



D. Brémaud (damien.bremaud@mxns.com) - BIOFORTIS Sensory & Consumer, France

1. Background & Objectives

Food supplement market is very competitive, any action for understanding consumer behaviour is crucial. The main motivation for consuming food supplements is the search for a better health or the expectation of a better physical or psychological wellness. Despite few publications on this topic, compliance to a food supplement seems to be influenced by many factors and especially the characteristics of the supplement. When looking at functional foods' compliance, a big size and a high frequency of consumption of the food have a negative impact on compliance (Galloway et al., 1994; Tuorila et al., 2002). Some authors also highlight that the taste of the food can have an influence on compliance (Tuorila et al., 2002). The questions at stake are "What happens after food supplement purchase? Does the consumer follow the recommendations of the manufacturer? Which factors influence compliance or non-compliance? How do sensory characteristics of food supplements influence compliance?"

2. Case study

Through an online quantitative study, we tried to better understand the drivers of compliance with a food supplement.

506 declarative questionnaires were collected from French women aged 18 to 55 years old and consumers of food supplements.

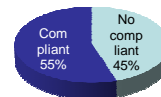
Different items were asked: usage, attitudes, habits when consuming foods supplements (frequency, type...), socio-demographic items, preference to 5 sensory items of the last food supplement consumed (colour, texture by touch, texture in mouth, smell, taste), reasons for stopping the treatment...

3. Compliance with food supplements

Compliance is defined as the way a person's behaviour (taking medications, compliance with a diet, implementation of lifestyle changes) fits the recommendations of a healthcare professional. The notion of compliance applied to food supplements is a new concept that needs to be fully explored to better understand consumer behaviour. Possible determinants of compliance are: the expected health benefit, the perceived efficacy, the dose, the shape, the taste and the price.

In the case study, the compliance score is calculated with 5 declarative items: forgetting, changes, decreasing, increasing, respect for the treatment period.

A consumer is considered as compliant when its compliant score is upper than 70% of the maximum score. With this criteria, 55% of the consumers are compliant.



4. Method

For the uni-dimensional analysis, Chi-square test is used to measure the impact of each explicative variable on compliance score.

For the multi-dimensional analysis:

- Multiple Correspondence Analysis (MCA) and Hierarchical Ascendant Clustering (HAC) are used as descriptive methods to better understand the consumer behaviour.
- Bayesian networks are used to explain compliance by external items including sensory items. They are based on conditional probabilities and Bayes theorem, use both graphics and probability theories. It aims at setting up links between items and at creating a model explaining a target item (compliance) which is called Probabilistic Structural Equation. All continuous data are discretized. These analyses are done with BayesiaLab Software developed by Bayesia.

5. Results

The Chi-square method highlights variables impacting compliance:

- the food supplement segment (P-value=0,007) see example below,
- the perceived efficacy (P-value=0,018),
- the season of consumption (P-value=0,010),
- the duration of the cure (P-value=0,001),
- the price (P-value= 0,003),
- the sensory characteristics and especially the colour (P-value=0,003) and the texture by touch (P-value=0,040).

Frequency Percentage	Non compliant	Compliant
Menopause	40 18%	44 16%
Slimness	39 17%	46 16%
Hair-skin	-- 23 10%	+++ 61 22%
Health issues	39 17%	46 16%
Stress	+++ 48 21%	-- 36 13%
Vitality	35 16%	49 17%

Chi-square =	16,15
P-value =	0,007
DOF	5

+++ / -- 1%
++ / - 5%

The MCA analysis followed by a HAC allows to create homogenous consumer clusters (Figure 1). Sample is divided into 3 clusters according to its attitude towards food supplements. The interpretation of each cluster is based on compliance, perceived efficacy, advisor and sensory items.

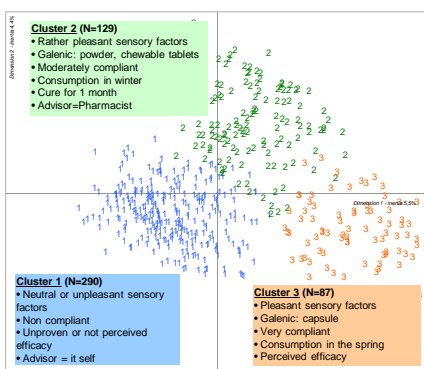


Figure 1 - MCA on the global sample

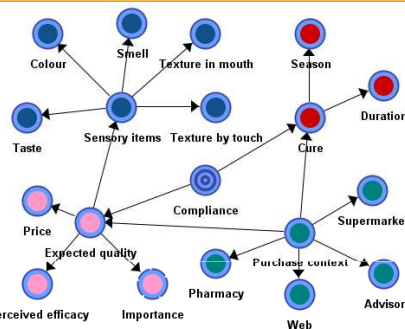


Figure 2 - Probabilistic Structural Equation

Bayesian networks show that 4 "factors" are created as new latent variables to summarize all items. For example, the variables Pharmacy, Web, Advisor and Supermarket are summarized in a factor called "Purchase context".

The 5 sensory items are all grouped together. Probabilistic Structural Equation (Figure 2) highlights that "Cure" and "Expected quality" are directly linked to compliance. The most impacting variables are season, importance, price, duration, texture in mouth.

6. Conclusions & Perspectives

The 3 methods used give similar results. The only differences are the mono- or multi-dimensional analyses and the way to present results. The most often mentioned variables to explain compliance are: the season and the duration of the cure, the perceived efficacy and some of the sensory items (colour and texture mainly).

This study helps to identify drivers of compliance with food supplement from a declarative point of view. As a next step, a product test is currently in course in order to study the in depth impact of sensory items on compliance.

7. References

- Galloway R., McGuire J. (1994), Determinants of compliance with iron supplementation: supplies, side effects, or psychology?, Soc. Sci. Med., Volume 39, No. 3, pp. 381-390.
 Jouffe L. (2010), Bayesia, Probabilistic structural equations with Bayesian belief networks, ISBIS-2010, Portoroz (Slovenia).
 Tuorila H., Cardello AV. (2002), Consumer responses to an off-flavor in juice in the presence of specific health claims, Food Quality and Preference, Volume 13, issue 8, pp. 561-569.