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## SESSION IV: THE QUALITY OF AGRICULTURAL PRODUCTS AND HUMAN HEALTH

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## PAPER 3: QUALITY OF FOOD PRODUCTS AND EFFECT ON DISTRIBUTION

*Gian Luca Bagnara*

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**Center for International Food and Agricultural Policy**
**University of Minnesota**
**1994 Buford Avenue, 332 C.O.B.**
**St. Paul, Minnesota 55108-6040 U.S.A.**
**Phone: (612) 625-8713**
**FAX: (612) 625-6245**

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# Quality of Food Products and Effect on Distribution

Gian Luca Bagnara[1]
Dipartimento Territorio e Sistemi Agro - Forestali
University of Padua
Italy

**Summary.**

The objective of this study is to identify the relationship between food quality and store's perceived quality and how they effect the perceived value of products. In particular, the organic product's characteristics have been considered.

A consumer survey was carried out through a questionnaire. The sample was stratified by purchasing performance of customers: supermarket, specialties' store, grociery's, producers market. The statistical model was devoted to understand the causal interactions among the explanatorial variables rather than their functional structure. For that purpose, path analysis was applied.

Specialties' store interacts with food characteristics as following: health, no perservatives, nutrient, good for children, producer identifiable, fresh. Supermarket is associated with: entertainment, convenience, practicity, generic magazines.

## 1. Introduction.

Competition in no longer only about price, it is also about attracting customers on the basis of product range, store ambience, packing and sale of fresh goods. Though marketing managers are interested in defining the consumers' perception of value on food quality, this aspects has been rarely investigated by researchers. Dodds, Monroe and

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[1] Current address (since November 1994): Istituto Sperimentale per la Frutticoltura
Piazzale della Vittoria 15 - 47100 - Forlì (Italy)

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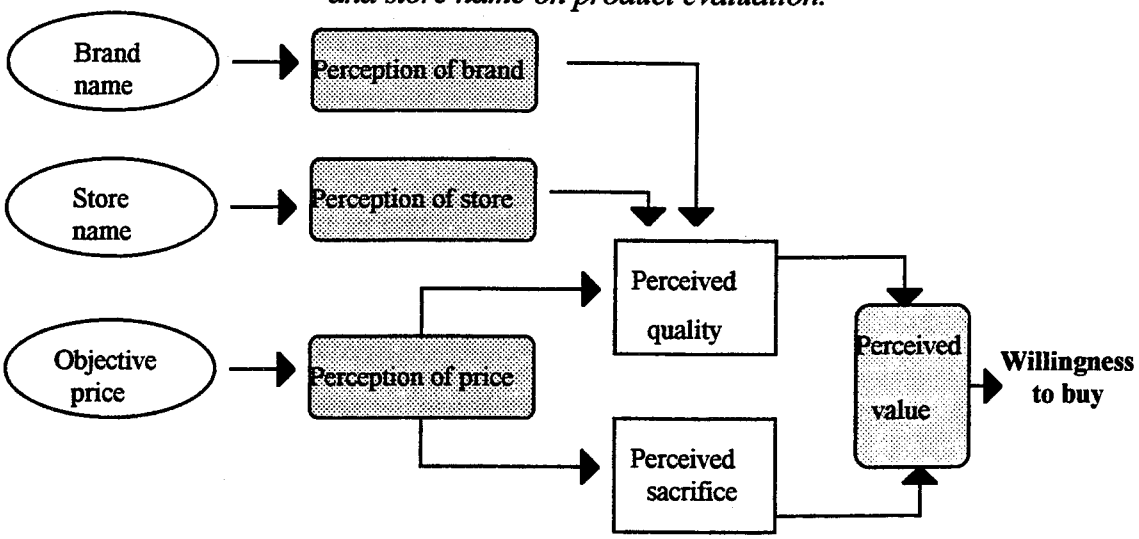
Grewal (1991) proposed a conceptual model relating price, perceived quality, perceived value, and willingness to buy (figure 1)

*Figure 1. Conceptual model of the effect of price, brand name, and store name on product evaluation.*




According to this model, if price, as an external cue, is perceived differently than its "objective" characteristic, buyers are lakely to use similar perceptual processes for both brand and store names. Therefore, price, brand name, and store name are three external cues that influence perceptions of products quality and value, and hence willingness to buy (Zeithaml, 1988).

The basic hypothesis of this study is that the perceived value relatively to other extrinsic characteristics, such as brand and store name, may depend on the nature of the products and their ranges. In turn, the perception of store name may depend on quality characteristics of product sold. In other words, retailers manage to transfer the perception of food quality characteristics to the store quality in order to improve the global perceived value, the willingness to buy, and the consumers' loyalty. This approach is also consistent with the Lancaster's (1966) concept of commodities as bundles of characteristics/attributes as a structure for relating goods within utility functions.

The objective of this study is to identify the double relationship between food quality and store's perceived quality and how they effect the perceived value of products. Furthermore, to understand the actual food system in Italy, a paragraph will be devoted to the distribution's structure and evolution.

## 2. Food consumption and distribution in Italy

Even though Italy is an industrialized country still has a quite high share of food, about 18-19%, on total household expenditure. However, in comparison to the European average, the Italian consumer shows a quite different mix of food expenditure (figure 2): higher for pasta and mineral water, but lower for snacks, bars, margarine and ready-made products.

Also the Italian distribution system is quite differentiated from the European average (figure 3): it is still traditional with a large number of retailers per population but it is facing a period of great change in terms of organization, concentration and conquest of countervailing power.

Retailer has become a crucial stake-holder substantially affecting market dynamics through the following tools: 1) concentration; 2) labeling; and 3) shelf space management. Consequently, that market might drift into inefficient equilibrium due to the interactions between retailer and manufacturer. Since the beginning of '90s, the big distribution is getting a large bargaining power also on grocery's products reaching more than 35% in 1993 from 12% of 1985 (figure 4. The percentage of grocery products, into the supermarket and hypermarket (or supercenters), shows a growth parallel with that of the number of supermarkets. That relationship is a consequence of the strategic role of grocery products and, mainly, "fresh produce" in improving the perceived quality of store.

Just recently, following the recession of 1993, Italy is facing and welcoming the introduction of hard discounts, mainly from German and France companies. That evolution is forcing also a greater price competition among retailers with benefit for

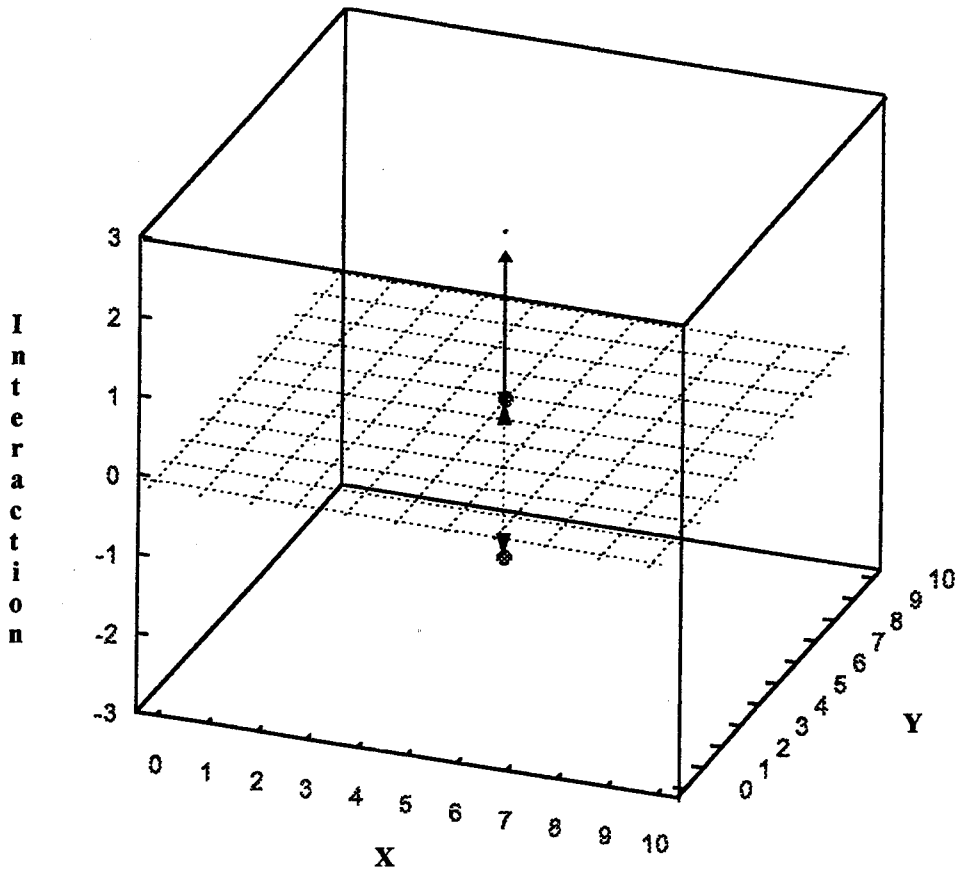
consumer though he/she is still suffering a large price spread between branded products and discount's products (figure 5).

## 3. Methods

A sample of 200 consumers, stratified by 4 retailers (supermarket, grocery's, producers' market, and specialties' shop), has been interviewed about organic products. The questionnaire used was structured into 3 parts: social and cultural characteristics of the household; food style, including shopping, of the household; and perception on organic products. This methodology was adopted following the conclusion of Ellis and Uncles (1991). According to these Authors, only in an unsegmented market, where all items compete equally, there is no particularly high or low correlation between buyers if one item with those of another.

The statistical processing was devoted to understanding the way with which retailers' characteristics affect of products' value through food quality perception and, in turn, food quality affect consumer's perception of store's quality. In order to analyse the relationships between food quality and store's characteristics causal modelling (CM) technique by path analysis was used instead of the standard method of multilinear regression (MLR). MLR is considered inappropriate since it treats each independent variable (X) as acting directly upon the dependent variable (Y). If reason exists to suggest that a particular X variable acts on Y indirectly by means of an intermediate effect upon another interposed X variable, this is difficult to isolate from the MLR model and consequently the causal connections between independent variables cannot be deduced. Indeed, if high correlations exist between variables they can no longer be assumed to be "independent" and one of the prerequisite conditions necessary for MLR is not satisfied (Sokal and Rohlf, 1981). CM, on the other hand, has been specifically developed to permit analysis of causal mechanisms between several variables simultaneously in order to define their interactions.

This procedure has been chosen since the main target of the model is not the direct role of the explanatory variables and their structural function but the interactions among them, in other words among consumer's perception of retailer and quality characteristics of organic products. Instead of being concern about the structural function of the model, much more attention has been paid on the interaction that alters the performance of variables as showed in the following graph:




The correlation coefficient of Spearman have been calculated because of normal distribution and linear structural relation are not required. In fact, the presence of interactions brings to a lack of these two assumption. Only path coefficients significative at P=0.01 have been considered and the determination coefficients have been calculated.

## 4. Results and discussion

### 4.1 Food style

The traditional food style, where lunch and dinner are the most important meals taken by the whole household together, is still the most performed. Breakfast is not very structured and quite often is composed only by coffee and/or milk. On the other hand, lunch is usually structured by pasta and second course (meat, cheese, ecc..) and also fruits are included. Just *second* course alone or with some fruits is the main structure of dinner.

The consumers interviewed are in a quite deep contradiction between temptation towards good meals and attention to health. They try to reduce fats and look for food without perservatives but good meal is appreciated. With these objectives organic products catch the attention of consumer even though their meaning is not very clear. Supermarket and grocery's are the main retailers where consumers shop and their preference is mainly due to trust, fresh products, hygienic warranties and perception of quality.

### 4.2 Perception of organic products

As far as organic products are concerned, the consumers perceived them healthy and trustable but, at the same time, have some misunderstandings considering them more nutritional, digestible, old fashion and better taste. Consumer wants to be more informed about organic products and for that purpose considers specialized magazines and retailer the best source.

### 4.3. Results from the path diagram

The figure 6 shows the direct predictors variables (positive and negative effects) related to the perceived value of organic products, resulted from the function in table 1. Breakfast with milk and cereals and with fruits are among the food style of organic products' consumer. On the opposit, breakfast with just coffee is a negative habit affecting food quality perception. Television is a negative source of information and entertainments

and vogue are cultural issues with negative effects on consumer's perception. Attention towards food health and information are characteristics of consumer appreciating food quality.

Specialized store on organic products and supermarket are the distribution channels affecting the quality perceived: the first positively and the second negatively. Figure 7 shows the interaction of specialty's store and supermarket with food quality characteristics. Specialties' shop (table 2) interacts with the characteristics of *healthy foods* and *no persecutive* that the consumer looks for into the products. Other positive traits of food quality that interact with perception of specialties' store are as following: nutrient, good for children, producer identifiable, retailer identifiable, identifiability of production, good warranties, fresh product. Specialized magazines are the information source associated with organic product that interact also with the perception of store. Entertainment, breakfast just with coffee, and diets are consumer's attributes affecting negatively the perception of the specialized store.

On the other hand, the perception about supermarket (table 3) is negatively associated with many products' characteristics: nutrient, good warranties, old fashion taste. Generic magazines, practicity, convenient prices and entertainments are characteristics positively affecting the perception of supermarket's quality.

## 5. Conclusions

This research supported the hypothesis that store characteristics affect the perception of products. In turn, retailer has to use food quality, interacting with consumer's food style, to enhance the perceived quality of the store.

The big distribution is already watchful on the double link between food quality and store's perception. For example, in Italy the biggest distribution company COOP is trying to segmented the market by the characteristics of stores:

| | |
|---|---|
| hypermarkets or supercenters | ⇨ assortment of products |
| large supermarkets | ⇨ quality |
| small supermarkets | ⇨ services |
| discounts | ⇨ convenience |

Consequently, a great role is play particularly by the private labels and by the assortment of the section "fresh produce" inside the store. Private labels can directly link products' quality and perception of store. Fresh produce section, indeed, attracts customer, like a garden or a refreshment area inside the store, increasing the time and the frequency of visit.

In that circular path of quality's perception, the main role is plaid indirectly by the interaction of the explanatory variables (products'characteristics, consumers' food style, ecc..) not just directly by structural functions of the model. Anyway, the methodology applied is just a first simple approach with the purpose of exploring the issue so that further deeper analysis will be required.

## References


- Beharrell B., McFie J.D., 1991. Consumer Attitudes to Organic Foods. British Food Journal, 93, 2: 25-30.
- Dodds W.B., Monroe K.B., Grewal D., 1991. Effects of Price, Brand and Store Information on Buyers' Product Evaluations.
- Ellis K., Uncles M.D., 1991. How Private Labels Affects Consumer Choice. British Food Journal, 93, 9: 41-49.
- Sokal R.R., Rohlf F. J., 1981. Biometry. Freeman Ed.
- Verbeke W., 1992. Advertising, Product Quality, and Complex Evolving Marketing Systems. Journal of Consumer Policy, 15: 143-158.
- Zeithmal V.A., 1988. Consumer Perception of PRice, Quality, and Value: a Means-End Model and Synthesis of Evidence. Journal of Marketing, 52 (July), 2-22.

*Figure 2*

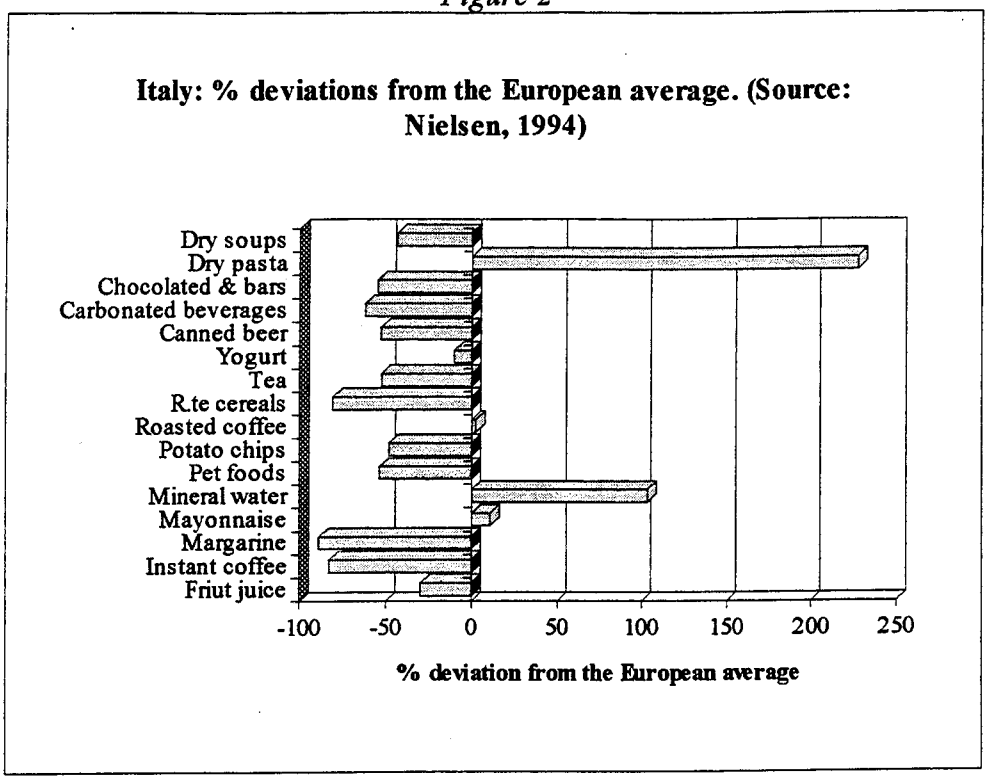



*Figure 3*

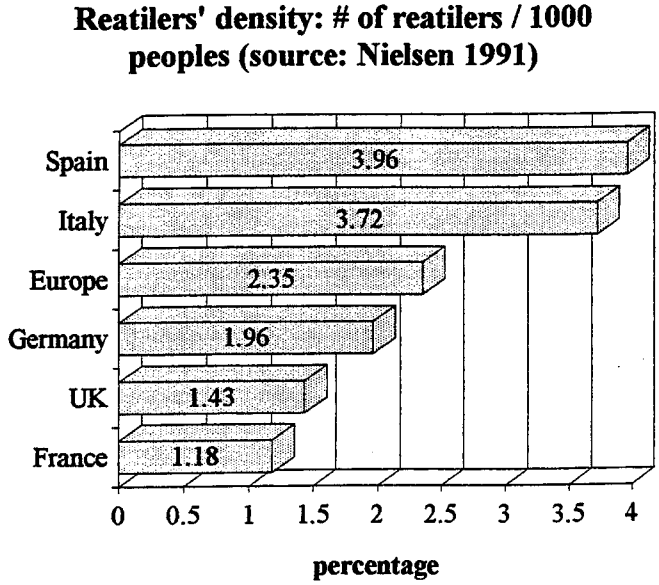


*Figure 5*

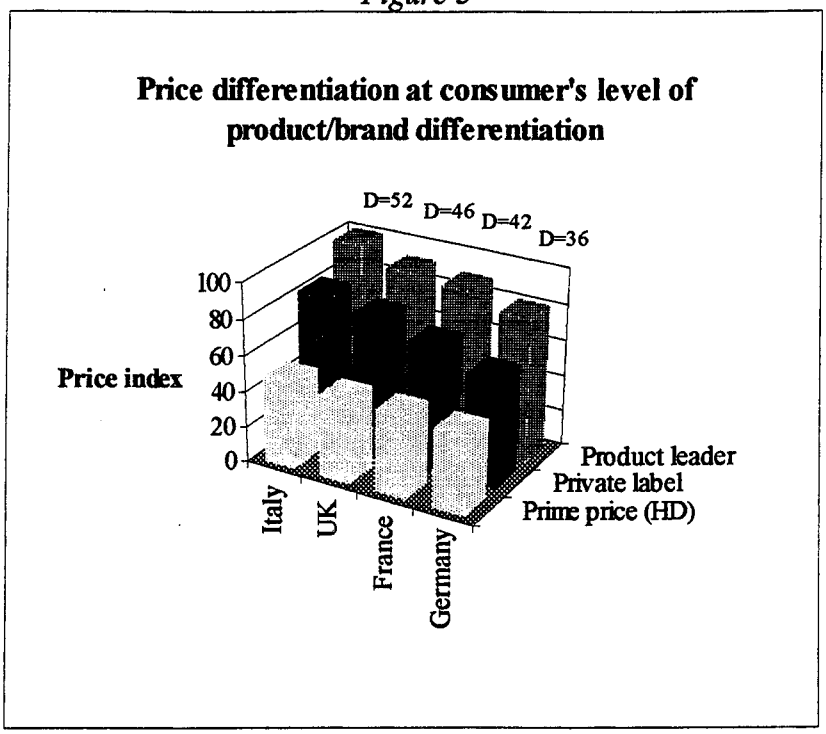



*Figure 4*

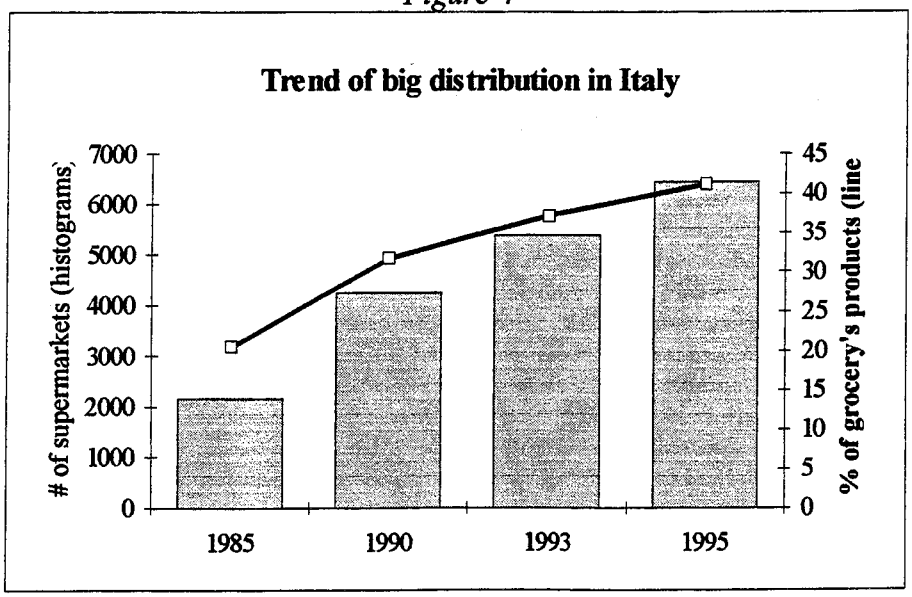


*Figure 6. Path diagram of characteristics affecting (significative at $P \leq 0.01$) consumption in value of organic products.*

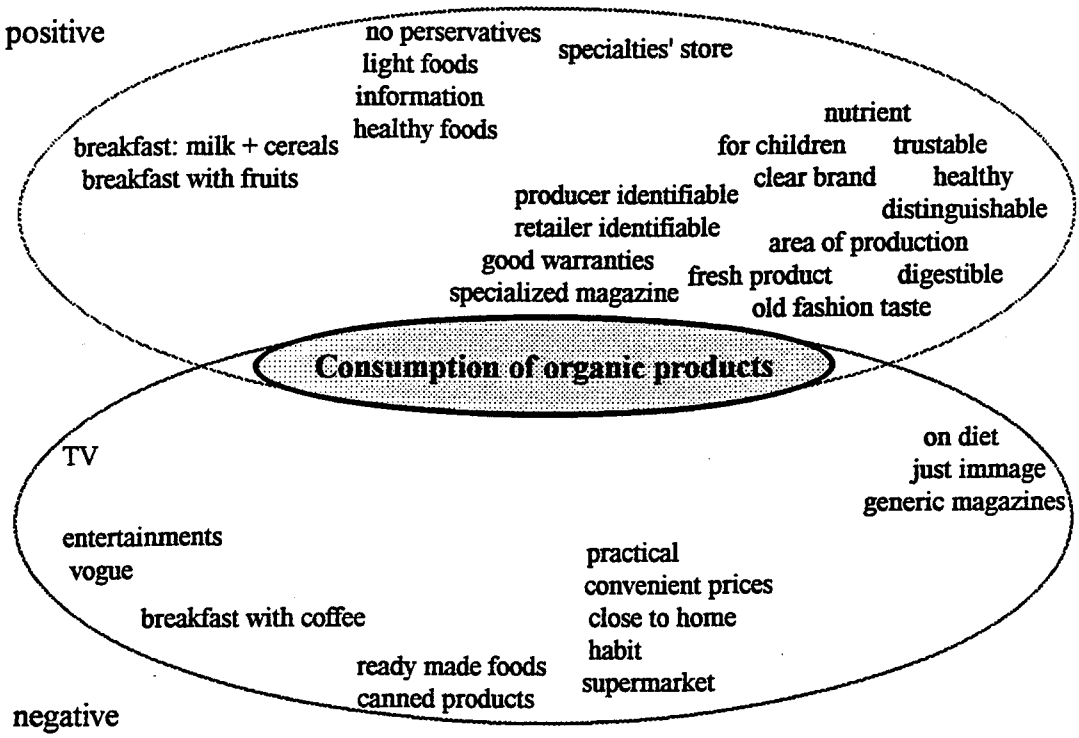


*Figure 7. Path diagram: interactions among product's perception and store's perception (coefficients of determination and sign of correlation).*

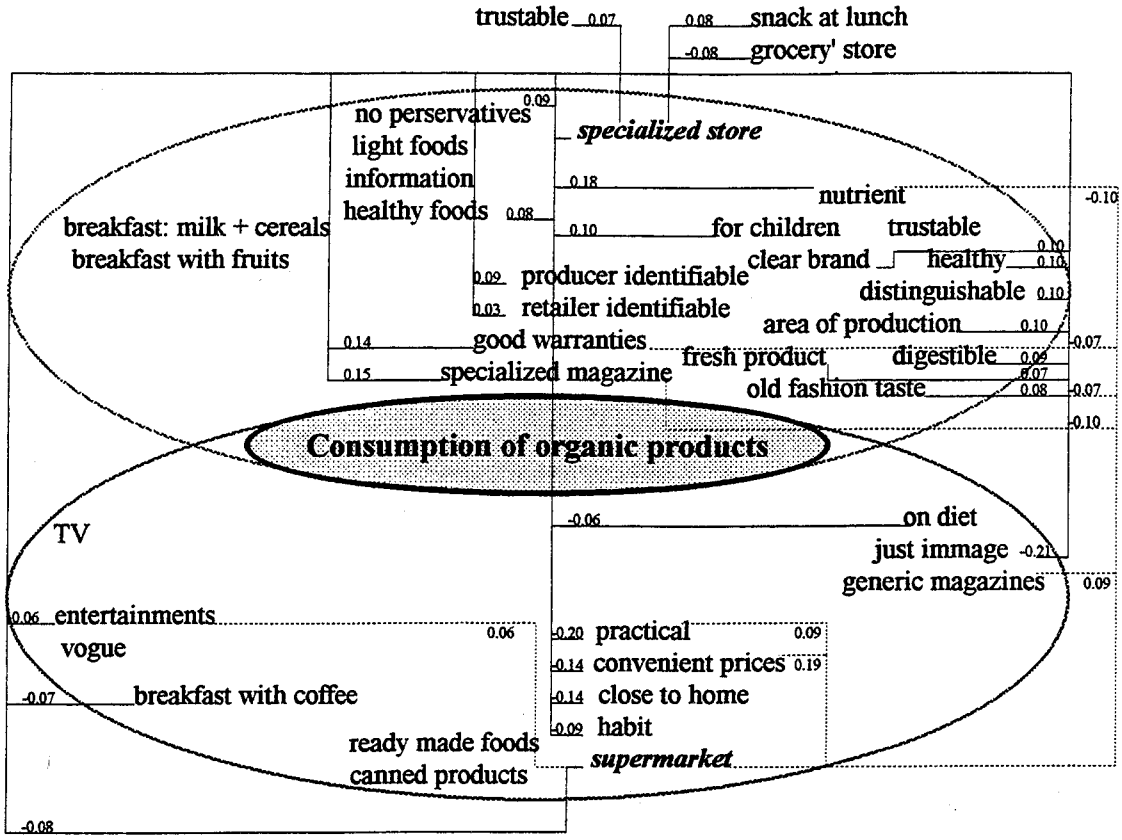


Table 1. Casual model of organic products' perception (coefficients of determination significative at P=0.01)

| Education | Job | Comunication and topic | Food style | Opinion on foof | Shopping | Opinion on organic products | Information on organic products |
|---|---|---|---|---|---|---|---|
| | | -0.10 TV<br>-0.11 entertainment<br>-0.07 vogue | breakfast:<br>-0.06 coffee<br>0.06 milk+cerelas<br>0.12 fruits | 0.36 no perservatives<br>0.11 light food<br>0.11 information<br>-0.11 canned food<br>-0.13 ready made<br>0-09 healthy | -0.11 supermarket<br>0.27 specialty' store<br>-0.20 convenience<br>-0.19 near home<br>-0.14 habit<br>-0.14 practicity | 0.27 nutrient<br>-0.24 diet<br>0.12 for children<br>0.17 healthy<br>0.18 trustable<br>0.13 distinguishible<br>0.15 clear brands<br>0.15 producer identity<br>0.16 reatiler identity<br>0.12 area identity<br>0.08 old fashion taste<br>0.12 digestible<br>0.18 clear information<br>0.20 good warranties<br>0.20 better taste | -0.09 generic magazines<br>0.27 specialized magazines<br>0.11 from producer<br>0.15 from experts |

Table 2. Casual model of "specialties'store - food quality" interactions (coefficients of determination significative at P=0.01)

| Education | Job | Comunication and topic | Food style | Opinion on foof | Shopping | Opinion on organic products | Information on organic products |
|---|---|---|---|---|---|---|---|
| | | -0.06 entertainment | breakfast:<br>-0.07 coffee | 0.09 no perservatives<br>0.08 healthy | -0.14 convenience<br>-0.14 near home<br>-0.09 habit<br>-0.20 practicity | 0.18 nutrient<br>-0.06 diet<br>0.10 for children<br>0.10 healthy<br>0.10 distinguishible<br>0.10 clear brands<br>0.09 producer identity<br>0.03 reatiler identity<br>0.10 area identity<br>0.08 old fashion taste<br>0.09 digestible<br>0.14 good warranties | 0.15 specialized magazines |

Table 3. Casual model of "supermarket - food quality" interactions (coefficients of determination significative at P=0.01)

| Education | Job | Comunication and topic | Food style | Opinion on foof | Shopping | Opinion on organic products | Information on organic products |
|---|---|---|---|---|---|---|---|
| | | 0.06 entertainment | | | 0.19 convenience<br>0.09 practicity | -0.10 nutrient<br>-0.07 good warranties | -0.10 specialized magazines<br>0.09 generic magazines |