food, the degree of attention to the nutritional labels and the level of healthy lifestyle of respondents.
2. *Trust in information* - The second factor summarizes eight variables that relate to the need expressed by respondents about the degree of sufficiency, clarity and reliability of the information available and the confidence that they give to different sources of information, with particular reference to Public bodies, Physicians and nutritionists, Information campaigns and groups of consumers;
3. *Satisfaction* - This last factor summarizes seven variables related to the perception that consumers have of a number of attributes that are intrinsic or extrinsic of functional and organic products, with particular reference to taste, cost, availability and safety of foods.

Table n. 2 - Factor Scores

Variables[4]	*Factor 1*	*Factor 2*	*Factor 3*	*Com*[5]
Degree of importance attributed to quality mark	-,325	,132	-,221	,740
Degree of importance attributed to the taste	-,186	,040	-,302	,590
Degree of importance attributed to nutritional attributes	,658	,111	,093	,696
Attention in nutritional labelling	,772	,201	,105	,665
I have the control of my health no matter what I eat	-,522	,147	-,342	,767
I don't want to give up the foods that I like	-,439	,093	-,033	,757
I always choose the healthiest option although it is more expensive	,658	,012	,175	,622
I do not need to worry what I eat	-,623	-,165	,288	,625
My food choices affect my health	,804	-,043	,455	,637
Consuming these foods improve my state of health	,644	,148	,723	,652
It is not easy to find these products	,153	,136	,697	,711
The range on the market is limited	,058	,098	,723	,709
These foods tasty less than conventional option	,201	,104	-,598	,811
These foods are more expansive	,059	,117	,892	,598
It's difficult to distinguish functional from conventional foods	,221	,190	,801	,643
The information in the label are difficult to understand	,119	,669	-,309	,790
Degree of healthiness in food choice	,659	-,274	,338	,810
Degree of healthiness in lifestyle	,598	-,304	,307	,851
The information about these foods are sufficient	-,106	,498	,299	,854
The information about these foods are clear and simple	,301	,522	,107	,832
The information about these foods are truthful	,020	,763	,101	,534
The information about these foods are confuse	,205	,423	,277	,722
Trust in Informative Campaigns	,045	,802	-,206	,697
Trust in doctors / nutritionists	,037	,794	-,044	,702
Trust in Public Bodies	,126	,820	-,104	,668
Trust in Consumers association	,112	,836	-,098	,526
Eigenvalue	*2,98*	*1,64*	*1,12*	
Variance %	*23,33*	*18,11*	*15,9*	
Total variance %	*23,3*	*41,44*	*57,3*	

[4] All the variables included in the factorial reductions are expressed by a Likert scale from 1 to 5.

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

Based on these three factors, a segmentation of the sample was created, to verify the existence of homogeneous groups of consumers characterized by a different propensity towards functional and organic 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 following table illustrates the final clusters obtained after iterations. To get a more detailed description of the individual groups, each cluster was analysed in relationship to the most meaningful variables used in the survey, comparing the averages among the individual groups and the total sample. Additionally, the association amongst the various clusters and some category variables was measured through the contingency and statistical analysis Chi square which tests its significance.

Table n. 3 – Centre of final clusters

	Cluster 1 (n. 98 - 32%)	Cluster 2 (n. 129 - 43%)	Cluster 3 (n. 75 - 25 %)
Healthy conscience	1,27648	,75289	,19804
Trust in Information	,24898	-1,04539	,10862
Satisfaction	,52092	,39080	-1,67042

Cluster n. 1 - Healthy aware

The first cluster made of 32% of respondents (n= 96) groups individuals that consume organic and functional products with higher frequency. These consumers are particularly concerned of the health aspects in the food choice and conscious of the link between nutrition and health. Moreover they are assiduous readers of nutritional information in food labels because they are very attentive to the nutritional aspect in their food choices. 58% follow healthy food habits, trying to keep their diet under control for health reasons. Healthy aware consumers show to know the organic production method very well and functional foods enough, confirmed by the high incidence of individuals who have provided a correct definition of these products. This group is characterized by the increased presence of individuals who claim a daily consumption of organic foods and consume functional foods several times a week (respectively 21% and 27% of cases). For these consumers the main motivations to the consumption of organic products are the safety of the products (38%) and the absence of pesticides residues (28%), while for functional foods is improving the state of their personal well-being and of their family members (56%). However, these consumers also complain that there are some difficulties in distinguishing these products from conventional ones 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 (64%), aged between 35-55, with a high level of education. Compared to the other groups, indeed, there is a greater concentration of university graduates or individuals holding a master degree.

Cluster n. 2 - Disoriented

This cluster includes 43% (n=129) of respondents very interested in nutritional aspects, as confirmed by the fact that these consumers give on average a higher degree of importance to these attributes in their food choices than the average of the sample (table n. 4). These consumers are quite aware of the role played by their food choices in the determination of health status and it is possible to consider their food choices quite healthy, confirmed by concentration of individuals who have both food habits and lifestyle fairly healthy. Despite this characteristic these consumers are characterized by a lower frequency in the consumption of functional and organic products, compared to the first cluster. They consume once a week organic products (32%) and several times a month functional foods (29%). Moreover they do not have a very clear idea of these products, in fact there is a concentration of consumers that tend to confuse the functional products with light or dietetic products and 9% of them associates organic farming methods with traditional practices or with products with less fat. Furthermore, this group of consumers state to have some difficulties in finding these products in their traditional shopping location and that it is not easy to distinguish functional and organic from conventional foods. Finally, this cluster express a negative opinion towards the information currently available on functional and organic products, which is considerate contradictory and confused and not always reliable.

Cluster n. 3 - Not Interested

The third cluster groups together 75 individuals (25%) that show less awareness in the link between food choices and health issues and do not pay too much attention to the nutritional properties of the food products they consume, and give more emphasis to extrinsic attributes such as brand and price. In fact

these consumers are not willing to give up tasty food products although they are not healthy and declare they are not willing to reject their favourite foods for health reasons. The low level of importance of nutritional properties in the food choices is confirmed also by the frequency of reading nutritional labels, lower than the other clusters. In addition, this group concentrates several individuals who claim to have control of their health despite their food choices. These respondents are characterized by a lower interest in the consumption of organic and functional products, confirmed by the high concentration of occasional consumers who do not know very well organic products and are unfamiliar with functional foods. In this cluster, in fact, there is a greater percentage of consumers who say they know organic products only vaguely (32%) and that do not know at all functional foods (19%). In many cases these consumers are unable to provide a correct definition of both organic and functional foods.
Finally this group also has a propensity to buy organic or functional products just for curiosity or without a specific reason. With regard to socio-demographic variables 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 - clusters' averages

Variables	*Healthy aware*	*Disoriented*	*Not interested*	*Sig.*
Degree of importance of nutritional properties	4,3	4,8	3,3	,002
Degree of importance of quality marks	3,2	3,5	2,8	,000
Degree of importance of brand	3,6	4,2	3,8	,000
Degree of importance of price	3,1	3,4	3,8	,002
Degree of importance of origin	3,7	3,5	2,7	,000
Frequency of nutrition labels reading	3,2	3,3	2,9	,023
I monitoring my health no matter what I eat	2,3	2,6	3,4	,012
I don't give up the foods I like	2,3	2,5	3,8	,000
I always choose the healthiest option although it's more expensive	4,2	3,9	2,8	,027
These foods are more healthy than conventional	4,4	3,6	2,8	,005
These foods are a passing trend	2,4	2,8	3,2	,033
Not always understand the properties of these foods	2,6	3,2	3,5	,003
It is difficult to find these products	1,9	3	3,6	,000
These foods tasty less than conventional	2,3	2,9	3,5	,018
The range of functional and organic foods is limited	1,9	4,1	3,6	,000
It is difficult to distinguish these foods from conventional	3,3	3,9	3,4	,000
Labels of organic and functional foods are difficult to understand	3,7	4,5	3,3	,000
Information about these foods are clear and simple	2,8	1,8	2,3	,000
Information about these foods are truthful and reliable	2,4	1,9	2,3	,000
Information about these foods are confuse and contradictory	3,1	3,8	2,5	,000

The Cluster Analysis has, therefore, confirmed the existence of different consumer segments with dissimilar attitudes towards organic and functional foods. The three partitions identified differ, not only concerning socio-demographic variables, particularly age and level of education, but also for the different degree of sensitivity shown towards the health aspects of food, the level of healthy eating habits and the existence of specific reasons that affect the diet (see Table 5). In particular, the cross-analysis of the three clusters reveals that the largest group is represented by confused consumers that, while showing a marked sensitivity to the health aspects of their food choices, have puzzled ideas in relation to the studied foods, especially on functionals. Otherwise the smaller segment is the disinterested, characterized by the lowest propensity toward such products, mainly due to a lack of understanding and the low interest in healthy aspects of food choices.
One element that clearly links the identified clusters is the negative perception of the level of information available on the market, in fact, event the first cluster, characterized by a high propensity towards healthy foods and a good knowledge of them, shows a low level of confidence in the main sources of information

Table n.5 – Demographic details of the identified clusters

	Cluster 1	*Cluster 2*	*Cluster 3*
Gender			
Man	36	48	41
Woman	64	52	59
*Age group**			
18-25	8	14	12
25-35	18	26	21
35-45	32	26	28
45-55	24	31	27
>55	18	3	12
*Education**			
Master	15	9	3
Bachelors degree	43	32	28
High school	42	48	46
Middle school	0	11	23
Specific diet			
No	23	36	52
Yes – health problems	59	44	36
Yes- ethical reasons	12	6	0
Yes - other	6	14	12
Lifestyle			
Shortly healthy	12	7	23
Average	63	65	59
Very healthy	25	28	18
*Eating habits****			
Low healthiness	3	14	26
Enough healthy	39	42	52
Very healthy	58	44	22

***Highly significant differences (pp0.001); *significant differences (pp0.05)

3. Discussion of main results

Health and disease problems related to food consumption are motivating consumers around the world to choose diets that promote healthy outcomes. Recent research show that healthiness is a major quality dimension when consumers evaluate food products, and healthy eating has become a major topic in the public discourse on food and drink[30]. As a consequence, it is increasingly significant to determine the factors that influence consumer behavior and his/her attitudes regarding healthy foods in order to verify the opportunities for further expansion of this segment.

From the consumer point of view, the success of healthy foods relies on a number of inter-relating factors, including the level of concern about general health and specific medical conditions, the belief that it is possible to influence one's own health and awareness and knowledge of foods/ingredients that are supposed to be beneficial.

The results of the current research reveal that Italian consumers have a good awareness of the links between food habits, healthiness of food and personal health, although they are not always willing to forego the pleasure of what they consume and continue to give taste a predominant role in their food choices. As confirmed by other studies that also pointed to the primary role of taste as a factor that directs consumers' food choice in general [31; 32].

At the same time, however, results confirm the strong interest on nutritional aspects of food and for products with a healthy image, as corroborated by the attention shown for functional and organic foods. However, when analyzing the propensity of respondents to these two product categories some confusion in relation to their characteristics still persist, in particular for functional foods.

Undoubtedly, the descriptive analysis highlights a greater familiarity of the respondents towards organic products, the majority of respondents in fact stated the correct definition of organic production and has declared a higher consumption propensity compared to functional foods.

Moreover, with respect to consuming motivations the results derived from this analysis show that consumers purchase functional and organic foods mainly for health reasons; they assume that these products are healthier than conventional products. Specifically, as shown extensively in the literature, food safety and health were very dominant organic buying motivations across most European nations[33;34;35].

The idea that organic foods are healthy is strongly associated with the absence of unwanted substances, especially with respect to the absence of synthetic pesticides, medicine residues and unwanted additives in processed foods. In particular, related to consumers of organic products, is it is possible to consider the concept of " health quality " that should have specific characteristics[6]. Consumers do not "feel healthy" eating healthy but "believe" to feel well [36].

However, until now, very little research has been performed to study the effect of organic food on health. Such studies have attempted to elucidate if there is a difference in the effect on human health, between food produced according to the organic standards compared with conventionally produced food. While some of these studies support a few general trends of differences in food composition, none have provided any conclusive evidence for differences in the effects on human health.

At the same time, consumers perception of functional foods is strictly linked to health benefit, whereas the improvement of their health and / or their family status was listed as the primary motivation to purchase these products, confirming the results of similar studies conducted in Europe [37;38].

However, relatively few consumers are likely to have a clear idea about the term 'functional foods', tending to confuse it mostly with light products. This is a common result derived from literature that functional foods from the consumers points of view are not perceived as being one homogenous group[39]. The less familiarity manifested by the respondents toward functional foods is confirmed also by analyzing the frequency of consumption declared by consumers, undoubtedly more sporadic than the organic products. Sometimes however, consumers buy the product nonetheless they do not know the functional component[7].

In this regard, an interesting finding that emerges from the present work is that the respondents complain about a certain difficulty in distinguishing between organic and functional and conventional foods and express a negative opinion towards the current level of information available on the market. As extensively argued in literature, the type of information and the trust on the effects of a particular product on health constitute additional factors of organic and functional foods' success[40]. It's important to underline that the role of information is crucial because consumers cannot perceive the benefit directly from the product, unlike for instance taste and other sensory characteristics. According to Tuorila and Cardello (2002), information concerning the health benefits of a food can increase the likelihood of its consumption[40]. In particular, the market for organic and functional foods is characterized by information asymmetry for consumers with respect to the presence, level and efficacy of the healthy attributes. This point has been recognized in the literature: Menrad et al. (2000) argue that information and communication activities are needed to deal with the problem that consumers have limited information and knowledge about the health effect of some functional ingredients[41]; Lappalainen, Kearneyc, Gibneyc (1998), consider necessary the implementation of information campaigns and public education promoted by health professionals and government agencies, given that almost all Europeans trust mainly in these sources of information[42].

4. Conclusion

Despite the existence of limitations, mainly related to the sample that is not representative of the Italian population, the current research highlights some very interesting findings and implications. The survey results reveal a positive outlook for growth of both organic and functional foods which are gaining, even if at a different pace, more and more space in Italians household food consumption. Moreover, the consumer demand for foods to fit their specific health needs and lifestyle will continue to increase and will have an impact on all sectors of food processing and manufacturing, and also on the supporting industries. In this sense, new and interesting prospects for growth are opening up for agri-business ready to embrace the changing demands and to satisfy a growing market.

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[6] The specific attributes of "quality health" as defined in literature are: subjectivity, non measurability, centrality and latency. Quality Health is a concept that is part of the symbolic territory of the consumer but that does not depend on a real experience. It is something intangible, as is present in the mind of the consumer only as a concept, idea, not verifiable. Moreover, as widely reported in the literature, the wholesomeness of the product is a dimension of quality that consumers perceive and sense but can not quantify.

[7] Niemann, Sommerfeld, Hembeck, and Bergmann (2007) reported, that according to a survey from 2006, a predominant part of the German consumers buy plant sterol enriched foods without being aware the labelling information and nearly half of the users of such products do not belong to the intended target group of people

From a marketing perspective, therefore, the ability to communicate the health benefits of foods is a key aspect for the success of both organic and functional foods.
In this regard, the survey showed that there is a widespread interest for more information on healthy food. Consumers generally understand the link between food and health, and many are interested in acting accordingly. Our findings are consistent with the results from other studies, which evidence the positive effect of health information on consumer expectations, perceptions[24;25] or intentions[27]. On the other hand, product information is one of the extrinsic factors/cues that has been demonstrated to affect consumer choice.
The three clusters, identified in our research, showed significant differences in terms of knowledge of health products, with particular reference to organic and functional foods, and the different level of information results in a diverse propensity to consume. Therefore, consumer acceptance of health claims can increase the intention to purchase the product.
It follows that the question how health properties of food products can and should be communicated to consumers is a crucial question in the development of organic and functional foods, as for new and more healthy food products. However, the provision of vast amounts of information to consumers have a limited chance of success, simply because plenty of this information does not target a particular need. Hence, it risks to not being attended and processed by consumers. The particular challenge lies in identifying and effectively reaching market segments[19]. A generic approach, involving the provision of massive amounts of information to the general public, stands a real risk of information overload, leading to confusion and lack of interest among the majority of consumers.
In this regard, an interesting indication that emerges from the current work relates to greater confidence expressed by respondents to public information campaigns, capable to reveal to consumers the link between diet and health, the nutritional properties and characteristics of healthy products, particularly organic and functional foods, and the benefits of a healthy lifestyle. As for the promoter of these campaigns, consumers have expressed strong confidence in the information disseminated by health professionals and government agencies, that are perceived as more effective.
In a dynamic perspective, the implementation of targeted information campaigns can play a decisive role in the development of healthy products. These campaigns should focus their attention on disinterested consumers, that do not have yet a strong involvement with organic and functional foods, and could, in the absence of incentives for consumption of such products, turn to other types of products that respond to their health needs.

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