



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Consumer health protection and Information and Communication Technology

Rosa Misso
University of Naples "Parthenope", Italy



**Paper prepared for presentation at the 113th EAAE Seminar “A resilient
European food industry and food chain in a challenging world”, Chania, Crete,
Greece, date as in: September 3 - 6, 2009**

*Copyright 2009 by [Rosa Misso]. All rights reserved. Readers may make verbatim
copies of this document for non-commercial purposes by any means, provided that this
copyright notice appears on all such copies.*

Consumer health protection and Information and Communication Technology

Rosa Misso

University of Naples "Parthenope", Italy

Abstract. The environmental emergencies, the alimentary crisis, the increase of chronic illnesses, pushes the consumers to seek informative channels often also "virtual" as a reassurance for their own health, for the salubrity of food and above all as a direct channel with the enterprises. For these last, then, it becomes fundamental to look at the information, to the virtual nets, and to the Information and Communication Technologies (ICTs) especially as powerful means of communication. Therefore, the work analyzes the role that the ICTs develop in the productive sector of 'Mozzarella di Bufala Campana', a particularly important product for the economy of the Region but in crisis because installed in a context of environmental emergencies that have seriously compromise the trust of the consumer, worried about the implications for the health. Particularly, the work proposes a survey both on the dairies that on the consumers with the purpose to appraise the propensity of the first ones to use Internet in their own strategies of web marketing and the importance of such tool, for the seconds, in presence of a situation of alarm for the health.

Keywords: Health, consumer protection, food quality, Information and Communication Technologies.

1. Introduction

The consumer's health protection represents a central theme and one of the decisive strategy for the development of agri-food sector. The actual context of integration and globalization of the economy, in fact, put more and more the foods to the center of the responsibilities on consumers' state of health because of numerous factors among which, particularly, the paradigms of development followed by the agri-food sector, the relative normative evolutions and the used tools. First of all, the development model of the agri-food sector, delineated time after time, has brought to an increasing convergence among diet (connected to the composition and to the level of the food consumptions) and food style (connected to the formalities of food consumption). Thus it has tried and has ended answering more to the expectations of the consumer-type than to the society's fundamental demands. In fact, the osmosis among the "how", the "how much" and "where" we eat has often prevailed on the "what" we eat, or rather on the intrinsic value of the food, leaving the consumer's health, as an advantage source, among the economic opportunities to be exploited on the market. By this way, factors at the base of this trial, as for instance unstructured meals or the propensity to the purchase of transformed agricultural products with the application of services time-saving, let us to lose the direct or indirect link that a food can have on the health, soliciting the attention and lifting the consumers' worries only and especially in the cases of food alarm.

Secondly, the regulation, both public and private, in the attempt to consolidate the fracture between production and consumption and therefore to recover the consumers' loss produced by situations of alarm for the health, is evolved toward the promotion of a model of total and integrated food quality in which health certainly represents a fundamental objective for the development of the agri-food sector, but it isn't recognized as a primary human value. By this way typical and quality products, become the symbol of the food excellence and object of analysis, as engine and flywheel of endogenous territorial development. Nevertheless, the disciplinary who control the production often neglect to consider the factors that directly or indirectly really have an impact on the health in virtue of the singularity of the productive methods, of the food final peculiarities and of its own nourishing properties. This frustrates the potentialities and the effectiveness of such tools, especially in particularly disadvantaged territorial contexts because degraded in environmental terms; at the same time, however, this non integral application of the tools also brings to some questions on the possible lines of development to start to sustain in a real and lasting way the enterprises' role, which are now by now called to answer to a new request by the society: the consumer's health. The enterprises that operate in the agri-food sector, in fact, are going to shape more and more as fundamental protagonists in the determination of the consumers'

state of health, and principal vehicle for the responsibility of these last in the behaviors of food consumption.

In line with such considerations, the present work wanted to put in evidence the worrisome existing conflict among the necessity of the enterprises of the agri-food sector to acquire information about the consumer and to manage the informative flows inside and outside from the firm in a convenient way and the consumer demand to acquire the connected information to the feeding, necessary for his own health. In this context, the ICTs appeared as powerful tools of contact between producers and consumers, able to reduce the distances among such actors, allowing an efficient management of the information for the first ones and an action of empowerment on the health's themes connected to the feeding for the seconds.

In particular, the present work wanted to experiment, in a context of alarm for the health connected to a quality food product, the significance of the ICTs, evaluating the real employ done by the enterprises, as a support to marketing strategies, and as an essential informative channel for the consumers' health. Particularly, the province of Caserta, in Campania, as example of a territory that, unfortunately fed strong worries about the environmental degrade, about the foods in it produced and about its inhabitants' health, is the ideal field to verify the level of development of Internet potentialities, and above all of the web marketing as tool of the consumers' empowerment in comparison to the health themes.

2. Consumer health and feeding: toward a model of food integrity

Feeding and health represent elements related between them, that defines an integrated system in which often, and in two way communication, produce effects both direct than indirect^(1, 2, 3).

The feeding can, first of all, determine both positive than negative effects on the health. As it regards the positive effects of some foods, or of substances in them contained, on makes reference to the ability of these last to oppose the cellular degeneration and to protect some tissues like the vascular one and the bone one. Fruits, vegetables, integral cereals, vegetables and extra virgin olive oil are the most important foods for the protective role towards the aging and the illnesses tied to it. Besides, a balanced feeding represents the base of a diet to delay the aging and to maintain a good health state^(4, 5).

The foods, however, can also represent a danger for consumers' health because contaminated or for the consequences of a long period of an unbalanced feeding. As it regards this last, it is to be considered that, currently, the link between diet and chronic illnesses represents a central aspect within the connected matters of the public health. Besides the cost for the human health, such problems have a connected elevated economic and social cost related to the weakening of the work force with a consequent diminution of the productivity, as for the public burden for the rehabilitation and the physical recovery of the sick. The chronic illnesses, in fact, are illnesses of long duration and slow progression that in the last years are creating a real sanitary emergency. According to the World Health Organization, in fact, around 35 million of people prematurely die every year because of a global chronic illnesses epidemic: heart diseases, crab, diabetes, respiratory illnesses, of the digestive apparatus and of the system osseous articulation system are by now, classified among the not transmissible illnesses, the most diffused causes of suffering and death also in the poorest Countries⁽⁶⁾.

Bovine Spongiform Encephalopathy, dioxin and avian influence are instead just some of the most known examples of food contamination and of the harmful implications for the consumer health. Many foods are contaminated during the productive trial because of the use of substances like the insecticide that, in excessive doses, can seriously harm the consumer health. But the contamination of the foods can be also one of the effects that the environment determines in comparison to the feeding. Speaking about it, the environmental scandals, that occurred during the time, not only to local level, but also to national and international ones, underline the existing link among environmental sustainability, food safety and quality. In fact, the more and more numerous presences of voluntarily or accidentally contaminated sites, and often just in proximity of areas of agricultural production, is at the base of the strong ties that derive in terms of development of a waving factory and consumer health. In the Territorial Systems with an agri-food vocation, therefore, illegitimate dumps of polluting substances in the grounds or in the ground water from the industrial activities, not checked deposits of urban or industrial refusals, together with combustions uncontrolled hips combustions, can jeopardize seriously the quality of the foods realized on the spot over that, naturally, the health and the quality of life of the local population^(7, 8).

At the same time, however, the same production of foods can determine a negative impact on the environment that than reverberates on the human health. Thinking, for instance, that intensive agricultural practices and farming are the principals responsible of the global issues of greenhouses gases, particularly

of methane and nitrogen oxides. The greenhouse gases determine changes of the climate which impact on the human health both in a direct way, through, for instance heat strokes, loss of life in floods, storms, both in an indirect way, through the change in the geographical distribution of the bugs vectors of illness (for instance the mosquitos), of the pathogen agents communicated by the water and by the foods as well as from the shortage of water and from the atmospheric pollution⁽⁹⁾.

Other example is furnished by the mariculture whose principal problem is tied up to the organic load caused by the immission of food and by the defecations of the fishes. The most greater part of the refusals, in fact, is in the form of organic solid refusals, dissolved nourishing substances and inorganic nourishing substances like the nitrogen and the phosphorus that can determine an high nutrition of the water and the diffusion of flowers algal, sharp blankets pains of green mud on the surface of the water accelerate the growth of bacteria, exhaust the oxygen and destroy the most greater part of the living beings in the underlying waters. From such considerations, therefore it emerges, that the salubrity and the safety of a food, the environmental sustainability, the animal wellbeing, the ethicality of the productions as the need of information on the origin of the products and on the methods of production cannot constitute just some of the "assistant values" to the food. In fact, such optics of development has produced a perverse mechanism for the consumer health since its expectations in comparison to the foods have been considered as varying functional to the development of the agri-food sector and not as substantial strategic determinants for his own health. Such perspective, has particularly gone to feed a model of development of the agri-food sector that has seen more and more, "the consumer to the service of the economy" rather than "the economy to the service of the consumer". With the aim to make lever on the varied and complex characteristics that identifies a product of the agri-food sector in relationship with the consumer needs, such perspective has determined besides the orientation of the agri-food system to the "quality." This last, as defined by the Standard International Organization with the norm ISO 8402 of 1986, is intended as "the whole of the properties and the characteristics of a product or a service that confer to it the ability to satisfy express or implicit demands". The conceptual evolution of the total quality as foundations of an integrated management system, have shown then the necessity to extend such concept to the agri-food sector too.

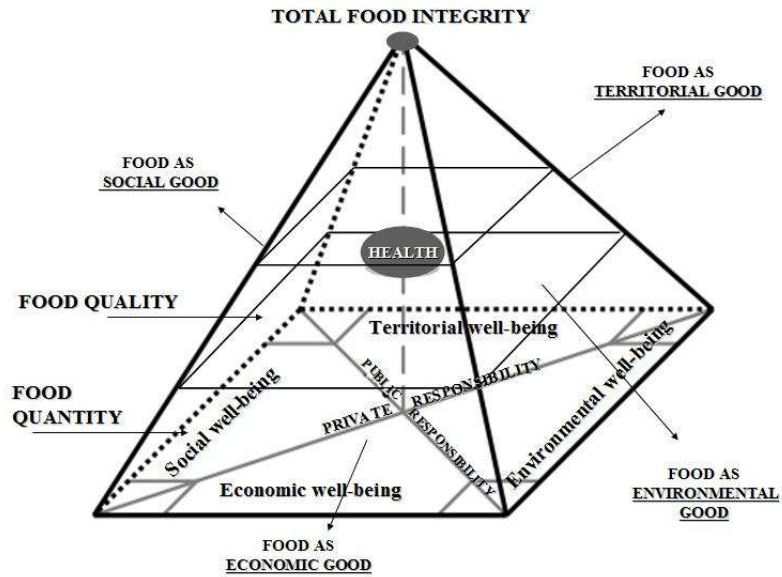
This, naturally, with the purpose to contain in the concept of quality the widest possible number of attributes that directly or indirectly can have a reference with the "express or implicit demands" among which can be considered the question of the consumer health. Despite the conceptual and normative evolutions of the food quality, however, in more occasions of food alarm we assisted to the loss of the effectiveness and the guarantee of such tool in comparison to the consumers' worries for their own health. This, has substantially ended evidencing the necessity to balance the attention among, "ownership and characteristics of a product" and "express or implicit demands", or, among functions and functionality of the foods and consumer health⁽¹⁰⁾. The expectation of this last in comparison to the foods, in truth, it finds its extreme synthesis in the *food integrity*, to intend not as "presence of all the positive attributes for the health", as it commonly happens, but, in the full respect of the etymology, as "food to which nothing has been removed, which nothing misses".

In such optics, it is necessary to reconsider and to revisit with a strategic key the concept of food to the light of the responsibilities of all the subjects that participate to its own determination process in the single Territorial Systems. Meaningful experiences matured on national level, with particular reference to some territorial Systems with agri-food vocation of Campania, has shown as actors and external actions to the firms put in crisis not only the competitiveness of some products of local excellence directly involved in the scandals, but of the regional whole offer, markedly jeopardizing its image, on the national and foreign markets, with strong reflexes also on the integrate activities, like tourism and agrotourism.

Naturally we well understand the connected difficulties to the new-orientation of the agri-food sector toward a *model of food integrity* and to the adjustment of the relative tools of development; nevertheless, it would have the pretension to propose not the health as necessary economic good, but, as primary human value for the development and the competitiveness of the agri-food sector (fig. n.1).

The centrality of the consumer health, in other terms, induces to question on the new paths of development along which to project the agri-food sector. In such optics, the territorial systems in which such paths are characterized for the lack of favorable conditions to the maintenance and the promotion of the human health constitute a substantial limit to a development cohesive, balanced and, altogether, sustainable of the agri-food sector.

Figure n.1- The model of total food integrity



3. Health, consumer empowerment and ICTs in the agri-food sector

The increasing worries on the social and economic costs of the chronic illnesses, as well as the consumers' attention to styles of life cures and healthy, has determined a transformation of the consumer health from functional variable to conclusive of the agri-food sector development. The connected themes to the health and to the relative problems, so doing, asked more and more new and wide responsibility to the different institutional, entrepreneurial and civil levels. The interconnections between food and health, give particularly evidence to the necessity to balance again the existing relationships among the production and the consumption in terms of actions, tools, resources and opportunity, offering to the consumers, to the light of a new model of food integrity, the authority and the means to autonomously manage their own health. To the respect, the tools currently individualized in virtue of the dominant model of development among which, for instance, the marketing in its different forms, the modern technologies of the information and the communication, the logistics, as the same tools of the social responsibility are often applied in an optics of brief period and not in an homogeneous way and not integral in the territories. Such tools, in fact, are developed and managed in the optics to support enterprises, territories and institutions for the exploitation of the "assistant values" to the food product like the safety and the salubriousness, the environmental sustainability, the animal welfare, the typical, the ethicality of the productions, information need on the origin over than on the prices.

In line with such perspectives, however, the distributive systems and of reflex, considering now a day the consolidated power of the great organized distribution, also the productive and industrial systems consolidate and exploit their own informative patrimony intercepting the tendencies of consumption that can allow better them to get an economic advantage on the market. In such way, the informative asymmetries are more and more widening, or, there is more and more interest to preserve situations that an integral sharing of all the information doesn't allow among the individuals playing in the economic trial, informative power becomes contractual power and therefore economic⁽¹¹⁾⁽¹²⁾. Particularly, when one of the actors playing in the agri-food system has more or better information on the availability to pay for the health, this asymmetry can reflect on the ability to influence on its own favor the health price. Accordingly it ended with a speculation on the human health as purely economic, and the informative capital of the consumers on the links between feeding and health and on the correct alimentary behaviors, becomes besides, only function of the cultural baggage and of the personal experiences of the single one rather than of the informative flows coming from the whole system. In such sense, it will seem paradoxical, but the tendencies of the actual model of development of the agri-food sector and above all

some used marketing tools are in conflict with the fundamental ones of the economy according to which: "The consumption is the only goal and purpose of every production; and the interest of the producer should be considered only in the measure in which it can be necessary to promote the interest of the consumer. This motto is so clearly evident by itself, that would be absurd to try to explain it. But in "Wealth of the nations" (1776), Adam Smith asserts that "in the merchant system, the interest of the consumer is almost always sacrificed to that of the producer; and such system seems to consider the production and not the consumption as the goal and the definitive purpose of every activity and every commerce".

Insofar, the new tendency of the agri-food sector toward a model of food integrity would ask for a contextual revisit of that tools through which information are communicated among the different components of the system. This, to the purpose to give a different position to the health's theme to the center of the staircase of the values and affairs of the agri-food system. In such context, particularly, the Information and Communication Technologies assume a strategic importance, as fundamental tools for the transmission, the management and the sharing of the information and the knowledge. In the agri-food sector it is undisputed the important role of the ICTs as tool to support the competitiveness of enterprises and of territories^(13, 14).

The ICTs, particularly, constitute the drawing motor of the modern economies and absolute priority of the politics for the innovation^(15, 16, 17). Succeeding in communicating information of any kind and in indefinable quantity, they offered themselves as valid tools as support of the great distributive chains as simplifiers agents of the relationships with the consumers, or also of the inside management of the enterprises of transformation and, more and more on speak about ICTs when on report about the agriculture of precision. In other terms, the digital revolution constitutes by now a trial in action in the agri-food system, or better, in the most advanced realities of the agri-food system.

3.1 ICTs diffusion in Italy

The data related to 2007, emerged by the survey conducted by the Istat on the ICTs in the enterprises, in Italy, they first of all underline that the sector of the alimentary industries, of the drinks and of the tobacco, overall it is still set to the limit in the adoption of the computers in comparison to the other economic sectors, preceding only the sector of the textile and of the clothing and the tannery industry. From 2002 to 2007, however, the values related to the adoption of computer in firm have sensitively gone decreasing. In the 94,93% of the cases, in 2002 the noticed enterprises declared to adopt a computer in firm, while the datum related to 2007 is equal to the 91,84% of the cases. Altogether, the percentages are increased instead, related to the number of employees that in the alimentary industries, of the drinks and of the tobacco use the PC with Internet connection at least once the week: from 15, 68% of 2002 to the 22,71 of 2007.

Besides, the presence of sites web of such enterprises has gone increasing. In fact, in 2002, in the 45% of the cases such industries were present online with a site web, while in the 2007 such percentage has been climbed to 59%. It treats, however, of values still too much low if compared with other economic sectors. From the data emerge, then, percentages of the use of computer most greater in the firms in the North in comparison to the South even if it concerns not only very meaningful variations. For instance, in 2007, the enterprises of the Piemonte, of the Lombardy and of the Trentino Alto Adige have declared approximately in the 98% of the cases adopted computer in firm, while for Campania, Basilicata and Molise the corresponding percentages are respectively 96,31, 94,18 and 92, 36% of the cases.

Mostly meaningful, instead it is the difference between North and South, as it regards the presence on line of some enterprises through the sites web. In fact, in 2007, in the 46,34% of the cases the firms of the South and the islands have declared to possess a site web, to forehead of the 60% of the in relief cases for the North.

Naturally, possible unbalances in the availability and in the use of the ICTs not only report the impossibility to exploit the opportunities of business that such tools offer to the agri-food firms, but above all, a substantial limit in to contribute to the empowerment of the consumer in comparison to the health's themes connected to the feeding. This last represents an essential condition to swiftly progress toward a model of food integrity in which the consumer has to be completely informed in comparison to the relative choices and models of consumption to feed.

The ICTs, can represent particularly an important opportunity for the strategies of marketing of the agri-food firms, above all through the appeal to the web marketing. The agri-food enterprises, in fact, internationalizing this new culture of market more and more founded upon the ICTs, modifying their own models of business operation on the possible applications offered by the Net^(18, 19). These, can consist

particularly in channels of sale on line, channels of support to the commercial activity in the pre and post sale phases, in channels of communication to inside and external use to improve the management of the transactions, in channels of communication from and toward the markets, to promotional use and of marketing. To the actual state, however, the benefits that the firms can draw from the different possibilities of implementation of the Internet marketing in the agri-food sector have not been cultured in homogeneous way from all the "actors" who operate on the global market.

In Italy, particularly, empirical studies realized in different regional contexts put in evidence the fact that the firms even if have understood the importance of Internet as a tool able to confer visibility in the world market, are not still able to use it in its full potentialities as a related tool able to increase the business competitiveness ⁽²⁰⁾.

In effects, limits to the use of the ICTs have also emerged from the search conducted in the present work to appraise the propensity of the Campania manufacturing firms of "Mozzarella di Bufala Campana" to the use of the web as integrative tool in the politics of marketing and to try to understand the appeal to the different tools of web-marketing as possible vehicles for the empowerment of the consumer. This last, finds particularly in the Net optimal factors of development, because virtual spaces of stable meetings are built between enterprises and consumers able to progressively reduce the distance between them and to produce knowledge and useful information to both.

4. ICTs, health and "Mozzarella di Bufala Campana": the empirical survey

The dairy sector is very important for the economy of Campania, with some productions that interest big part of the regional territory. It strongly feels the effect of some complexity of the regional zootechny that, according to the raised kinds and productive lines, proposes business models, productive trials, markets of reference and really heterogeneous structures of transformation and distribution ⁽²¹⁾.

The animal husbandry breeding, with pastures and state grounds, is diffused in almost all the regional territory. The breeding of the milk cattle assembles above all in the zones of the Matese and Monte Maggiore, in the province of Caserta, in the area of the Titerno and the Alto Tammaro, in the province of Salerno in the territory of the Tall and Middle Sele, of the Calore Salernitano and of the Alburni and in Vallo of Diano. The ovine-goats breedings, whose production of milk is destined to the transformation, are assembled above all along the inside band of the Appennino, in the zone that extends from the Matese to the Vallo of Diano ⁽²²⁾. The buffalo breeding, results instead, assembled in the province of Caserta and Salerno.

The articulation of the dairy sector in Campania, to every way, often introduces dichotomic reality to the different levels of the chain, and it draws above all rather a non homogeneous picture of the distinctive peculiarities of the producers and of the transformers. This way, to models of undisputed excellence, generally proper of the buffalo breeding, strongly integrated with the other operators of the food chain, a myriad of firms is contrasted, expression of incapable models to contribute to the success of the sector. Accordingly, productions of merit what for instance mozzarella, ricotta, provola, caciocavallo, provolones, see their birth both in firms which are in the forefront from a structural and technological point of view, and in reality in which, still and unfortunately, there are unresolved problem tied to the qualitative and hygienic sanitary aspects. In truth, are these realities to represent, unfortunately, still a limit to the definition of sustainable perspectives for the development of the whole sector. In some territorial realities, besides environmental degrade, and structural backwardness, puts in crisis the sector also nullifying the efforts of the most virtuous enterprises. To the respect, the recent scandals, that have interested the "Mozzarella di Bufala Campana" for the cases of positive results to the dioxin (a dangerous toxin that causes skin disfigurement and is linked to cancer, to birth defects and organ failure, and that can be dangerous even in small amounts) found in some sample of milk and mozzarella drawn in the dairies of different areas of Campania, represent a concrete example of the strong economic repercussions that have interested the whole sector, and accordingly, the economy of the region.

In Campania, in fact, the number of the producers and transformers of the cheeses DOP is enough meaningful in comparison to the whole midday of Italy (see table n.1). After the food alarm for the dioxin and the consequent breakup among the production and the consumption, however, the sector has progressively gone weakening, determining strong economic and social repercussions in the different

provinces of Campania and particularly in the province of Caserta, where the problem of the waste had already put to hard test the sensibility of the population to the dangers for the health ⁽²³⁾.

Table n. 1- Producers and transformers of cheese DOP. Details for region

Regions	Agricultural Farms		Transformers		
	Number	Breeding	Total	whose	
				Cheese workers	Maturation workers
Piemonte	1053	1057	155	113	152
Valle d'Aosta/Vallée d'Aoste	1152	1163	194	193	194
Lombardia	6364	6974	474	343	409
Liguria	nd	nd	nd	nd	nd
Trentino-Alto Adige	1403	1558	33	31	33
Bolzano/Bozen	538	541	2	2	2
Trento	865	1017	31	29	31
Veneto	4283	5110	133	100	133
Friuli-Venezia Giulia	749	750	41	29	41
Emilia-Romagna	3981	4037	532	420	139
Toscana	1018	1024	19	17	19
Umbria	4	4	-	-	-
Marche	52	52	3	3	3
Lazio	810	815	15	15	15
Abruzzo	nd	nd	nd	nd	nd
Molise	36	36	6	6	6
Campania	1245	1283	120	120	120
Puglia	124	127	12	12	12
Basilicata	22	22	6	6	4
Calabria	29	29	4	4	4
Sicilia	58	58	62	52	26
Sardegna	10928	11170	142	128	142
ITALIA	33311	35269	1951	1592	1452

Source: Istat, 2009.

The province of Caserta, so, offered its territory as an ideal field to experiment the significance of Internet in a context of alarm for the health appraising the reality of the use from the enterprises, as support to the strategies of marketing, and from the consumers as essential informative channel for their own health.

4.1 Internet in the dairies of the province of Caserta

With the purpose to underline the propensity to the use of Internet in the enterprises vocated to the production of quality, and to appraise the significance of the strategies of web marketing for the consumer health, an empirical survey has been conducted in an area of origin of the milk of transformation and elaboration of the cheese "Mozzarella di Bufala Campana": the province of Caserta. The area of production is established from the Disciplinary of Production n. 258 of 6.11.2003 to the article 2. Upon the disciplinary, the zone of origin of the milk of transformation and elaboration of the cheese "Mozzarella di Bufala Campana" includes various territories of the Region Lazio, Molise, Puglia and Campania. Relatively to Campania, the interested administrative territories are those related to the Province of Benevento (communes of Limatola, Dugenta, Amorosi), to the Province of Naples (commons of Acerra, Giugliano in Campania, Pozzuoli, Qualiano, Arzano, Cardito, Frattamaggiore, Frattaminore, Mugnano in Naples) and to the whole territory of the Province of Salerno and Caserta.

Particularly, the survey has taken in examination the dairies authorized to the exercise of the activity by the "Sector Provincial Ecology, Guardianship of the environment, Environmental clean up and Civil Protection of Caserta", of the Regional Council of Campania. According to the 2008 data the dairies industries are 202.

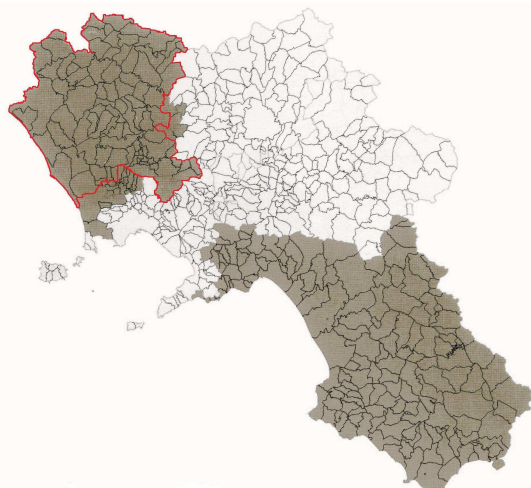


Figure n. 2 – Area of production of the “Mozzarella di Bufala Campana” DOP and field survey

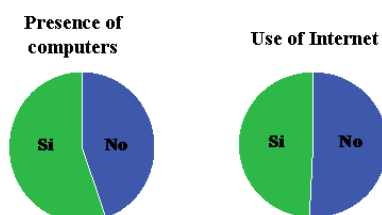
Their presence in 67 communes of the province appears enough articulated but, overall, not unhomogeneous. Their number is relatively raised in the communes of Cancellò Arnone, Maddaloni Aversa, Castel Volturno and Mondragone (fig. n.2).

The presence of just one dairy constitutes the characteristic of 26 communes of the province of Caserta. It is to underline however that such characteristic doesn't report a smaller importance or a smaller development of the relative business activity since very competitive business realities exist also among the communes that present only a dairy.

The survey, particularly, has foreseen the direct administration to a casual sample of 70 dairies of a questionnaire structured in 3 parts up to respectively analyze: the structural characteristics of the firm, the formalities of use of Internet and the strategies of web marketing adopted. The questionnaires have been administered in the inclusive period between October 2007 and February 2008 through interviews face to face with the persons responsible of the firms. Any way, from the survey not only emerged some indications on the presence and therefore diffusion of Internet on the investigated territory but above all on the value of this technology and on the obstacles that a full expression of the connected potentialities are interposed by firms strongly anchored to the territory but that hardly communicate this peculiarity in their action on the market if not through some calls to the consortium to which they refer to.

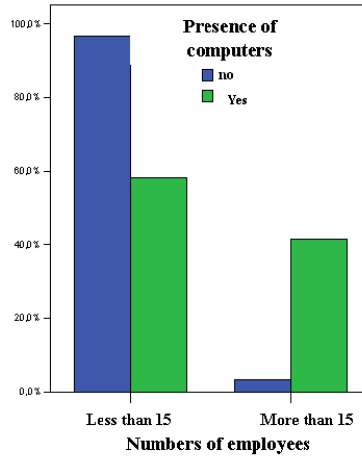
The most greater part in the investigated dairies have declared a number of employees less than 15 (precisely 75,4%). Besides, the local market would represent the principal result of the productions and just the 23% of them would serve the international market, exclusively in the 12% of the cases. Particularly, in 50,8% of the cases, the dairies serve just the local market; in 18,5% the local and regional market; in 7% of the cases also the national market.

Around the 45% of the interviewed firms (44,6%) has declared that they don't use the computer in their firm. In the almost totality of the cases, such firms have justified the scarce importance of the computer alleging as fundamental motivation the fact that the production of mozzarella was exclusively destined to the local market and that accounting was submitted to a chartered account. The firms that have declared to possess a computer, have responded always then not relatively in affirmative way to the use of Internet. In fact, in the 49,2% of the cases, the firms have declared to use Internet or other computers network, to the 55,4% that has declared to possess a computer (graphic n.1).



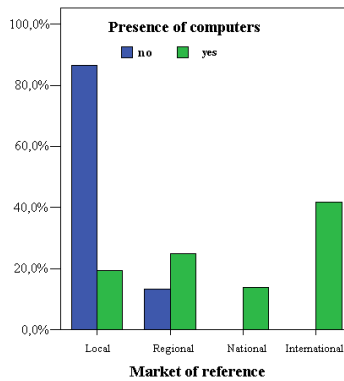
Graphic n. 1 – Presence of computer in the firm and use of Internet or of another computer network

In other terms, the presence of a computer in a firm don't mean the use of Internet. In fact, in the 7% of the cases, firms that exclusively serve the local market, have declared to use above all the computer for the accounting, but they don't want to use Internet not only to contain the costs but also to avoid distractions to the employees. The absence of computer, besides, is remarkable among the firms that have declared an inferior number of employees to the 15 unities; but, in every case, the number of employees cannot be taken as parameter for intercepting the motivations of the use of the computer in firm. In fact, among the firms that have declared an inferior number of employees to 15 there is an elevated percentage that uses the computer (graphic n. 2).



Graphic n. 2. Presence of computer for class of employees

With reference to the market of destination of the production, the totality of the firms that have declared to serve the International market, besides that National, posses a computer and also Internet.

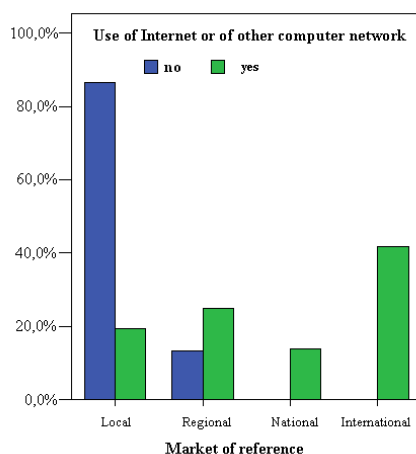


Graphic n. 3. Presence of computer for destination of the production

In the 63% of the cases, besides, have been their children that have decided to place side by side their parents in the management of the firm, to introduce the computer, to equip it with the most appropriate technologies and to follow the news of the relative market.

Overall, on the use of the computer and Internet it seems anymore the market of destination of the productions to engrave that the employees' number. This verification, partly, underlines that the use of Internet is produced by a greater mental opening, from the more deepened knowledge on the relative potentialities over that from the boosts coming from the outside. In fact, the enterprises that overlook on different markets from that local are more inclinable to know different reality and often more evolved, in which wouldn't be possible to imagine an enterprise without Internet.

Among the firms that use Internet, then, the employees' number that really has access to it is very low: he goes from an inclusive percentage among the 1 and 3% to the enterprises with less than 15 employees to a maximum of 25% for those with more than 15 employees.



Graphic n. 4. Use of Internet for destination of production.

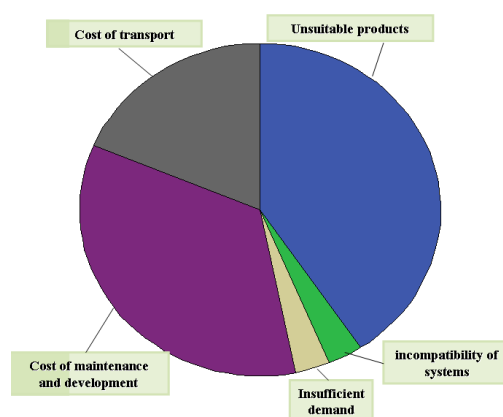
As it regards the applications of Net, the level of diffusion of the systems INTRANET, EXTRANET and WAN is still very low. Besides, the connection happens generally through DSL; yet, some enterprises have manifested their malcontent since, also being interested to this typology of connection, they aren't still able to profit of it for the absence of coverage in the commune of residence.

As it regards the strategies of web marketing promoted from the firms, in truth, they report a scarce development of virtual tools in comparison to the necessary functionalities to attract and to serve the cyber - consumer. The enterprises that use Internet, in fact, only in the 33,8% of the cases possess a site web; the most greater part of them has a promotional and informative character and there is a scarce presence of sites trained to the electronic commerce. None of the firms in possession of a computer and Internet effects purchases through the Net, while only the 37,5% of them realize sales through Internet although the declared percentage subsequently on the total turnover of the firm is inferior to 4,5%. The final clients are almost exclusively foreign consumers, few those national. The firm generally, invites the client to effect superior orders to a datum proper weight with the purpose to amortize the costs of the consignment. In fact, if among the principals beneficent of the sale on line, the firms have primarily pointed out the increase of the quality of the service to the client and the reduction of the times of transaction, one of the principal impediments to the sale on line is represented really from the costs of transport and consignment.

In truth, the data sees the mozzarella (and its by-products) not suited for the sale on line, as a highly perishable product and realizable in limited quantity, it noisily screeches with the expectations of who, instead, already realize sales of this type and would desire to increase the relative quotas. These last, have individualized, particularly, as obstacle to the success of this channel of sale the relative costs of maintenance and development. In other terms, recognizing in Internet a market apart that must be fed with unusual initiatives and dynamics ones, they expresses the necessity to devote greater resources, or better to say, exclusive resources for the development of the relative sector.

Although Internet is also used broadly in the relationships with organizations of government, nevertheless, such use is limited to the harvest of information or to the download of models that rarely on line are compiled. The functionality of Internet in comparison to the formation (e-learning) or to the finance are practically unknown in the firms of the sample of survey, at the same time are practically absent other systems to communicate toward the outside with other suppliers or distributors. In other terms, whereas it exists (and it deals with a low percentage, 7% of the cases), the computerized system is inside to the enterprise.

Finally, as it regards the other characteristics of the sites web, besides the catalog of the products (and rarely of the prices), to the recipes and to information on possible points sale, none of the sites offers information on the effects for the human health of an excessive consumption of the offered product and they rarely contain information around the relative nutritional value.



Graphic n. 5. Obstacles to the sale on line

Therefore, as it regards the use that the dairies make of Internet, in comparison to its real potentiality, the survey signals, unfortunately, substantial limits both in comparison to the scarce development of the tools of the web marketing both in comparison to the informative demand of the consumers about their health.

4.2 The importance of Internet for the consumers in a situation of alarm for the health

With the purpose to gather the importance for the consumers of the availability on Internet of complete information and detail in presence of cases of alarm for the health, an empirical survey has been conducted to the Campania consumers. Particularly, the survey has taken in examination the consumers of “Mozzarella di Bufala Campana”, following the alarm for the cases of positivity to the dioxin found between the month of October and the month of February of 2008 in some sample of milk and mozzarella drawn in dairies of different areas of Campania. The survey has foreseen the direct administration to a casual sample of 150 consumers of a questionnaire structured in four parts respectively aimed to analyze: the consumers socio-demographic characteristics; the habits of the use of Internet; the awareness that the consumers have about some existing link among health, feeding and information (for instance, information on the alimentary behaviors, on the methods of production, on the environment and on the pollution of the surrounding sites to that productive); and, finally, the propensity toward Internet in a situation of food alarm for the health. The questionnaires have been administered between March and May 2008, in 3 of the principal dairies located in the province of Caserta, of Salerno and of Benevento. The socio-demographic composition of the analyzed sample is characterized for the prevalence of belonging men, in 38,7% of the cases to the class of age 40-50 years, for the most part conjugated with children and in 30% of the cases graduated. As it regards the profession, prevail employees and free represented professionals, respectively, from 32,7% and from 30,4% of the sample.

From the analysis of the habits of the use of Internet, it emerges, that the interviewed sample, the 65,7% of the cases, frequently uses Internet and possesses a connection Adsl in his own residence. In comparison to the motivations of the use of the Net, the interviewed people declare to have precise motives in the harvest of information on Internet; there are not only job reasons (29,6% of the cases), but above all reasons that, in opposition, it is possible to define of relaxation, because they aren't connected to the appointment of job. Among these, there is for instance the consultation of, daily on line (in the 13,4% of the cases), the share to social network (in the 37,4% of the cases), to chat (21,5%) to forum (6%) and other applications, among which the exchange of e-mail (in the 16% of the cases).

As it regards the typology of picked information, besides, the interviewed consumers declare to use the Net to get information relatively to the tourism (in 21,5% of the cases), to the credit (also insurances, monetary and financial market) (16,5%), to the transports (15%), to the industry (3,4%), to the agriculture (3,6%), to the job (13,3%), to the education (3%), to the justice (3%), to the surgeon and the health (12%), to the environment and the territory (5,7%), to the politics (3%).

Over that the leisure time and the recreational activities, therefore, the harvest of news also pertains to the economic, social and political field and is evident, therefore, that the interviewed consumers attribute the

value of strong social adhesive and important vehicle of information to the Net. In fact, analyzing the variable related to the awareness that the interviews have about the existing link among health, feeding and information (via Internet) on deduce in evident way the importance, for the protection of their own health, that they attribute to the food information. Particularly, tightening the variable of survey just to the information on the food behaviors, on the food properties and on the characteristics of the environment in which they are produced, in most cases, the interviewed subjects have declared to agree with the affirmation related to the importance for the health of the availability on Internet of certain information of this type (table n.2).

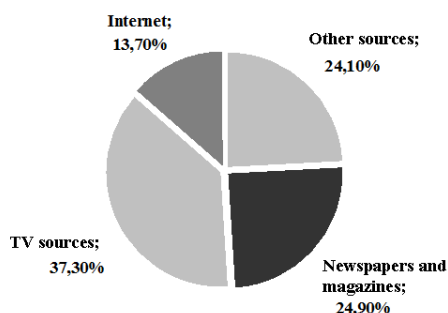
Table n. 2. Awareness of the existing link among health and information on the alimentary behaviors on the foods and on the environmental sites of the production

	<i>strongly agree</i>	<i>agree</i>	<i>neutral</i>	<i>disagree</i>	<i>strongly disagree</i>
Availability of information on Internet about feeding, food and its environment of production is important for my health	33,6 %	16,4 %	3,7 %	20 %	26,3 %
Information about the feeding and the environment where such food are produced could better protect my health	28,6 %	40 %	7,7 %	18 %	5,7 %
My health doesn't depend from related information to the foods eaten by me and the environment where they are produced	10 %	13,3 %	10 %	40 %	26,7 %

The analysis of the propensity toward Internet in a situation of food alarm for the health, has finally been realized verifying:

- the weight of Internet in comparison to other informative channels relatively to the alarm for the dioxin in the “Mozzarella di Bufala Campana”;
- the information perception conveyed through Internet (sites web, portals, e-mail, chat, social network and other applications) and the degree of satisfaction of the interviewed people in comparison to the level of information received.

In the 37,3% of the cases, consumers were aware of alarm for the dioxin from the television media. In 24,1% of the cases from other informative sources. Only in the 13,7% of the cases consumers were aware of the dioxin through Internet (graphic n. 6).



Graphic n. 6. The weight of Internet in comparison to other informative channels in a situation of alarm for health

As it regards the perception of the interviewed people of the available information on Internet, instead, from the table n.3 clearly emerges that they relatively complains about a certain difficulty in the retrieval of transparent, complete and certain information about the alarm for the mozzarella to the dioxin.

Table n. 3– Perception of the information conveyed through Internet

	<i>Not at all</i>	<i>A few</i>	<i>On average</i>	<i>Enough</i>	<i>A lot</i>
Complete	29,7	26,7	20,3	16,9	6,4

Certain	39	22,1	19,2	15,9	3,8
More expansive	38,4	25,4	19,3	10,6	6,3
Easy to obtain	19,6	20,7	20	29,4	10,3
Not easy to understand	26,3	25,3	20,4	19,7	8,3

Besides, the results of the expressed satisfaction degree is particularly low from the interviewed people in comparison to the information received through Internet. Among the factors of greater dissatisfaction for the consumers there are, in most cases, the scarce clarity and accuracy of the information and the skepticism around the reliability of the same. Particularly, the consumers report the prevalence of information of the commercial nature aimed to reassure them about the salubriousness and the quality of the product, despite to a scarce diffusion of news on the implications for the consequential human health, in general, from the consumption of mozzarella and, in the specific one, from the risk of the presence of dioxin in the same one. Finally the interviewed people declare to trust more and more in the information gotten by neutral informative sources, reporting therefore the absence of an informative source able to assure the necessary equilibrium among consumer health protection and affairs of the productive sector.

5. Conclusions

The present work has underlined strong limits to a balanced development of the ICTs inside the dairy sector, hindering in a strong way the relative functionality for the enterprises and for the consumers. Particularly, the survey to two levels ended underlining the met resistances in comparison to the objective to innovate and to spread the digital culture in the manufacturing enterprises of “Mozzarella di Bufala Campana”.

From the survey, particularly emerged a disappointing data, as it regards the diffusion of Internet in the dairies of the province of Caserta. If we think, in fact, that the priority objective of an inclusive Information Society is that one to equip every enterprise with Internet, it appears strong the existing discrepancy in the investigated sector among those business realities that are gifted of it (and also use other computer technologies) and those other business realities that aren't provided of it and that, even avoiding the relative use of it.

In conclusion, the serious crisis of trust of the consumers, witnesses of food scandals, ask more and more for a new optic of the roles and the responsibilities of all the actors who participate to various title in the realization of a food product and that pushes more and more to question themselves on the centrality of the actors of the relative weaving factory in the determination of the same consumers' health. In such optics, the principal challenge to be faced for the sector of the productions of quality of Campania will be represented by the ability of enterprises, territories and institutions to know how to answer to the consumers question of health and well-being, through not only the offer of healthy and genuine foods but also and above all through a plan of communication integrated facing the consumer's empowerment on the themes of the health.

References

1. Comba P, Bianchi F, Fazzo L, Martina L, Menegozzo M, Minichilli F, Mitis F, Musmeci L, Pizzuti R, Santoro M, Trinca S, Martuzzi M. (2006), “Cancer mortality in an area of Campania (Italy) characterized by multiple toxic dumping sites”, *Ann NY Acad Sci* 2006;1076:449-61.
2. World Health Organization (2007), *Population health and waste management: scientific data and policy options*. Report of a WHO workshop Rome, Italy, 29-30 March 2007.
3. Vrijheid M. (2000), “Health effects of residence near hazardous waste landfill sites: a review of epidemiologic literature”, *Environ Health Perspect*; 108 (Suppl 1):101-12.
4. Hartwig de Haen (2000), “Qualità e salubrità degli alimenti nel contesto della globalizzazione”, *La Questione Agraria* n.2.
5. World Health Organization (2004), *The global strategy on diet, physical activity and health*, Geneva, WHO.

6. World Health Organization (2005), *Preventing Chronic Disease: A Vital Investment*, Geneva, WHO.
7. Annunziata A., Misso R. (2009), "Alimentazione, salute e benessere del consumatore: da determinanti di scelta ad opportunità di mercato", *Atti del XVII Convegno annuale della Società Italiana di Economia Agroalimentare dal titolo "Qualità alimentare: competitività del sistema, sicurezza e benessere del consumatore"*, Firenze 25-27 giugno 2009.
8. Cesaretti G.P., Scarpato D. (2009), "Qualità alimentare e competitività di sistema - Per una politica integrata dell'alimentazione", *Atti del XVII Convegno annuale della Società Italiana di Economia Agroalimentare dal titolo "Qualità alimentare: competitività del sistema, sicurezza e benessere del consumatore"*, Firenze 25-27 giugno 2009.
9. World Health Organization (2009), *Protecting health from climate change: Global research priorities*, Geneva, WHO.
10. Grazia C., Green R., Hammoudi A. (2008), *Qualità e sicurezza degli alimenti – Una rivoluzione nel cuore del sistema agroalimentare*, Franco Angeli.
11. Green R. (2002), "Recueil des travaux sur l'impact de la Traçabilité et des technologies de l'information et de la communication dans l'agroalimentaire", INRA, Paris.
12. Green R., Hy M. (2002), "Internet et chaînes d'approvisionnement agro-alimentaire", *Economie Rurale* 272.
13. Porter M.E. (2001), "Strategy and the Internet", *Harvard Business Review*.
14. Porter, M. E., e Millar, V. E. (1985), "How information gives you competitive advantage", *Harvard Business Review*.
15. Foray D. (2000), *L'économie de la connaissance*, édition la Découverte.
16. Parsons G. L., (1983), "Information technology: a new competitive weapon", *Sloan Management Review*.
17. Petit P. (1998), *L'économie de l'information: Les enseignements des théories économiques*, La Découverte, Paris.
18. Galizzi G., Pieri R., (1998), *Tecnologie dell'informazione, consumatori e sistema agro-alimentare*, FrancoAngeli.
19. Stricker, S., Sumner, D., Mueller, R. A. E. (2003), "Wine on the web in a global market: A comparison of E-commerce readiness and use in Australia, California and Germany", in *Atti della IV Conferenza dell' EFITA European Federation for Information Technology in Agriculture*. July, Hungary.
20. Annunziata A., Misso R., Vecchio R., (2008), "Information and Communication Technologies in the Campania Region Wine Business", *Proceedings of International Advanced Workshop on Information And Communication Technologies for Sustainable Agri-Production and Environment (Awictsae 2008), May 22-23 2008, Alexandroupolis, Greece*.
21. Cacace D., Falessi A., Marotta G. (a cura di), (2005), *I sistemi agroalimentari e rurali in Campania – Filiere e territori*, FrancoAngeli.
22. Marotta G. (a cura di) (2005), *La riforma della Politica Agricola Comunitaria – Analisi dell'impatto in Campania*, FrancoAngeli.
23. OECD (2004), *Agriculture, Trade and Environment – The Dairy Sector*.