# Balancing Precision and Agility: Assessing a Rapid Approach for Sensory Insight Generation

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## BACKGROUND

Descriptive Analysis (DA) is widely regarded as the gold standard in sensory evaluation, providing detailed and quantitative insights into product characteristics, differences, and positioning. However, its application is often constrained by high resource requirements, including extensive panel training, significant time investment, and large product volumes.

In fast-paced project environments, there is a growing need for more agile and efficient methodologies that can deliver actionable sensory insights while optimizing panel capacity. Qualitative mapping is a consensus-based approach in which products are collectively positioned on a sensory map according to their perceived similarities, differences, and key sensory characteristics. Qualitative mapping offers a potential alternative, enabling rapid, consensus-driven product positioning along key sensory dimensions, with reduced resource demands.

This study aims to evaluate whether qualitative mapping can effectively complement or replace full descriptive analysis in certain contexts.

## RESEARCH QUESTIONS

- To what extent do qualitative sensory maps align with outputs from descriptive analysis?
- Can qualitative mapping reliably capture key sensory differences and product positioning?
- What are the trade-offs between speed, resource efficiency, and analytical precision?

## METHOD

### Descriptive analysis (DA)

- A trained sensory panel evaluated 8 products in duplicate under blinded conditions.
- Panelists assessed attribute intensities using a structured quantitative scale (0-100).
- A standardized lexicon was applied to ensure consistency in attribute evaluation.
- A Principal Component Analysis (PCA) with clustering was conducted to identify product groupings and similarities.

### Qualitative sensory mapping

- The same 8 products were assessed in a consensus-based panel session under blinded conditions.
- The panel identified the two sensory attributes that best discriminated between products and used these as the horizontal and vertical axes of a two-dimensional sensory map.
- Products were then positioned on the map according to their perceived intensity on these attributes.
- Consensus discussion was used to agree on product placement, clustering and other sensory (dis)similarities.
- The session resulted in a qualitative mapping of the products on the predefined axes, clustered together on attributes that drive similarity.

### Qualitative comparative analysis

Outputs from both methods were compared qualitatively to assess:

- Alignment in product positioning and clustering
- Ability to discriminate between products and clusters
- Depth and type of sensory insights generated

## OUTCOMES

**FIGURE 1: MMR Descriptive Analysis (PCA)**
Overlapping attributes are marked in **bold** in both maps.
BC = Branded Competitor, ML = Market Leader, PL = Private Label, FP = Flora product.
The accompanying number identifies the specific product number within that category.

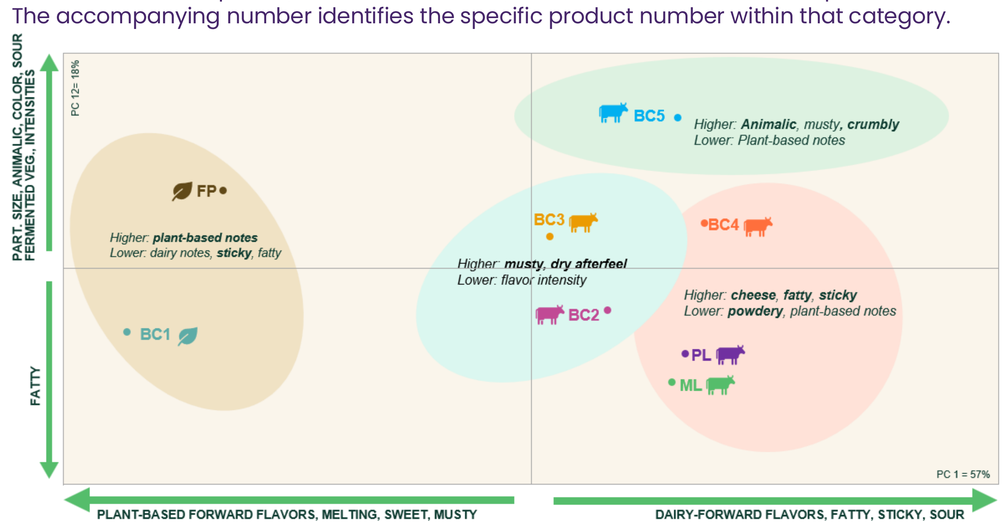
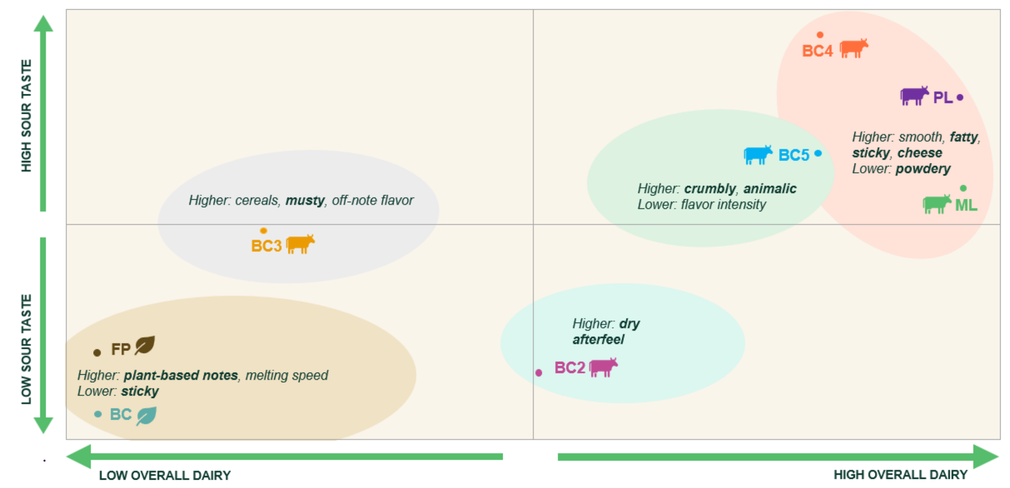



**FIGURE 2: MMR Qualitative Mapping**
Overlapping attributes are marked in **bold** in both maps.
BC = Branded Competitor, ML = Market Leader, PL = Private Label, FP = Flora product.
The accompanying number identifies the specific product number within that category.




## RESULTS

Qualitative mapping and descriptive analysis generated comparable outputs, showing similar product groupings and overall product positioning:

- All products clustered similarly across both methods, and sour taste and overall dairy flavor rankings showed strong agreement between the means table and QM, particularly at the attribute extremes.
- Only minor differences were observed: BC3 (D*) and BC2 (D) clustered together in the PCA but not in the QM. BC3 (D) was positioned lower on overall dairy flavor in the QM, while BC2 (D) was positioned more central and BC 4 (D) higher than indicated by the means table. For sourness, ML (D) was positioned higher and BC2 (D) lower on the QM. These differences may reflect that the PCA incorporates the full sensory profile, whereas the QM focuses on selected attributes.
- Cluster positioning was highly similar across both methods, with the strongest agreement observed along the horizontal axis (PC1). As PC2 explained only 18% of the variance, the QM primarily reflected the main product differentiation captured by PC1. E.g. the cluster with FP (PB**) and BC2 (PB) is positioned on the left side of the map for both methods, and the cluster with BC4 (D), PL (D) and ML (D) is placed on the right side of the map for both methods.
- Attributes that characterize the clusters are similar between both methods. E.g. the cluster with FP (PB) and BC1 (PB) is characterized by being high in plant-based notes and low in stickiness for both methods, and the cluster with BC4 (D), PL (D) and ML (D) is characterized by being fatty, sticky and cheesy, and low in powdery mouthfeel.

*D = dairy product
**PB = plant-based product.

## CONCLUSION AND RECOMMENDATION

Qualitative Mapping (QM) provided a rapid, resource-efficient alternative to Descriptive Analysis (DA), while still providing comparable insights for sensory product positioning. QM differentiated products and identified key sensory characteristics, accelerating insight generation and optimizing panel resources.

QM was completed in one session versus six for DA, reducing panel time by five days, sample preparation and panel leader time by 10 hours, and sample usage from 10 to 2 servings per product. However, these efficiency gains come with reduced analytical precision.

Unlike DA, which provides multiple outputs for detailed quantification and statistical validation, QM generates a single consensus-based output and may lead to slight differences in product ranking.

Findings suggest that QM is well suited to product screening, benchmarking, and exploratory research, where timely, directional insights are required. For detailed quantification and robust statistical validation, DA remains the preferred approach. Overall, QM can complement traditional sensory methods, supporting more efficient decision-making while reserving DA for studies that require greater depth, precision, and quantitative rigor.