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Quality evaluation of fresh and bloomed filled chocolates in House of Quality

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Objectives

Companies producing filled chocolates often deal with the problem of fat bloom. This is caused by oil migration of the filling to the chocolate couverture. Consequently, the sensory quality of the filled chocolates decreases.

AIMS:

✓ Development of a structured approach for the maintenance of sensory quality of food products through House of Quality with the application on filled chocolates.

Materials & methods

PRODUCTS:

 Six variants of pralines were produced in Belgium and Hungary

		Variants					
		V1	V2	V3	V4	V5	V6
Couverture	Milk chocolate			X	X		
chocolate	Dark chocolate	X	X			X	X
Filling	Low hazelnut	X		X			
	High hazelnut		X		X		
	Low alcohol					X	
	High alcohol						Χ

STORAGE

-18°c → keep fresh

20°c → slow bloom

23°c → fast bloom

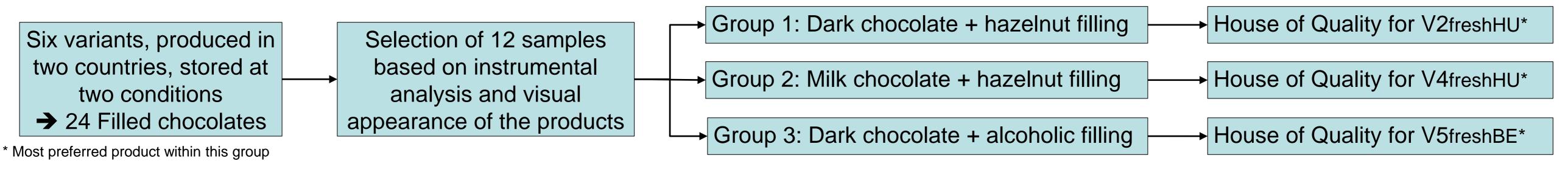
INSTRUMENTAL ANALYSIS

- Colour measurement
 SENSORY ANALYSIS:
- Trained panel
 QDA with 28 descriptors
 on appearance, aroma, texture and flavour
- Consumer panel
 Tasting session for preference

Results

Product Sampling

No blooming occurred for the samples stored at 20°c, therefore only fresh samples (stored at -18°c) and bloomed samples (23°c) were used.



Consumer test

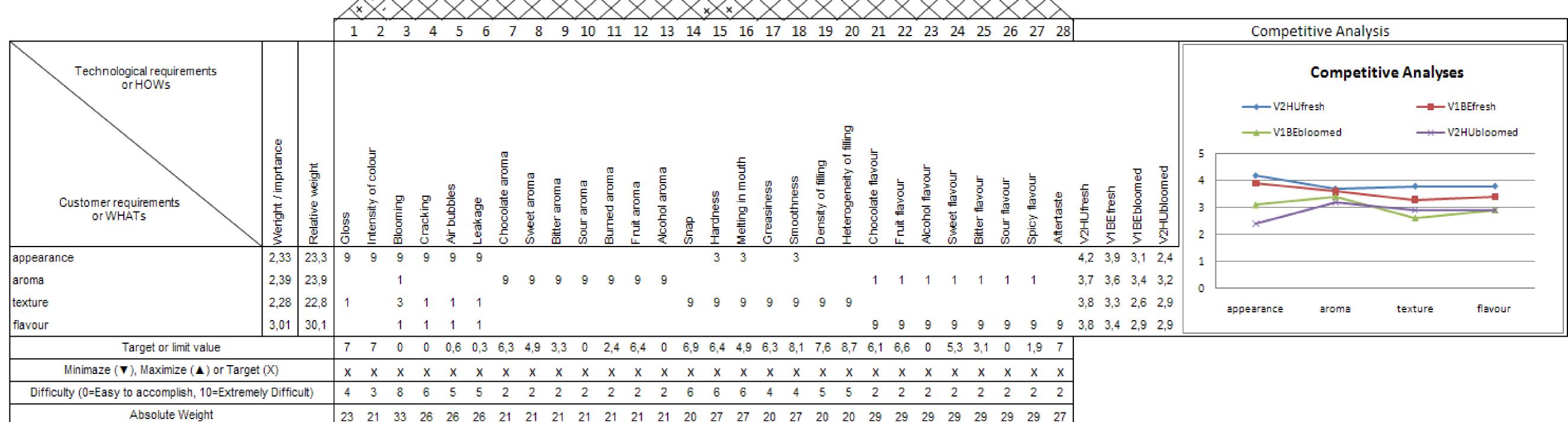
- The <u>importance of appearance, aroma, texture and flavour</u> for the consumer are measured with question from the Food Choice Questionnaire (FCQ).
- A <u>tasting session</u> is used to reveal the <u>overall preference</u> for the filled chocolates within the three groups. The results helped to select the samples to construct the three Houses of Quality.
- Further, <u>preference on appearance, aroma, texture and flavour</u> for the different samples is given in the competitive analyses graph in the House of Quality.

Integration of the results in the House of Quality

- <u>Customer requirements</u> and <u>competitive analysis</u> are constructed from consumer test.
- The central part, the <u>interrelationship matrix</u>, is established through extensive literature study. The attributes that belong specifically to one of the four constructs (appearance, aroma, texture, flavour) receives a value 9. Some of the attributes also have a moderate (3) or slight (1) influence on another constructs.
- The roof of the House, <u>technical correlation matrix</u>, gives the correlations between the 28 attributes. When changing a certain attribute, a correlated attribute can be affected in a positive or negative way.
 - The <u>matrix of technical properties and targets</u> is used for formulating conclusions. The target values are given by sensory analysis. Absolute and relative weights are calculated whereas the scores "difficulty to accomplish" changes in specific attributes are distilled from the literature.

Sensory analysis

• <u>A trained panel</u> evaluated the most preferred sample on 28 attributes. These values are used as <u>target values</u> to achieve when producing filled chocolates within the same group of samples.



Conclusions

Relative Weight

Max relationship value in column

The constructed House of Quality shows that <u>flavour</u> is the most important characteristics to the consumers when evaluating filled pralines. From the competitive analysis it is clear that the <u>main differences between the pralines are found in appearance and texture</u> but to a lesser extent in aroma and flavour. The target values are indications in future use of sensory analysis of pralines. The relative weight indicates that <u>blooming is the first thing that needs to be handled but it is also the most difficult change to accomplish</u>. It is possible to extend the House of Quality with results of instrumental analyses or even process parameters.

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This House of Quality is not built on competitive products but on fresh and bloomed products which is not the traditional way of using this tool but helps to understand that blooming is the most important item to adjust in order to provide the consumers what they need. Moreover it gives a <u>clear overview on what influence blooming</u> has on all other sensory attributes of the pralines. This makes it possible to <u>set target values</u> and <u>reveal where improvements can be made</u> to the product.