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Perception and interest of European consumer for Mountain Quality Food Products (MQFPs)

Summary: the aim of this article is to analyse the perception and interest of the European consumer in mountain quality food products (MQFPs) as part of the 3-year EU research project called EuroMARC conducted by 10 partners from 6 countries (Austria, France, Norway, Romania, Scotland and Slovenia), which combined their expertise to set up an EU administered survey to help managers build strategies in the field of food products, and especially MQFPs, where there had been very little information available before.

After a phase of building specific tools for the empirical survey to obtain a data base, we propose a model based on the influence of five specific variables on consumer behaviour for MQFPs. The results confirm the significance of the place of sale, the MQFPs' characteristics, their availability and the circumstances in which they are consumed, for the consumers' behaviour and attitudes related to these products. However, the consumers' statements, ideas and impressions regarding MQFPs do not seem to bear much influence on their buying of this type of products, which the researchers had imagined of much greater importance at the beginning of this project.

Key words: Consumer behaviour, Mountain Quality Food Products, Structural equations modelling.

Introduction

Taking into account that mountain areas cover 40.6% of the European territory (including EU 27, Norway and Switzerland) and are inhabited by 19.1% of the European population, the agriculture in these areas and the economic sector it represents are part of multiple problems that the EU and its politicians have to analyze and, if possible, to solve. Increasing out-migration to the bigger cities (Mignon, 1998), declining agricultural activities in mountain areas, seriously impact demography and the quality of environmental resources like the water, air and soil of these areas. It is necessary to preserve the geographical, historical and cultural landscapes. The local production in the mountains is an essential factor for the development of these areas (McLeod, 2006). "Protection, promotion and certification of local products is, therefore, an important step to ensure local development" as is noted in the Recommendations booklet of EuroMARC (2010).

Of course, all the actors in the chain are concerned and one part of the EuroMARC research project was to carry out a survey on the interest and the perception of the European consumer for the Mountain Quality Food Products (MQFPs) to gain a better understanding of the consumer's expectations and desires for this type of food product.

To conduct this research, we started by acquainting ourselves with various studies which had already been carried out on the subject. Then, we tried to create a model using data from the empirical survey composed firstly of a qualitative phase involving focus groups and advice experts, followed by a quantitative phase with the conception and administration of a questionnaire for the 6 countries, gradually building up a database which would then be analyzed statistically. This database must then allow us to validate the models of behaviour of the consumer for MQFPs. We shall then comment on the results and give our recommendations. Finally, we shall specify the limits of this research and the further research opportunities offered by this study in line with the EuroMARC project.

Mountain quality food products

Definitions

First of all, the partners involved in this project reflected on the definitions to be retained for mountain products and mountain quality food products (EuroMARC, 2010). Finally, the following definitions were accepted by the working consortium:

- "The mountain products were defined as coming from a mountain area, having some of the key processing stages of the production performed outside the mountain area, or even as products that only use mountain terms or images as a marketing tool".

- "The mountain quality food products were defined in conformity with the European Charter of the Mountain Quality Food Products[1], with a defined origin (all the stages of the production and processing are done in the mountain areas), cultural and environmental criteria of production; products that can give something back to the mountain areas and combat the migration of the people from these areas to the cities".

Considering the little existing research conducted on the behaviour of the consumer for mountain foods, we firstly directed our research towards this behaviour and the strategies currently employed by suppliers to respond to demand. Then, we consulted research papers on foods of "*terroir*" and the signs of quality used in their regard, and on organic products which, for a decade, have been the subject of ample research.

Consumer behaviour regarding food purchases and the strategies of suppliers

Over the last decades, following the various food-related crises such as bovine spongiform encephalopathy (BSE), avian influenza pandemic (bird flu), bacterial contaminations and the spread of illnesses such as diabetes or obesity, consumers have become more and more anxious and very attentive to the health and safety standards of the foods they buy. Michelle Bergadaa et al. (2006) who ask "what's new in marketing research?" note that the perceived food risk as a consumer risk is more present in the consumer's mind. The producers and suppliers must take into account those new expectations in the marketing choices they make for the products of "*terroir*" and through the reinforcement of client relationships. They also note the influence of time on catalogue purchases. Bourassa (2004) finds in the current food-processing world that we can identify the existence of two very different markets. There is on the one hand a mass market made up of convenience foods and on the other hand a market of speciality products with highly differentiated products in limited volumes. Hassan and Monier-Dilhan (2005) wonder if we

[1] http://www.mountainproducts-europe.org/sites/Euromontana/CHARTER/

should be afraid of store brands and Lapoule (2005) proposes a skill-base model verifying the success distributors have enjoyed with their "*terroirs*" brands.

For instance, in the case of milk, an evaluation made by CNIEL[2] and SOFRES[3] (2006) shows that the denomination *French regions milk* seems to have, at first sight, the most charm. But confronted with two other denominations, *Selected farms* and *Mountain*, *French regions* does not maintain the very good scores observed in the *monadique* and appear to present a lesser potential versus these other two denominations. The analysis of responses to questions such as the perception of the price, the contents of evocation or even the reasons of purchases shows that the *French regions* denomination is certainly federative but is penalized by its weak content when compared with *Mountain* and *Selected farms*. It is thus the denominations *Mountain* and *Selected farms* that present the best potential versus *French regions*. The results of this evaluation are similar to those found with *Bio* or Organic denominations and thus translate the good potential of the *Mountains* and *Selected Farms* denominations.

A classification was established by Giachetti and Pascal (1996) by comparing eater identity and the image of food products:

- The eater and the eaten: the subtle complexity of a fundamental relation.
- Food, morality and society.
- "*Terroirs*", food and eaters through the course of history.
- Eaters and food: what can an economic analysis teach us?
- Experts, manufacturers, media, consumers, institutions: how the representations of the actors and the market co-build themselves.
- The eaters between traditions and novelties: some specificities of food marketing.
- The dramatic representation of food in the main of consumers.
- Cultural comparative approaches: cheese and *Käse*.

Pichon (2002) had already underlined that the trust of the consumer is linked to food brands guaranteed by renowned chefs because of consumer fears and a general loss of trust in products coming from the farm-produce industry. He studies how industrial brands associated with renowned chefs from the world of French gastronomy can respond to the need for reassurance from a consumer who lacks points of reference regarding food products. Lefevre et al. (2004) have worked on the process of adapting the cooking of regional specialities to factory-scale production.

[2] *Centre National Interprofessionnel de l'Economie Laitière*
[3] *Société française d'enquêtes par sondage*s

As the title of their research paper indicates, Pinto et al. (2006) measure food label perceptions on a sample of consumers. Using the MDS[4] data analysis method, they point out that consumer discerned positioning and real positioning are different. Label multiplication induced a certain degree of confusion in the consumers' minds.

But, for Rey (2006) in the SIAL[5], in Paris, labels and packaging which emphasize "*terroir*" are not fashionable any more.

Already in 1992, Cordell (1992) notes the effects of consumer preferences for foreign sourced products. The globalisation of markets represents one of the most important phenomena and one of the biggest challenges of our time (Van Ittersum, 2003). The abolition of national borders means those markets are more easily approachable and this makes for more lively competition (Blandin, 2001). Consequently, small and medium-sized firms succeed less and less easily whether it is on the local, national or international scale. Their survival depends then on the search for creative strategies. According to the author, the marketing of products in reference to their region of origin constitutes at the same moment a viable and valid strategy. By underlining the specific local characteristics which allow them to elaborate a product with a particular character, small and medium-sized firms can give to their product a unique identity. These products are capable of responding to those consumers in search of quality products, endowed with a distinctive character and with which they can identify. A product marketed by means of a regional indication, a regional product, is defined as "a product among which the quality or the fame can be attributed to its region of origin and marketed under the name of its region of origin" (Van Ittersum et al., 2003).

We can see that often the characteristics of the food products are very present in the mind of the consumer when he/she buys and eats food products giving all its sense to the term of "*terroir*" and to signs of quality.

"*Terroir*" and signs of quality

Using the example of the apples grown in the southern French Alps, Alavoine Mornas and Camman (1995) describe the measures taken by agricultural enterprises within a particular area to promote fruit. An investigation amongst apple growers and their customers produced a positive image of the "*Pomme des Alpes*" within the industry and identified ways in which this produce could be improved to meet market requirements. The investigation showed that the measures taken to promote this produce came up against technical, commercial, organizational and psychological obstacles. The authors show that it is not enough for the produce to originate

[4] Multidimensional Scaling

[5] *Salon International de l'Agro-Alimentaire* or the global market food

from an area that is well-known; the agricultural enterprises should form an organization to draw up a specification and must be able to guarantee the origin and quality of their produce. Following their investigations in the fruit and vegetables sector, Alavoine Mornas and Camman (1998), find that the producers develop strategies of differentiation based on geographic origin, in order to valorise typical rural areas ("*terroir*"). Investigations among consumers show the very positive image of typical rural areas. Interviews with persons in charge of food distribution firms show that products from typical local areas are well integrated into quality strategies of these firms.

But, at the beginning, the most analysed food product type in sense of quality and "*terroir*" is, certainly, cheese. In 1998, Coulon et al. (1998) confirm that cheese brands having an « Origin Verified Designation »[6] represent high economic stakes for the "Massif Central" area and the "Auvergne" region especially. The manufacturing development and improvement of the cheese quality with OVD designations are dealt with in two Research-Development hubs (Sensitive Area Hub and "Massif Central" OVD Cheese-making Hub). As regards the link between product and native "*terroir*", there now exists objective elements which enable the demonstration of the effect of some prime factors on the sensory characteristics of cheese types such as the flower diversity on grasslands for instance, while other factors are more related to the production system such as fodder preservation method and the physiological state of animals. The notion of quality held by the consumer has also been the subject of research work, within the scope of the RIPPLE European program which was launched in 1997. This program is on "regional images and the promoting of quality products and services" and aims to develop recommendations on the policies to be set up in this field for the development of disadvantaged rural areas.

In several works, Aurier and Couderc (2001), then Aurier et al. (2005) in a survey on brands in 1208 food companies in 5 sectors (wine, fruits and vegetables, meat, milk and cheeses, cereals) show that 60 % of these companies work with own brands which allows for better value added. In the same way they find that the region of origin seemed to be the most important dimension in the definition of a "*terroir"* product, the region being associated with both location and know-how. These results are consistent with previous studies into landscape, climate and natural resources but also producers' skills in the COI[7] (Verlegh and van Ittersum, 2001). However, in the quantitative study, the "region of origin" dimension is now split into two factors: "origin" as geographical origin, and "trade-skill". Besides these two dimensions, the analysis identifies a third factor "time and culture". The analysis shows that this factor seems to be the most

[6] OVD = label of quality

[7] Country of image must be perceived as congruent with country of origin (COO).

influential. It is correlated with the highest number of variables, particularly those related to the image and evocations associated to "*terroir*" products. Some very positive associations are only correlated with this factor, such as "*terroir*" products being more environment-friendly (less polluting and consuming less natural resources). Thus, while the managerial literature underlines the (physical) geographic and skill or production process dimensions as constitutive of "*terroir*", they can counter argue from this consumer oriented research that a third dimension exists, "time and culture", which has a heavily symbolic and emotional content, and appears, in this exploratory research, to be the most influential.

Also in 2001, Sirieix et al. (2001) present their theoretical approaches concerning regional processed food products and the results during a seminar of research.

Fort and Remaud (2002) conclude that the "*terroir*" establishes a valid passport for international trade. This passport is simpler to obtain for the small and medium sized firms of "*terroir*" products than for the others conferring them a durable competitive advantage consolidated by food safety fears and the search for a hedonistic, more eclectic form of consumption. But, this situation can sharpen the appetites of multinationals in search of segmentations with strong added value. On the contrary certain more dynamic small and medium sized firms could learn and this could lead then to accept being absorbed by these same firms to ensure the development of their activity. Finally, the valuation of food-processing products through the concept of "*terroir*" raises a lot of hope in terms of strategies which are convenient for small and medium sized firms but also a lot of questions: strategic on the one hand and financial on the other.

The need for authenticity is the focus of numerous concerns, among which food is today one of the most important argue Brochot and Bonnain-Dulon (2004). Mentioning the origin of a food product and establishing an explicit link with its production area is automatically interpreted nowadays as a guarantee of quality. Consequently, labels, geographical indications (Loureiro and McCluskey, 2000), protected designations of origin, have become essential vectors for the demonstration of the quality of food and decisive selling arguments. Considered as an essential point for the protection of commercial channels, they enlighten existing social and professional conflicts and spatial delimitation problems. Then, the authors ask if "authenticity is always guaranteed by origin?" and "Moreover, is the link between origin and quality as certain as usually asserted?"

Rastouin (2004) considers which strategy can be recommended for the "*terroir*" products in a context of globalization.

For Pitte et al. (2005), there are two opposing theses. Mass-produced Products or products of "*terroir*" both have relevant arguments for being on the market place. The authors remind us that

we need variety in what we eat to exist (eat with one's body, with one's heart and with one's head).

As part of the team of Philippe Aurier and Lucie Sirieix in Montpellier, Dekhilis and d'Hauteville (2006) explore the dimensions of the image of "country" and "region" of origin which influence consumer preferences in case of olive oil. Their results suggest that the geographical origin acts as an important cue of perceived quality. It appears that the two concepts "region" and "country" are not alternatives but complementary.

In this review of the literature, which is far from being exhaustive of course, we can see that the number of works is very consequent. Similarly, works on the signs of quality have also been increasing over the last two decades. The researcher the most involved in this topic was Bertil Sylvander and his team.

In the CNA (French National Food Council) work report in 2002 (Sylvander, 2002, Lagrange et al., 2003), the experts on signs of quality resume their opinions on the notion of quality as:

- **"Quality is a social construction**

In addition to the progress which marked the lesson of the centuries to assure the consumers that all the products which they buy are healthy and fit for consumption and to bring them an honest and sufficient knowledge on the bought quality, the money saved on a "generic" market led also to the development of particular categories of products which carry "quality signs" within the framework of strategies of differentiation.

- **Towards a rigorous generic quality without ambiguity**

The generic quality is based mainly on the food safety and hygiene and the nutritional level of foodstuffs offered on a mass market to the consumer. In spite of the recent crises, the level of this quality is recognized as being in constant improvement.

- **Towards an improvement and an internationalization of the politics of the Official Signs of quality**

The official quality signs, created in different periods and in diverse contexts of the food-processing development, were reinvested during the 1990s by authorities, to constitute a rigorous and evolutionary group, with indubitable strengths (for example, segmentation of the market, the promotion of the agricultural incomes, the land settlement) and also some weaknesses (lack of legibility and relations between signs, little coherent information, actors' continuing dependency on strong public support).

- **Towards an overall policy on quality discussed socially, organized into a hierarchy and arbitrated**

If, in simple sectors using mastered techniques, the progress of science and the technology allows us to fix certain characteristics of products, the complexity of modern companies gives rise to new quality problems.

Besides, new social expectations have come to light and are, in the minds of consumers connected to food quality: it is what is called here, " societal quality ", established for example by environmental protection, the recycling of sewage sludge, GMO[8] crops, biodiversity, climate change, the energy toll of the production process, water management, child labour in the third world and in Europe, fair trade, animal well-being, etc..

It is thus necessary to move from a one-dimensional approach to quality, even if it is seen as a social construction, to a global socio-political approach where all the dimensions of quality will be discussed, where the responsibility for technical and socioeconomic contradictions will be assumed and where real hierarchical organizations of objectives and means can thus be formulated. This process could lead to the clarification of certain tricky points such as verifiable modes of production and traceability, to shed light on new statutory lines of intervention and to inform, simplify and reassure the choices of the consumers, replaced in their context of consumption".

We can see that, step by step, the consumer turns his/her attention to organic products. Armand-Balmat (2000) analyses why the consumer buys more and more organic food products (increase of 50 % of this market in 1990s) and she tries to measure its CAP (consent to pay) for organic food products in comparison with non organic products.

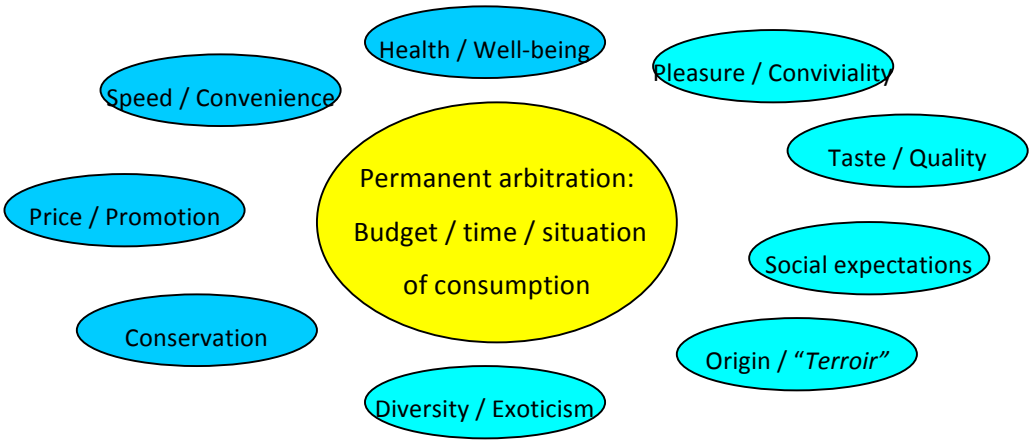
Of course, nowadays, the consumer is asking for this type of product and even for the sustainable production of food products. To such an extent that magazines quote "*60 millions de consommateurs*" in France as being interested in the subject (Author unknown, 2006). Berard and Marchenay (2009) worked on Protected Geographical Identity (PGI) and why it contributes to organic diversity that seems to be of increasing interest to the new consumer.

This whole review of literature, of course not exhaustive, allows us to summarize consumer behaviour regarding foods products, their origin and the signs of quality which they have given rise to in the following plan:

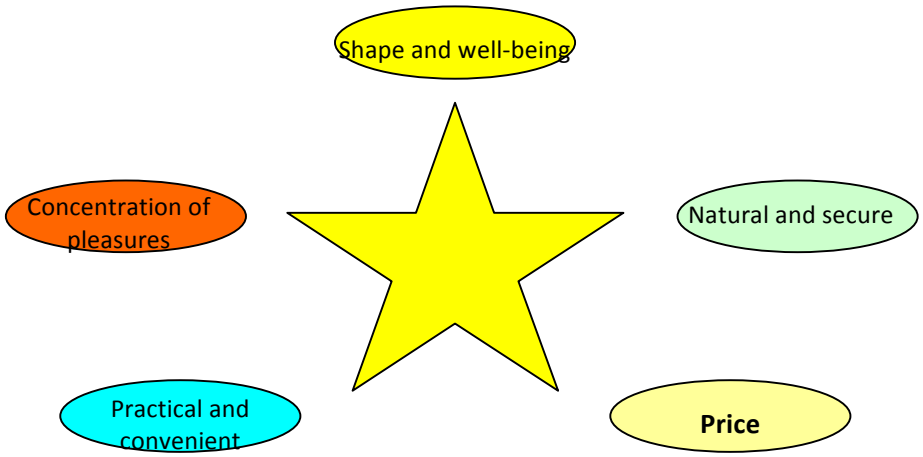
[8] genetically modified organism

General tendencies in food consumption

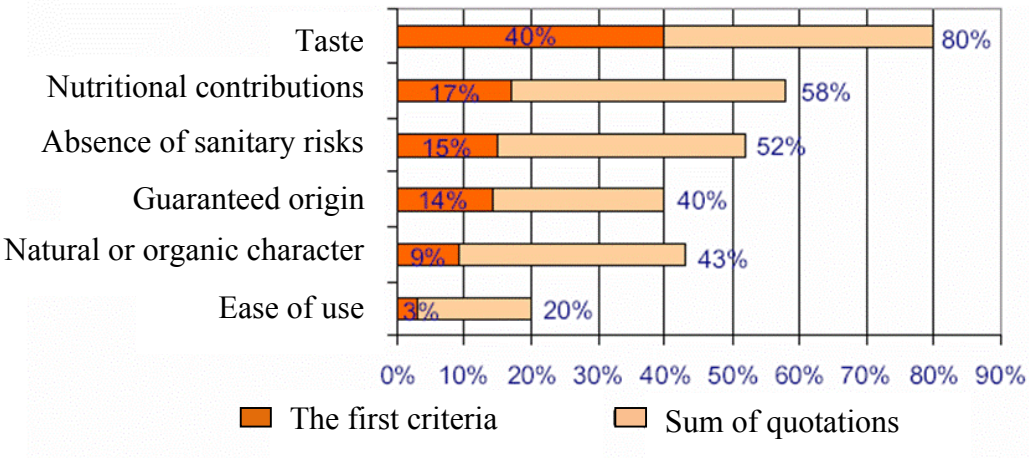
Some markers:



5 big types of location



"What are the two most important food quality criteria?"



Source : Enquête CREDOC – INC, février 2001

All this literature informs us that the consumer is very sensitive to quality and the good taste of the food products he/she buys and eats and is more and more attracted to foods with high nutritional value which can be explained by a sense of well being and hedonism. On the contrary, he/she thinks that producers and retailers give false or poor information and he/she seems disorientated by the numerous signs that feature on food products as guaranties of good quality. In reaction, the consumer turns to the notion of "*terroirs*" and buys more and more regional products even if this means spending more. But, nowadays, faced with the world crisis is s/he not going to invert this phenomenon?

By this work we try to confirm, or not, whether consumer behaviour continues in this way until the end of 2000s.

Methods of research:

After 21 focus groups had been organised in the concerned countries, a questionnaire was drawn up following the paradigm of Churchill (1979) and using the backward translation procedure, knowing that consensus is always difficult to obtain while working with 10 partners from 6 diverse cultural backgrounds. The questionnaire (annexe 1) was then administered by phone, by e-mail or face to face, taking into account different cultural realities of the participants in the project. The consumers from the 6 countries were required to choose two types of MQFPs among meat and fish products, dairy products, fruits and vegetables, as well as mineral bottled water during the administration of the questionnaire.

The 1904 collected and validated questionnaires allowed us to build a database with 33 measured variables represented by the 10 sets of questions in which 5 were considered as exogenous variables and one as endogenous or dependent variable. One work on the database was to re codify some questions as Q1, Q6 and Q11 to be consistent with the topic of consumer behaviour and MQFPs / FP (food product). Another was to aggregate measures between two types of products as Q2 & Q3. And, as the Modelling by Structural Equations, named SEM in the following work, needs continuous variables and can't run with nominal or ordinal variables, we had to make treatments for Q9 and Q10. All these treatments are detailed in annexe 2.

Using data processing statistics, validation of the proposed scales and the indication of stability, it was possible to validate our database (Annexe 2), which was in turn useful for the development of 5 hypotheses along the parameters that influence customers' behaviour related to the MQFPs/FP. After all these treatments we obtained the new data base that we used to test all our hypotheses with SEM.

All time, the latent concepts table in annexe 3 can again notify the signification of the model labels is. Step by step we built the elementary models and the reader can follow all the elements of this construction from SME theory to the parameters influencing the consumer behaviour for MQFPs by annexe 4.

Summary of elementary models for consumer behaviour regarding MQFPs

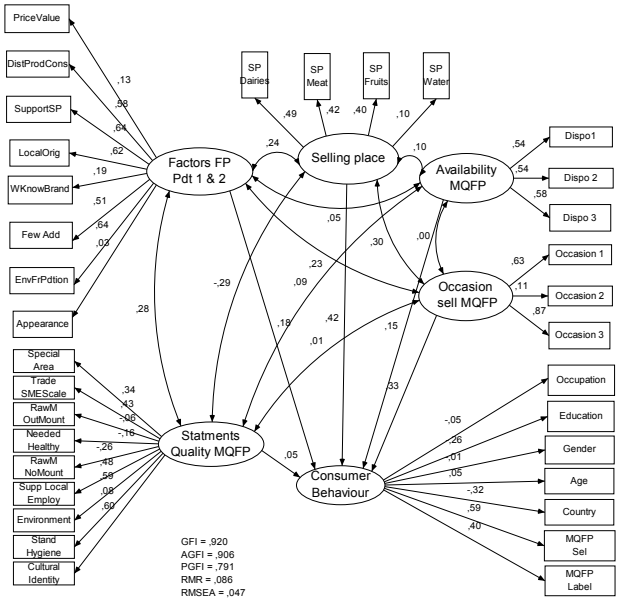
The matrix below summarizes all relations between the various latent concepts and consumer behaviour.

Hypo thesis	Comments	Standardized Value and(*)	Validation	SE	CR	P
H1	The selling place influences positively consumer behaviour	0.555 (0.554)	Yes	0.073	7.615	***
H2	The factors or characteristics of the food products influence positively consumer behaviour	0.387 (0.215)	Yes	0.025	8.639	***
H3	The statements about the quality of the MQFP influence positively consumer behaviour	-0.008 (-0.005)	No because the value is not at the correct level of significance	0.25	-0.203	0.839
H4	The disposability of MQFP influence positively consumer behaviour	0.203 (0.49)	Yes	0.011	4.319	***
H5	The occasion to sell MQFP influence positively consumer behaviour	0.519 (0.086)	Yes	0.009	9.882	***

(*) is the unstandardized estimate
(***) Level of significance for regression weight
The probability of getting a critical ratio as large as 7.615 in absolute value is less than 0.001 or p < 0.001.

Models for building the general model of consumer behaviour for MQFPs

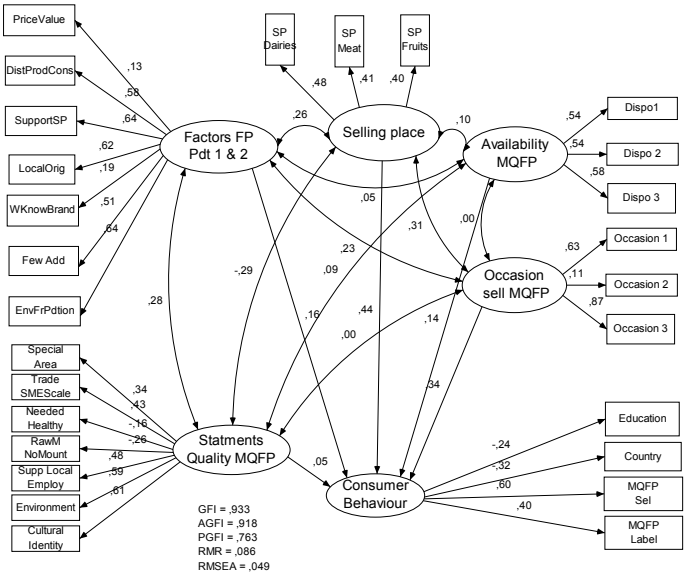
Then, we drew and calculated the models progressing by successive additives of latent concepts to arrive, finally, at the most complete model which takes into account all the data.



All the regression weights are significant ($p < 0.000$) with the exception of the statements to consumer behaviour ($p = 0.320$), in the factors of FP the same with the appearance ($p = 0.289$), in the statements the raw material ($p = 0.025$) the standards hygiene ($p = 0.003$), the water in selling place ($p= 0.002$), the age, the gender, the occupation (respectively $p = 0.083$, $p= 0.659$, $p = 0.120$).

We can note that the selling place of FP (not MQFP), the occasion to buy the MQFP, the factors or characteristics of food products (not MQFP) and the availability influence consumer behaviour but not at the same level and, to a much lesser degree, the statements about the quality of MQFP.

The same model calculated without the measures whose regression weights are not significant



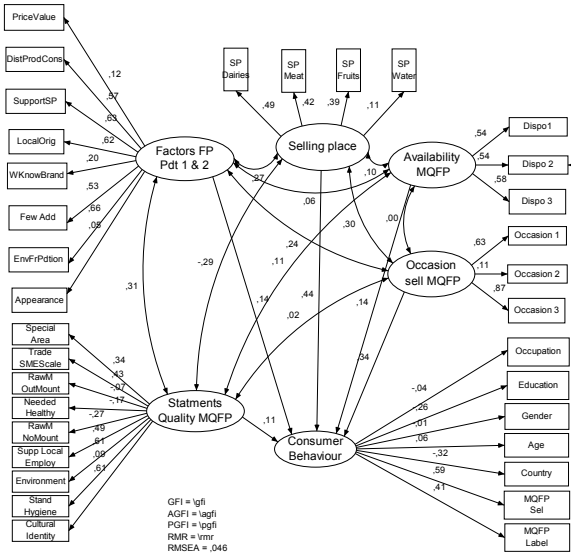
All the regression weights are significant ($p < 0.000$) with the exception of the statements to the consumer behaviour ($p = 0.334$) and more or less, the availability ($p = 0.001$).

At this step, we can see that the statements about quality of MQFP do not influence consumer behaviour. On the contrary, selling place of FP is the most influential factor on consumer behaviour, followed by the occasion to buy MQFP, the factors or characteristics of MQFP and to a lesser degree the availability of MQFP.

General models

Firstly with this general model as drawn above we propose to verify the differences between the results when we work with missing values treated and the results of the model that takes into account the missing values. Of course, the goodness of fit indexes is not complete in this second case.

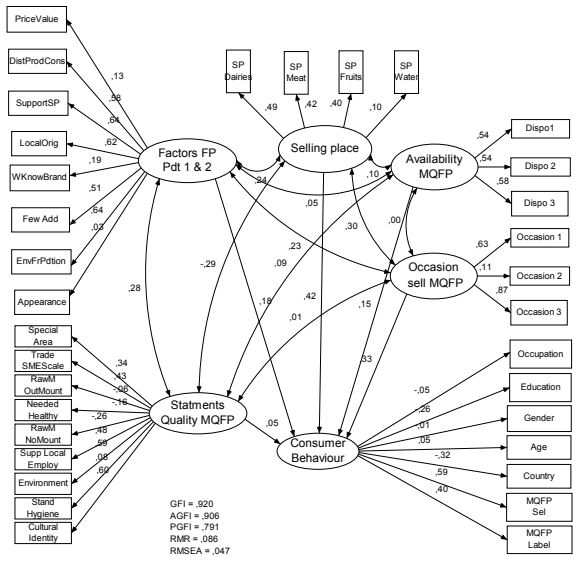
General model for all countries without missing values treated.



General model for all countries with missing values

With Amos, it is possible to run a modelling of the data even with missing values. But the goodness of fit indexes of model can't be calculated as when the data base is without missing values. For that, we treated the data base as noted in annexe 2.

General model for all countries with missing values treated.



General model all countries with missing values treated

In comparing both models, we can see that the differences are not so significant. Simply, the relation between the statements about quality and consumer behaviour has changed (0.11 to 0.05) but it remains barely significant (p =

0.069 to 0.320) and the same for the factors of FP influencing consumer behaviour and it is significant (0.14 to 0.18 and p = 0.009 to 0.000).

At this level of analysis, we can follow modelling with only the data base treated with missing values calculated by SMEAN of SPSS.

The matrix of results testing these hypotheses in accordance with the general model (knowing that the outputs of AMOS 16 can be supplied if asked) is the following:

Hypothesis	Comments	Standardized Value and(*)	Validation	SE	CR	P
H1	The characteristics of the food products influence positively the consumer behaviour	0,178 (0,107)	YES	0,028	3,770	***
H2	The selling place influences positively the consumer behaviour	0,424 (0,429)	YES	0,076	5,641	***
H3	The disposability of MQFP influences positively the consumer behaviour	0,148 (0,038)	YES	0,011	3,342	***
H4	The occasion to sell MQFP influences positively the consumer behaviour	0,335 (0,055)	Yes	0,008	7,027	***
H5	The statements about the quality of the MQFP influence positively the consumer behaviour	0,052 (0,033)	No because the value is not at the correct level of significance	0,034	0,994	0,320
Second Hypo	**Correlations between the exogenous variables**	**Standardized Value and(*)**	**Validation**	**SE**	**CR**	**P**
H6	Selling place with occasion to sell MQFP are correlated	0,302 (0,327)	YES Positively correlated	0,047	6,940	***
H7	Selling place with characteristics of the food product are correlated	- 0,238 (0,071)	YES Positively correlated	0,013	5,444	***
H8	Selling place with disposal of MQFP are correlated	0,102 (0,070)	No because positively correlated but not at the correct level of significance	0,033	2,141	0,032
H9	The characteristics of the food products with disposal of MQFP are correlated	0,052 (0,061)	No because positively correlated but not at the correct level of significance	0,041	1,470	0,142
H10	Disposal of MQFP with occasion to sell MQFP are correlated	0,003 (0,012)	No because positively correlated but not at the correct level of significance	0,145	0,080	0,936
H11	The characteristics of the food products with occasion to sell MQFP are correlated	0,230 (0,420)	YES Positively correlated	0,057	7,386	***
H12	The characteristics of the food products with statements about quality of MQFP are not correlated	0,283 (0,132)	YES Positively correlated	0,017	7,875	***
H13	Selling place with statements about quality of MQFP are correlated	-0,287 (-0,079)	YES but negatively correlated	0,013	-6,002	***
H14	Occasion to sell MQFP with statements about quality of MQFP are correlated	0,007 (0,013)	No because positively correlated but not at the correct level of significance	0,054	0,232	0,816
H15	Disposal of MQFP with statements about quality of MQFP are not correlated	0,093 (0,101)	No because positively correlated but not at the correct level of significance	0,041	2,442	0,015

(*) is the unstandardized estimate
(***) Level of significance for regression weight
The probability of getting a critical ratio as large as 3.770 in absolute value is less than 0.001 or p < 0.001.

Four of five mainly hypotheses are verified. By the SME, we can enlarge our results to confirm that five of the ten secondary hypotheses are verified.

Conclusion

In this work, we wish to shed light on the behaviour of the consumer when faced with food products and MQFPs.

Having analyzed various parameters such as selling place of FP, factors or characteristics of FP, statements of MQFP, availability and occasion to buy MQFP, we studied which relations, which effects, these parameters have on consumer behaviour.

To do this, we adopted a progression from the elementary up to increased association in a general model of all the moderate parameters. Considering the complexity of the obtained model, we confined this paper to the presentation of the most significant and most general results disregarding at once details and multiple possible combinations.

We kept in mind the constant concern to simplify this paper to the best of our ability. Of course all results and the computing outputs are available and can be supplied upon request.

The results were generally in agreement with analyses made in the main document of EuroMARC report. In this sense, the model of selling place of FP, we noted that a FP like water is not seen by the consumer as the other FPs. Here we can note the first difference.

We noted however some other differences in the ideas that emerged from our focus groups. For example, contrary to all expectations, the appearance and the price of products do not appear to influence consumer behaviour.

Moreover, we can note that for the consumer, the use of raw materials for the food production of MQFP is not as indispensable as the producers may think. Conversely, cultural identity, environment friendly, connections with specific cultural areas, traditional practices and small scale producers are statements with which the consumer agrees regarding MQFPs.

Generally, the consumer is influenced to buy MQFPs by the availability of this type of products and regarding the occasion on which he/she eats them and he/she is favourable to a specific logo as a source of good information emerging and appearing from the crowd of the current labels which disorientate the consumer.

Consumer behaviour in our study is not characterised by age or gender. The country where he/she lives is one significant parameter with, to a lesser degree, the occupation. Generally the consumer is in favour of a label specific to MQFPs and he/she states a desire to buy more of these products.

Limits and future or additional research

The first limit is that we work with several forms of enquiries relative to culture no take into account the specificities of each country. A bias may come from mixing responses obtained through different forms of enquiry. The second bias is that for the characteristics or factors of products we mix the different types of FP. But that would have been too complex to analyse and to segment by the type of product concerned. Another limit is the need to treat data to make modelling by Amos possible when we have missing values.

Future or additional research can be carried out on the same database modelling the consumer behaviour for MQFPs for each country to analyse the difference of behaviour between the European countries concerned and therefore to specify which recommendations are relevant for each producer and retailer if we find significant differences.

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Annexe 1

Questionnaire for people recruited in both urban and rural (mountain) area

Text formatted as **bold** should be read out by the questioner.

Date:

This questionnaire is meant for use with face to face consumer recruitment or through the web, which gives the possibility of further explanations or looking together at the questionnaire (in the case of tables to be filled). It should be printed in an A3 sheet or two A4 sheets double-sided.

This questionnaire needs to be adapted to each country (see Alexander's notes). That means that:

Question 2 and 3: Insert the food categories you have picked

Question 6: Insert names for the two case study areas you have picked

Question 15: Adapt to your education system

Conjoint analysis: If you use the same respondent as with the questionnaire, see end of this document

INFO: Presentation from yourself (who you are, where do you work)

Introduction text:

We are seeking information about the food habits of consumers living in this area. Would you be willing to answer some questions? This is not a marketing study, but a European research project. It will take approximately 8-12 min. (Including the conjoint analysis.)

1) **Where do you <u>most frequently</u> buy the following food products?** (One answer for each food product.)

Food product		**Directly from the producer or at a farmers market**	**In specialty shops (like a butcher's shop, natural food store etc.)**	**Superstore/ supermarket / discount shops**	**Directly form friends/ family/ own household**	**Other**	Do not use such products/ do not know/ no answer
		1	2	3	4	5	99
A	**Dairy products**						

B	**Meat**						
C	**Fruits or vegetables**						
D	**Mineral water**						

2) **How important are the following factors when you buy food product A** (Here you write the first category of product studied in your country.) **Rank them on a 1-5 scale, where 1 is "not important" and 5 is "very important".**

Attributes	← Not important				Very important →	Do not know/ no answer
	1	2	3	4	5	99
A) Price/ Value for money						
B) Short distance from producer to consumer						
C) Support to small scale production						
D) Local origin						
E) Well known brand						
F) Few additives						
G) Environmental friendly production						
H) Appearance						

3) **How important are the following factors when you buy food product B.** (Here you write the second category of product studied in your country.) **Rank them on a 1-5 scale, where 1 is "not important" and 5 is "very important".**

Attributes	← Not important				Very important →	Do not know/ no answer
	1	2	3	4	5	99
A) Price / Value for money						

B) Short distance from producer to consumer						
C) Support to small scale production						
D) Local origin						
E) Well known brand						
F) Few additives						
G) Environmental friendly production						
H) Appearance						

4) **What would you call mountain food products, or mountain drink products**? **Do you have an example?** (Open question, max. three answers. If respondent does not know what to answer, tick box.)

_____

☐$_{99}$ Do not know/ no answer

5) **What kind of food or drinks would you call "mountain quality products"?** (Open question, max. three answers. If respondent does not know what to answer, tick box. If respondents react upon the question, tick relevant box. Repeat the question and write down answers.)

_____

☐$_{1}$ Is there any difference with the previous question?

☐$_{2}$ No reaction

☐$_{99}$ Do not know/ no answer

6) **Have you ever bought food coming from a mountain area such as A and B?** (Closed question, tick one box. Each partner writes here names of A and B, two case study areas in EuroMARC. If no answer, go to question 8).)

☐$_{1}$ Yes ⇒ question 7)

☐$_{2}$ No ⇒ question 8)

☐$_{99}$ Do not know/ no answer ⇒ question 8)

7) **Can you quote what sort of product it was?** (Open question max. three answers.)

_____

8) **Below we have a list of statements regarding mountain quality products. We ask you to rank them on a 1-5 scale according to how much you agree with them. Here 1 means "strongly disagree" and 5 means "strongly agree".**

Statements	← Strongly disagree Strongly agree →					Do not know/ no answer
	1	2	3	4	5	99
A) Mountain products are connected to specific cultural areas						
B) Mountain products are produced in a traditional way by small scale producers						
C) Raw materials from mountain areas can be processed to mountain products also outside the mountain area						
D) Mountain products are not required to be healthy products						
E) The main raw material of mountain food products does not necessarily need to come from a mountain area						
F) Mountain products support local employment						
G) Mountain products are produced and processed in an environmental friendly way						
H) Mountain products have to comply with industrial standards of hygiene						
I) Mountain products are part of the cultural identity of local communities						

9) **Where do you think these mountain quality products are available?**

If you get a direct answer, you do not read out alternatives; just tick relevant boxes, max. three. If you do not get any answer, you thick the box "do not know/ no answer", and then you can read out alternatives and tick relevant boxes, max. three)

- ☐ 1 Regular grocery shops or supermarkets
- ☐ 2 Directly from the producer
- ☐ 3 Farmers' market and other markets
- ☐ 4 Restaurant
- ☐ 5 Factory outlet
- ☐ 6 From own household (self grown, self harvested, hunting, fishing etc.)
- ☐ 7 From friends or family
- ☐ 8 Special shop (ex: butcher)
- ☐ 9 Other
- ☐ 99 Do not know/ no answer

10) **For which occasion would you buy such mountain quality products?** (Show alternatives to respondent. Closed question, max. 3 answers.)

- ☐ 1 **When you wish to try something new**
- ☐ 2 **When you visit a particular mountain area**
- ☐ 3 **When you plan dinner with friends/family**
- ☐ 4 **For everyday use**
- ☐ 5 **For the weekend**
- ☐ 6 **For a very special occasion like wedding, confirmation etc.**
- ☐ 7 **I seldom or never buy this kind of product**
- ☐ 99 Do not know/ no answer

11) **Do you think that for mountain quality food products there should be a governmental/EU label to certify that these products really are mountain products?** (Tick relevant box.)

- ☐ 1 Yes
- ☐ 2 No
- ☐ 99 Do not know/ no answer

12) **Where do you live?** (Open question, write down answer. If respondent is foreign, cross the correct box. Each partner will classify the answer here whether it is in the mountains or not.)

Region, city or village in the country: _____1

☐ Foreign country ☐ No answer

13) **In which year were you born?** (Write down year with four digits.)

_____

14) **Your gender:**

☐ 1 Female ☐ 2 Male

15) **What age did you leave school/university at, or what level of education did you complete?** (Do not read out alternatives; just tick the relevant box.) Please check here, each country will have to adapt.

☐ 1 Primary school (0-10 years)

☐ 2 High school (11-13 years)

☐ 3 University/ college (more than 13 years)

☐ 4 University/ Master degree (more than 18 years)

☐ 99 Do not know/ no answer

16) **What is your occupation?** (Do not read out alternatives; just tick the relevant box.)

☐ 1 Unemployment

☐ 2 Student

☐ 3 Retired

☐ 4 Workman

☐ 5 Clerk

☐ 6 Intermediate profession, technician

☐ 7 Farmer

☐ 8 Craftsman, trader, head undertaken

☐ 9 Manager, higher intellectual profession

☐ 10 Voluntary out of work (i.e. house wives etc.)

☐ 11 Others

☐ 99 Do not know/ no answer

☐ no/no response

Annexe 2

Data treatments

As the Modelling by Structural Equations, named SEM in the following work, needs continuous variables and can't run with nominal or ordinal variables, we must do several treatments in the WP1 data base and we did not use the other kind of variables which are not continuous like nominal variable.

Question 1: Where do you most frequently buy the following food products?

Re codification for each product (dairy, meat, fruits and vegetables, water)

We take the consumer proximity as measure and we affect 5 for Directly from friends…., 4 for Directly from the producer or at a farmer market, 3 In specialty shops, 2 for Superstore/supermarket…, 1 for Other, missing value for do not use such products….

Question 2 & 3: How important are the following attributes when you buy food product 1 & 2?

As the attributes are the same for several kinds of product depending on the country survey we propose to aggregate the value for product 1 and the value for product 2 with the measure as average of both values (It was the Vienna meeting proposition). Ex: Q2&3A = (Q2A + Q3A) / 2. The same was done for B, C, …., H attributes.

Question 6: Have you ever bought food coming from a mountain area such as A and B?

We recodify as 0 for Do not know / no answer, 1 for No, 2 for Yes in the sense it seems more logical that the measure increases with the probability of consumer buying MQFPs.

Question 9: Where do you think these mountain quality products are available?

In this kind of question, the consumer must answer with three places maximum. We try to convert this information in measures by loading each place proposed in the sense of proximity to the consumer (JP Gilly, A Torre, 2000, C Dupuy, A Burmeister, 2003, S Dubuisson-Quellier, M Navarrete, J Pluvinage, 2006). The chosen scale is: 1 for From own household, 2 for From friends or family, 3 for Directly from the producer, 4 for Factory outlet, 5 for Farmers' market and other markets, 6 for Special shop, 7 for Regular grocery shops or supermarkets, 8 for Restaurant, 9 for Other and 10 for Do not know / no answer. Finally we have three measures for this question for each observation or respondant. Of course it is not scale but we take these quantities as measures of the concept of availability of MQFP.

Question 10: On which occasions would you buy such mountain quality products?

As in question 9 we construct the following pseudo scale on the basis of the frequency at which the consumer eats such products: 1 for I seldom or never buy this kind of product, 2 for When you visit a particular mountain area, 3 for When you wish to try something new, 4 for For a very special occasion like wedding, confirmation etc., 5 for When you plan dinner with friends/family, 6 for For the week-end, 7 for For everyday use and 0 for Do not know / no answer.

Question 11: Do you think that for MQFP there should be a governmental / EU label to certify that these products really are mountain products?

We re codify as 0 for Do not know / no answer, 1 for No, 2 for Yes in the sense that it seems more logical that the measure increases with the probability of consumer wanting a MQFP label.

Missing values:

Indeed for SEM missing values are not allowed in the data base inlet to run. For all the questions (Q1, Q2, Q3, Q8, Q9, Q10) and for all the concerned measures, to treat the missing values we chose arbitrarily the average of the series (SMEAN) between the 5 methods of the software SPSS (LINT Linear interpolation, MEAN Mean of surrounding values, MEDIAN Median of surrounding values, SMEAN Variable mean, TREND Linear trend at that point).

Reliability of scales by SPSS software

Alpha of Cronbach index

Before modeling we must test the reliability of the scales created. We use the Alpha of Cronbach and the KMO which are the two main indices of scales reliability testing. The good reliability of the scale for the Cronbach Alpha is when the value is > 0,7 (Nunnally and Bernstein, 1994) but > 0,6 can be acceptable at least.

KMO index and PCA

The second step in this work is to calculate the KMO (Kaiser-Meyer-Olkin) index and the PCA (Principal Component Analysis) to verify how many dimensions make up the scale is. In the same way as Cronbach Alpha the good value of KMO is > 0,7 (Lance and Vandenberg, 2002).

The results

The following matrix proposes the main results in this calculation.

Question	Q1	Q2	Q3	Q6	Q8	Q9	Q9Agre	Q10	Q10Agre	Q11
Cronbach Alpha	0,354	0,637	0,884	np	0,351	<0	0,565	<0	0,396	np
KMO	0,584	0,72	0,74	np	0,685	0,116	0,629	0,253	0,454	np
PCA Dimension	1	3	2	1	3	4	1	3	2	1
% Explained variance	35,05	58,85	53,95	100	50,14	52,90	53,64	50,97	86,15	100

For Q1 the indexes aren't good. This can be explained by the fact that we don't measure one phenomenon but we measure for the four different kinds of product the phenomena of the consumer most frequently buying food products. Alternatively, the PCA gives one dimension as the proximity where the consumer buys the kind of products.
For Q2 and Q3, the indexes are acceptable at good.
For Q6 and Q11, as it is not a scale because is only one measure for each, the indexes are not pertinent.
For Q8, the index of Cronbach is very bad but the 3 dimensions or factors are acceptable with 50.14 % of explained variance. Those factors are f1 with traditional value employment and environment, f2 with raw material and standards of hygiene and f3 with healthy and specific areas.

For Q9 and Q10 of course the measure is not scale and it is the reason why we performed the treatments of these two questions as noted in 1.4 and 1.5. The results of Q9Agre and Q10Agre are medium and not so good as we could have hoped.
After all these treatments we obtain the new data base that we use to test all our hypotheses with SEM.

Bibliography of annexe 2

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Annexe 3

Labels table of for the variables and, or measures in modeling.

Latent concepts	Variables / measures	Labels	observations
Selling place	Selling place for dairy products	SPDairies	Where do you most frequently buy the following food products?
	Selling place for meat products	SPMeat	
	Selling place for fruits or vegetable products	SPFruits	
	Selling place for water	SPWater	
Characteristics of food products for products 1, 2 and 1&2	Price value	PriceValue	How important are the following factors when you buy food products 1 and 2 (proposed by the country)? Likert scale 1 to 5.
	Short distance from producer to consumer	DistProdCons	
	Support to small scale production	SupportSP	
	Local origin	LocalOrig	
	Well known brand	WKnowBrand	
	Few additives	Few Add	
	Environmental friendly production	EnvFrPdtion	
	Appearance	Appearance	
Statements Quality MQFPs	Mountain products are connected to specific cultural areas	Special Area	The answered have to rank those statements according to how much he/she agrees with them. Likert scale 1 to 5.
	Mountain products are produced in a traditional way by small sale producers	TradSmEscale	
	Raw materials from mountain areas can be processed to mountain products also outside the mountain areas	RMOutMountArea	
	Mountain products are not required to be healthy products	NeededHealthy	
	The main raw material of mountain food products does not necessarily need to come from a mountain area	RMno MountArea	
	Mountain products support local employment	SuppLocalEmploy	
	Mountain products are produced and processed in an environmental friendly way	Environment	
	Mountain products have to comply with industrial standards of hygiene	StandHyg	
	Mountain products are part of the cultural identity of local communities	CulturIdenti	
Availability of MQFPs	Where do you think these mountain quality products are available? Answer 1	Disposability1	The answered have to tick relevant boxes proposed.
	Where do you think these mountain quality products are available? Answer 2	Disposability2	
	Where do you think these mountain quality products are available? Answer 3	Disposability3	
Occasion MQFPs	For which occasion would you buy such mountain quality products?	Occasion1	The answered have to tick relevant boxes proposed.
	For which occasion would you buy such mountain quality products?	Occasion2	
	For which occasion would you buy such mountain quality products?	Occasion3	
Consumer behaviour	Where do you live?	Country	Region, city or foreign
	How old are you?	Age	In with year were you born?
	Your gender	Gender	Female or male
	What age did you leave school / university at, or what level of education did you complete?	Education	The answered have to tick relevant boxes proposed.
	What is your occupation?	Occupation	The answered have to tick relevant boxes proposed.
	Have you ever bought food coming from mountain area?	MQFP Sel	Tick relevant box (Yes or no)
	Do you think that for mountain quality food products there should be a governmental / EU label to certify that these products really are mountain products?	MQFP Label	Tick relevant box (Yes or no)

Annexe 4

Basis of Structural Equations Modeling

Generalities

SEM (or covariance structure analyses) is the second generation of multiple-varied analyses (Fornell, Larcker, 1981, Fornell, 1982, Valette-Florence, 1988). They introduce the latent variable or not observable variable. They allow the nature of relations between these variables and their measures to be specified. They offer the possibility of clarifying the type of relations envisaged between the latent variables. They are capable of analyzing the causal inferences between several sets of explanatory and explained variables. They may be used in confirmatory purposes as we made (Lance and Vandenberg, 2002).

Construction of model

Latent variable is the first part of the model construction. Each latent variable is measured by three or more measures as the values given by the respondent depending on the scale.

Validity of the model

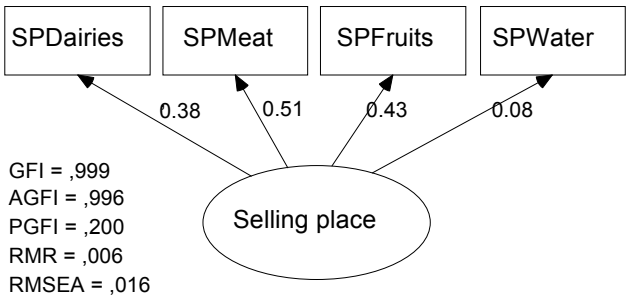
We must verify three validities to ensure that the model works correctly (Didellon, Valette-Florence, 1996):

- Convergent validity: the sum of communities for every construct (or latent concept) must be superior at random or 50%. $\Sigma\lambda^2 > 50\%$ with λ as community or the loading for each measure.
- Discriminate validity: variance shared by a construct and its measures must be superior to the variance shared between the constructs.
- Nomo logical validity: is the validity of the model. Concerns the endogenous variables confirming that the studied theoretical field is provided with sense. $R^2\eta/\xi \neq 0$. This value must be as high as possible, for example 0.15 is a good value for a social field, 0.21 is excellent.
- Some goodness of fit indexes are available. With AMOS 16, the software calculate GFI (goodness of fit index), AGFI (adjusted goodness of fit index), PGFI (parsimony goodness of fit index) followed by RMSEA (root mean square error of approximation) and RMR (root mean square residual). The GFI, AGFI, PGFI is less than or equal to 1, the higher is the better. A value of 1 indicates a perfect fit, > 0.85 is good fit. The smaller the RMR, the better the RMSEA is. An RMR and RMSEA of zero indicate a perfect fit.

Basic elements of the model before building it

Before modeling the relations between all the variables surveyed and measured, we built it element by element and we can analyse each of them separately. For this part, we worked with all the measures obtained by the countries (1904 data).

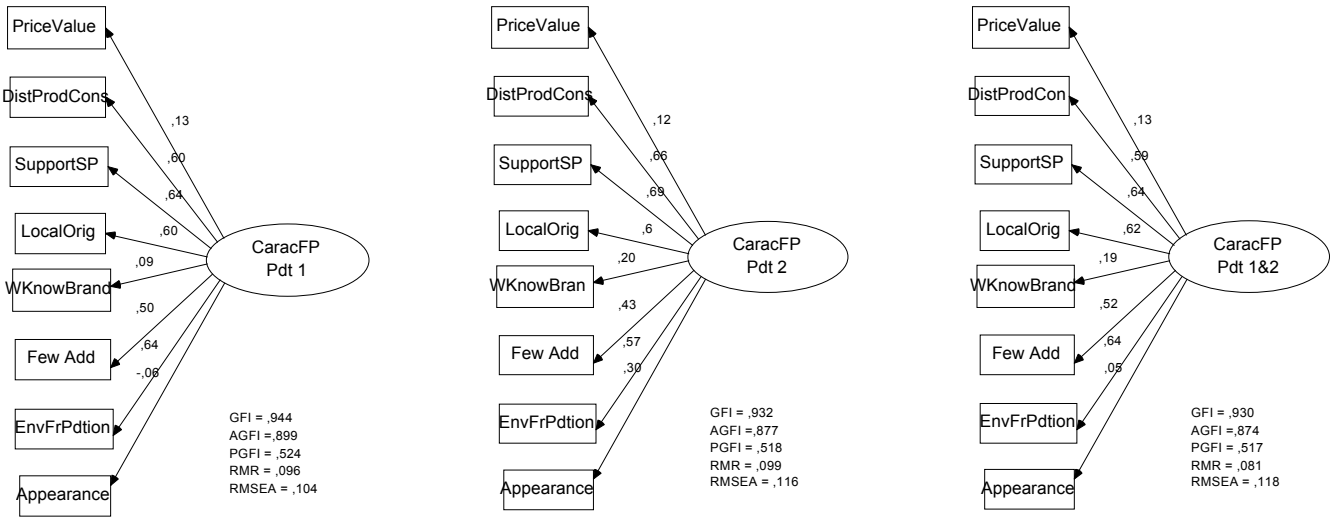
Selling place (Q1)



All the communities or regression weights are significant and higher except for the product water. It is understandable because water can be bought mainly in the hyper/super market contrary to the other products seen by the consumer as a more specific act.

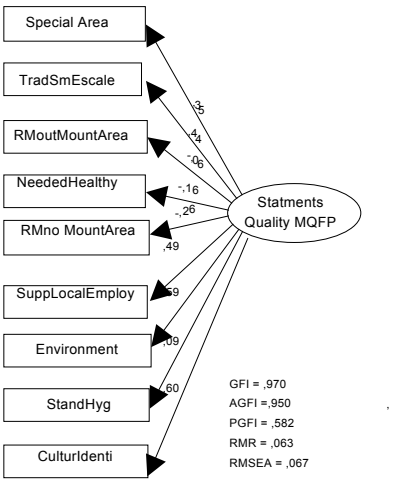
All regression weights are statistically significant, p <0.000 for the first three and p = 0.023 or at 2.3 % for the water.

Factor importance when you buy FP 1(Q2), FP 2 (Q3), FP 1&2 (Q2&3)



For the product one and the product two depending on the country, the appearance, the well know brand are not significant and the other attributes are heavily influential except the price value which is moderate in the thinking of the consumer. All regression weights are significant, p < 0.000 and only except for Appearance of product 1 (p = 0.016) and products1&2 (p = 0.063).

Statements regarding MQFP (Q8)

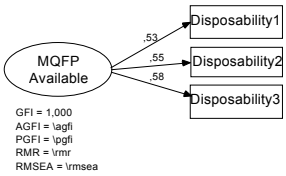


The raw materials can be processed in mountain products also outside the mountain area, the Mountain Products are not required to be healthy products and the main raw materials of FMP do not necessarily need to come from mountain areas are in opposite sense (< 0) to weight on the latent concept but as the questions are ambiguous this is not strange. On the contrary, consumers do not agree with the fact that the MP has to comply with the industrial standards of hygiene.

All regression weights are significant at $p < 0.000$ and except for Raw Material, $p = 0.031$, and Standard Hygiene, $p = 0.001$.

This model indicates that the consumer is not aware of raw material and standard hygiene, probably because he/she thinks that the producers necessarily use quality raw materials and this leads naturally to food hygiene restrictions.

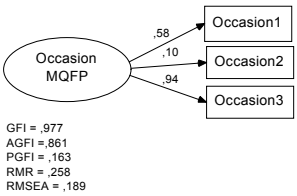
Availability of MQFP (Q9Agre)



As we work with 3 measures, the model is ideal et al. figures are significant and as the GFI is 1 the software did not calculate the other indexes.

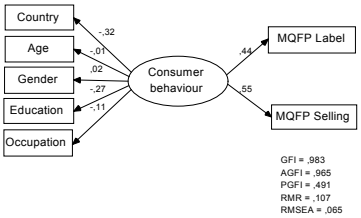
Of course in this case, all regression weights are significant.

Occasion to buy MQFP (Q10Agre)



All the regression weights are significant but the RMR and the RMSEA indicate difficulties in modelling.

Consumer behaviour



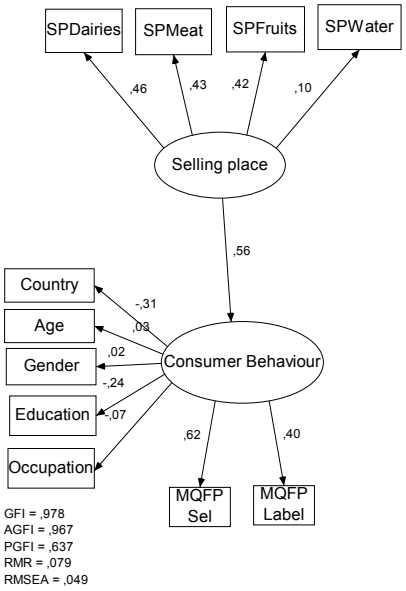
For consumer behaviour, we find that the consumer busy MQFP and he/she is in favour of a label of MQFP and the country measure, the education and the occupation are in inverse to the consumer behaviour in our sense of the measure of each parameter.

All the regression weights are significant ($p < 0.000$) exception of the age ($p = 0.514$) and the gender ($p = 0.881$)

Simple Models for WP1

Throughout the following part, we have chosen the best amongst a possible mass of models to draw. We don't provide all data results for each model in order to simplify the reading but we can supply them upon demand. The objective of this part is to verify the hypothesis that each of the latent concepts is or is not influencing (or in relation with) consumer behaviour.

Consumer behaviour and selling place

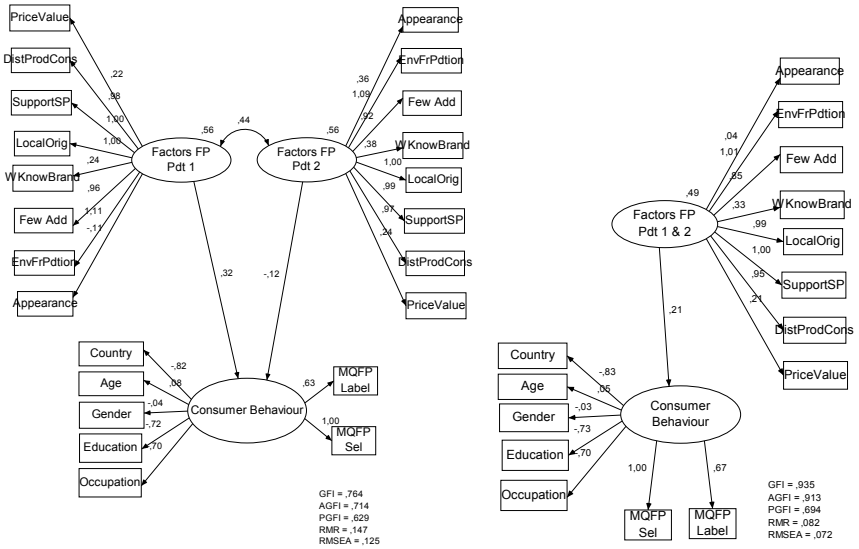


All the regression weights are significant ($p < 0.000$) with the exception of the selling of water ($p = 0.004$), the age, the gender, the occupation (respectively $p = 0.375$, $p= 0.462$, $p = 0.022$).

The relation between the selling place and consumer behaviour is strong. The nearer the selling place is to the consumer in the form of farmer shops or specialized shops, the more the consumer is favourable to the selling of MQFPs and to the labelling of this kind of product. Age, gender, occupation of the consumer doesn't influence his/her behaviour. Of course, the place where MQF water is sold is less influential on consumer behaviour than for the other products.

Factors or characteristics of FP and consumer behaviour

Here, we find the problem that the FP factors studied are the same in each country but not for the same products. For this reason, the results are not so significant and we tried to aggregate the data in one single measure as noted in annexe 2.



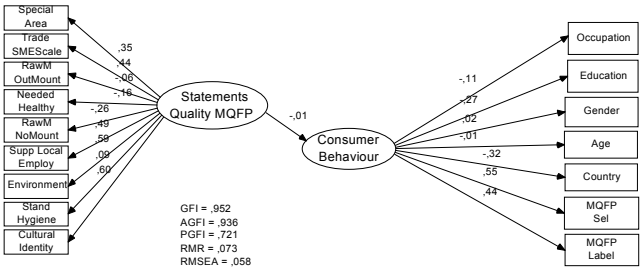
With these two models we can see the interest in aggregating for each factor the measures of product 1 and those of product 2.

All the regression weights are significant ($p < 0.000$) in the first model with the exception of the relation Factor FP Pdt 2 to consumer behaviour ($p = 0.008$), the appearance for Pdt 1 ($p = 0.013$), the age, the gender, the occupation (respectively $p = 0.286$, $p= 0.294$, $p = 0.003$).

All the regression weights are significant ($p < 0.000$) for the second model with the exception of the appearance ($p = 0.276$), the age, the gender, the occupation (respectively $p = 0.507$, $p= 0.509$, $p = 0.004$).

We can think that the appearance of food products is not as important for the consumer as we could have hoped. All other factors studied in this part for the food product (be careful not MQFP) directly influence consumer behaviour.

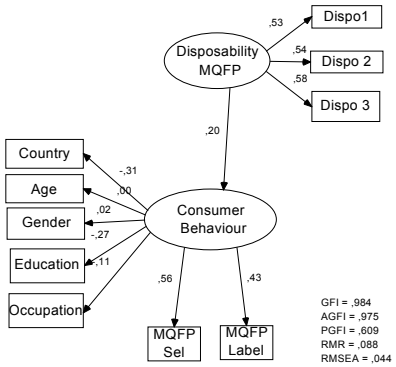
Statements about quality for MQFP and consumer behaviour



Here we can see that the statements about the quality of MQFP are not related to consumer behaviour ($p = 0.839$).

For the other regression weights, the majority is significant ($p < 0.000$) with the exception of the raw material ($p = 0.030$), the standard of hygiene ($p = 0.001$) and, as before, the age, the gender, the occupation (respectively $p = 0.865$, $p= 0.497$, $p = 0.002$).

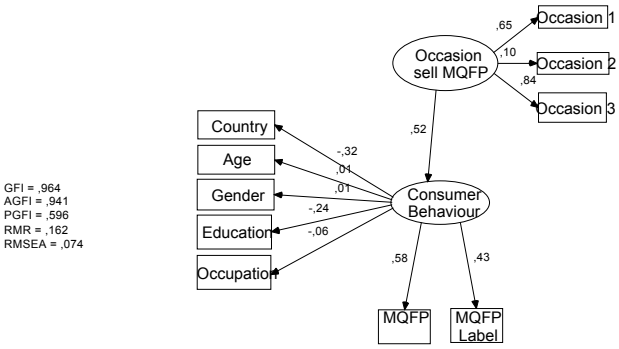
Disposability of MQFP and consumer behaviour



All the regression weights are significant ($p < 0.000$) with the exception of the age, the gender, the occupation (respectively $p = 0.922$, $p= 0.618$, $p = 0.001$).

The influence of the MQFP disposability on consumer behaviour is medium.

Occasion to buy MQFP and consumer behaviour



All the regression weights are significant ($p < 0.000$) with the exception of the age, the gender, the occupation (respectively $p = 0.828$, $p= 0.643$, $p = 0.061$).

The influence of the occasion to buy MQFP on consumer behaviour is strong.

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