

# Perception of naturalness by consumers of processed food

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## Naturalness perception

organic

claims

'better-for-you'

nutritional

Acceptability /  
preference

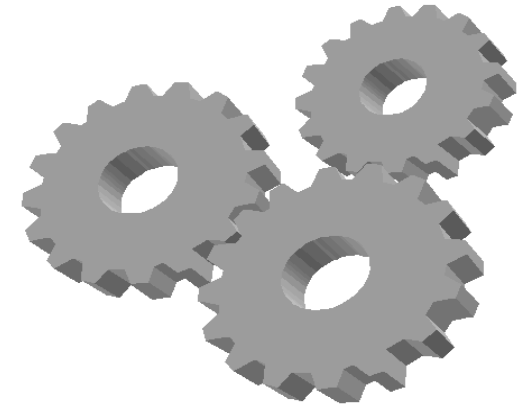
no additives

chemical and  
process  
transformation

environment  
friendly

mixing natural  
substances

## Processed Food



## Research question :

Is it possible to develop processed food, perceived natural for consumers? and also good for environment, good for health and appreciated?



**Characterization of an existing processed food offer:  
to identify drivers and determinants to build a healthy, sustainable  
and appreciated food offer, perceived natural for consumers**

→ *Used of a multicriteria approach to determine the links between  
**sensory perception and objective indicators**  
(nutritional, technological, economic, environmental)*



**Possible to propose some recommendations for manufacturers  
and consumers?**

# Focus on pizza's world

A processed product  
highly consumed: 10kg / year,  
inhabitants / France

High variability in terms of recipes :  
multiple processed ingredients from animal  
(meats, cheeses) and plant (tomato, crumb...) origins

Best for environment? Best for health  
? Always appreciated?



Possible recommendations:  
To go further to a more sustainable  
and healthy diet?



# Multidimensional mapping of pizzas

www.agroparistech.fr

environmental

ratio animal/plant in kcal or kg  
Garnish / Dough Ratio  
Life cycle analyzes (climate change)  
Exergy balance

nutritional

Fat, salt, proteins levels  
carbohydrates, fiber,  
energy density  
5C score, SENS score...

18 objective criteria



technological

« Processing » score

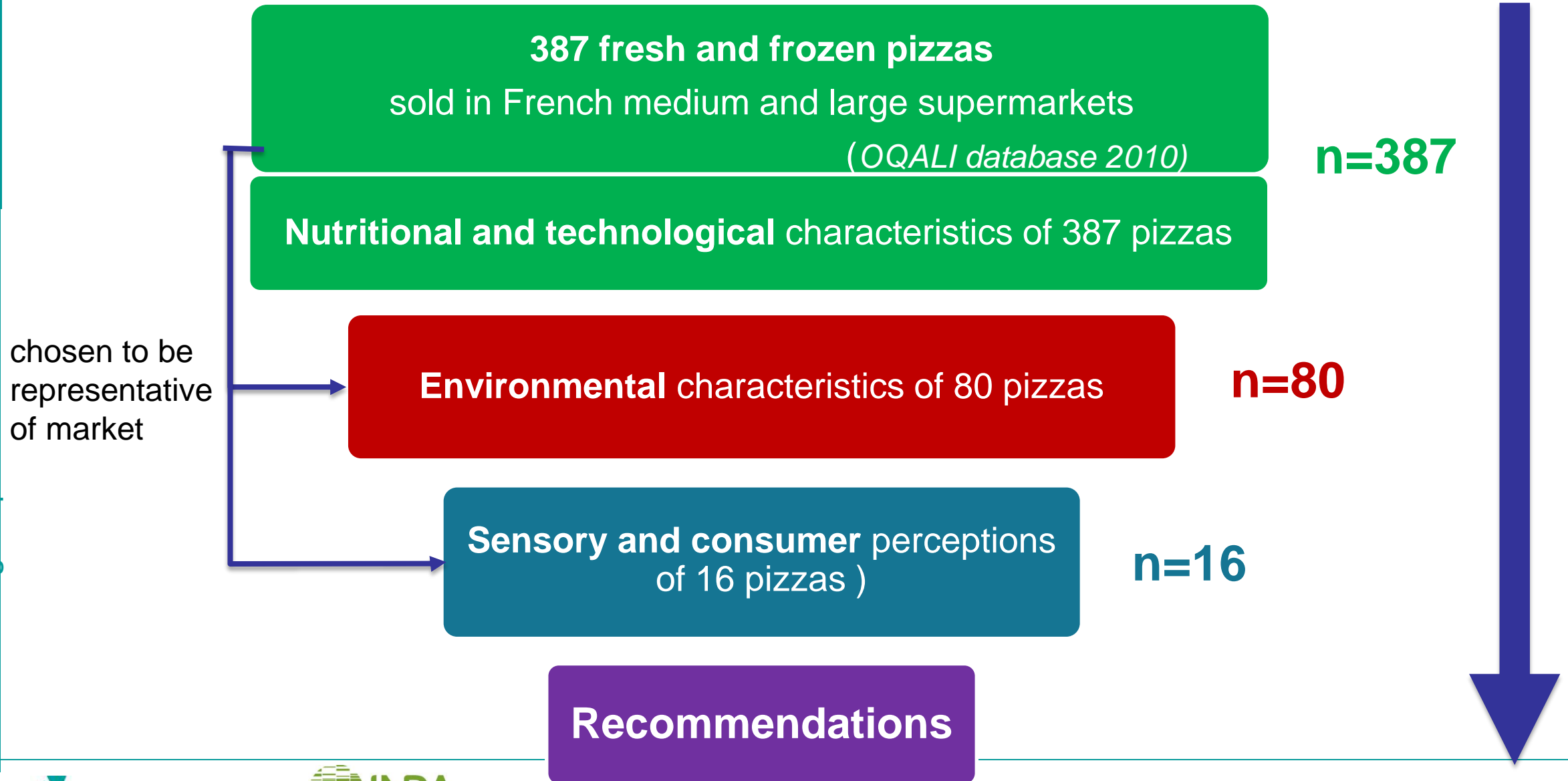
sensory /  
consumers

Perception and  
appreciation by consumers

economic

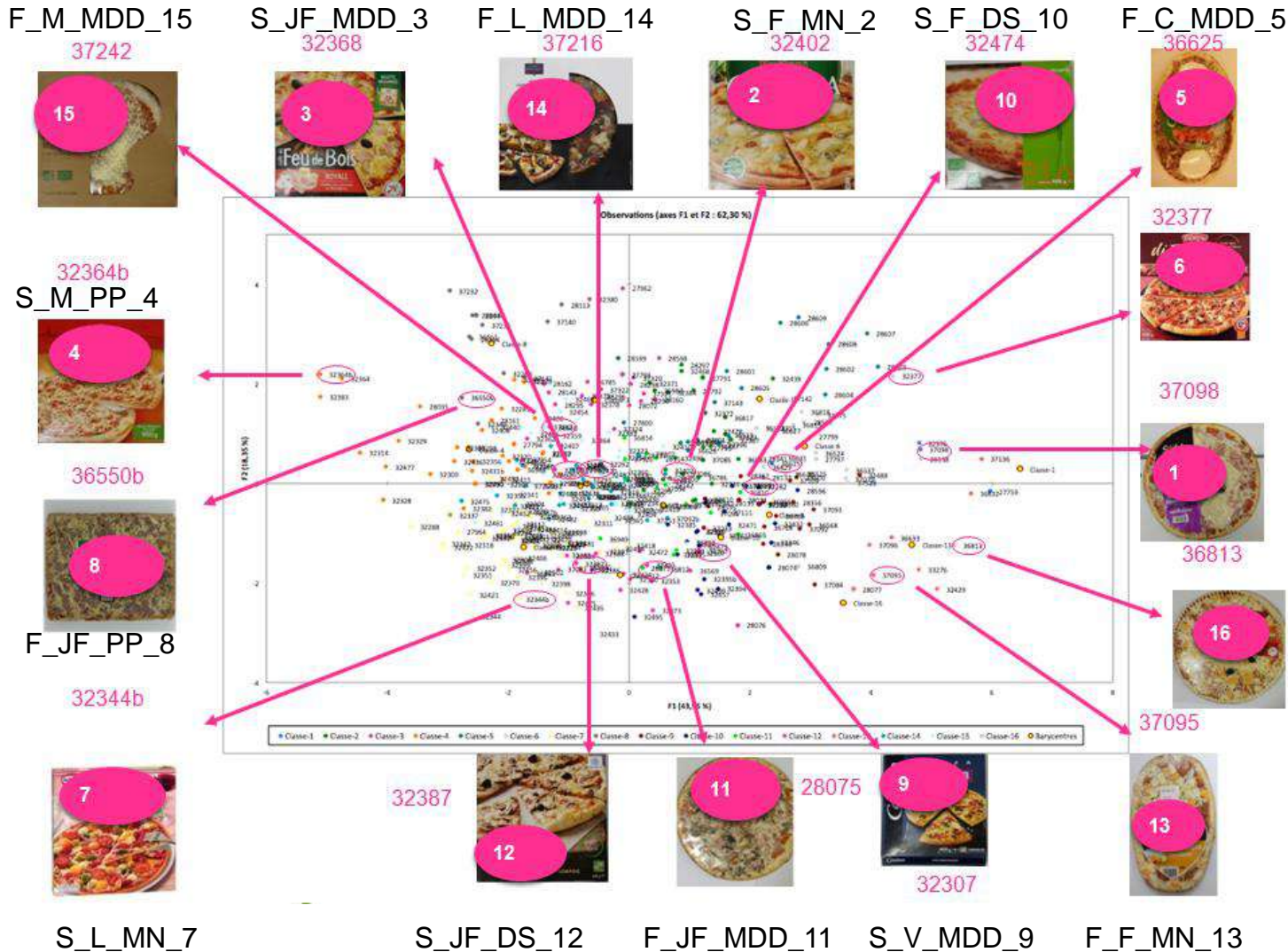
Price  
Sales volumes

# 1- Approach and studied products



# 1- Selection of 16 pizzas / 387 for consumer evaluation

## PCA map



Selection of 16 pizzas by using cluster analysis:

Based on :

- *nutritional*
- *environmental*
- *technological criteria*
- **Belong to 6 families** (vegetarian, margherita, kebab, cheese, delicatessen, ham-cheese)
- **8 were frozen and 8 fresh**

## 2- Perception by consumers in real context

### Design of study :

- Context : at university restaurant with 64 consumers (students / AgroParisTech Campus)
- During diner:
  - 1 pizza was proposed as main course,
  - + choices for side dish : vegetables / potatoes / rice / noodles...
  - + choices for starters and dessert
- 16 evening meals to evaluate the 16 pizzas (in monadic mode)
- During 2 months



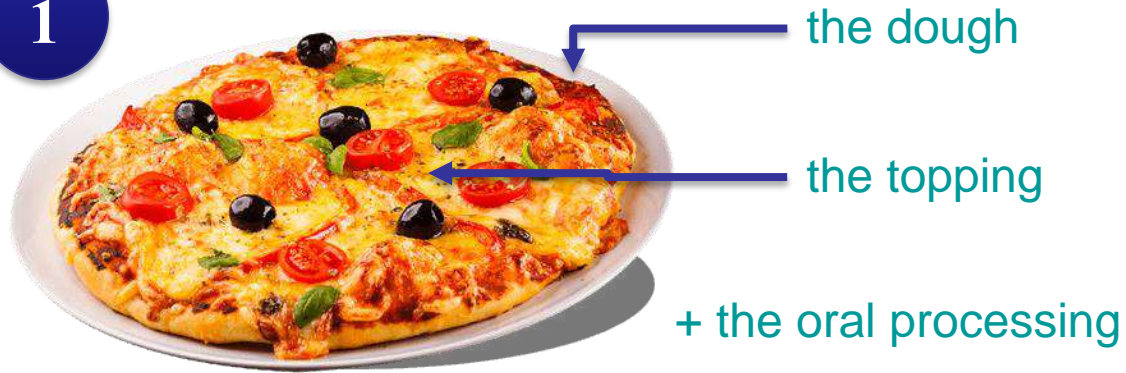


## 2- Sensory and consumers methodologies

### Methods:

#### - Liking and consumer's perception:

1



**CATA method + Intensity**

2

Perceptions  
of :



**Likert scales**

#### - Evaluation at 3 times of consumption:

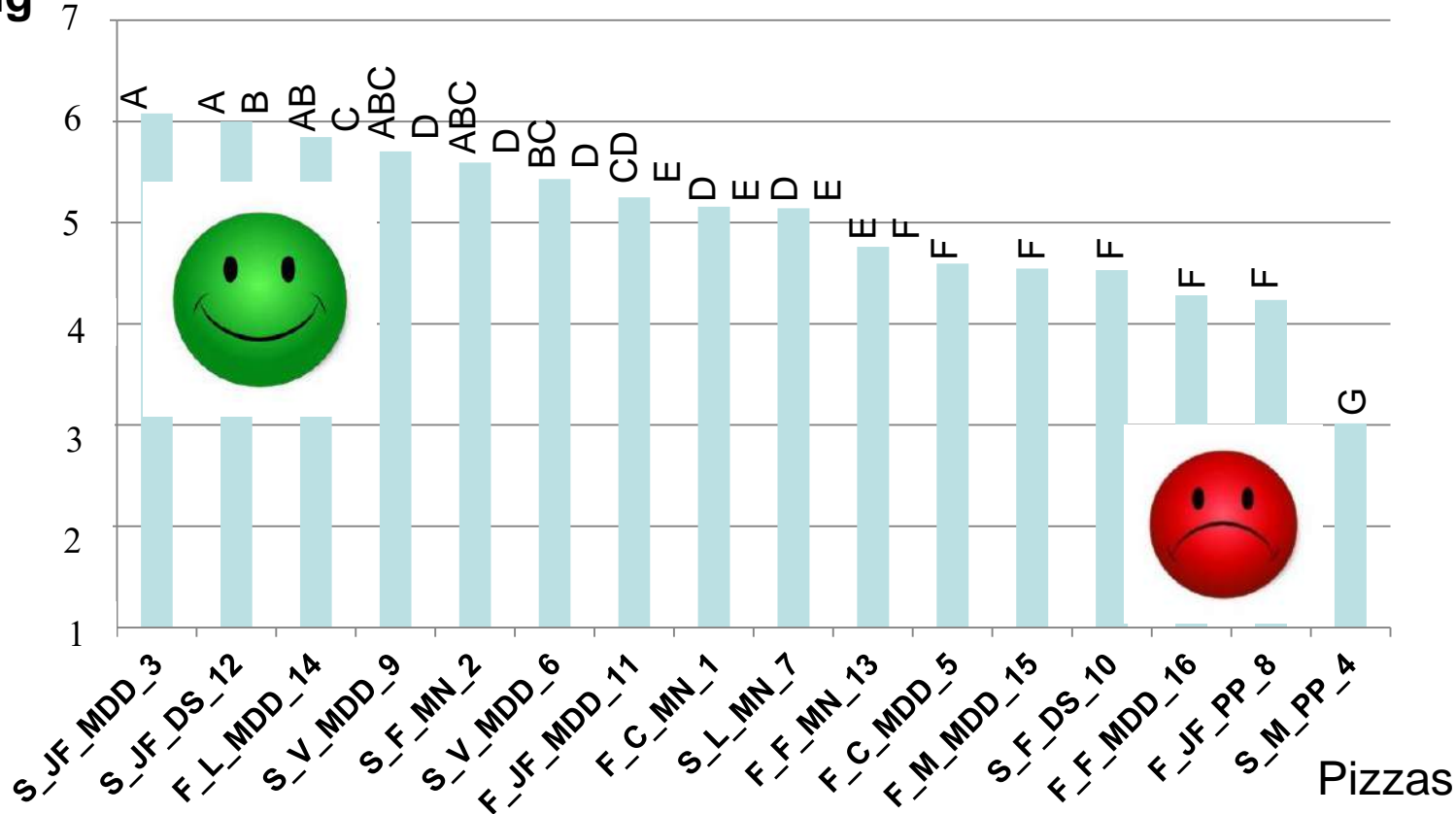


## 2- Liking of pizzas by consumers in real context

### Appreciation at the end of consumption

Liking

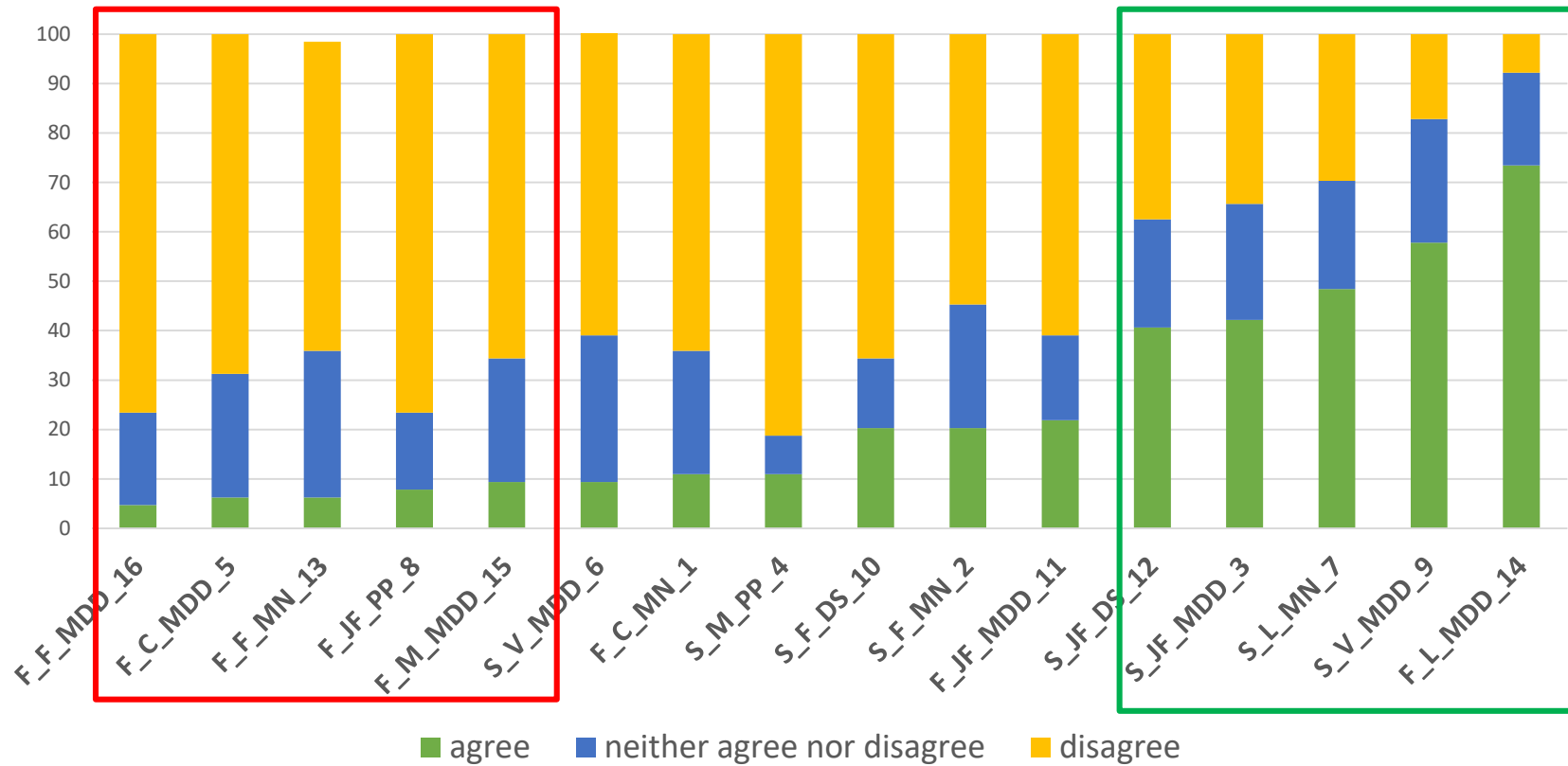
Scale in 7 points



The 16 pizzas were highly and differently appreciated.

### 3. Naturalness perception of pizzas evaluated by 64 consumers

#### Naturalness perception of pizzas



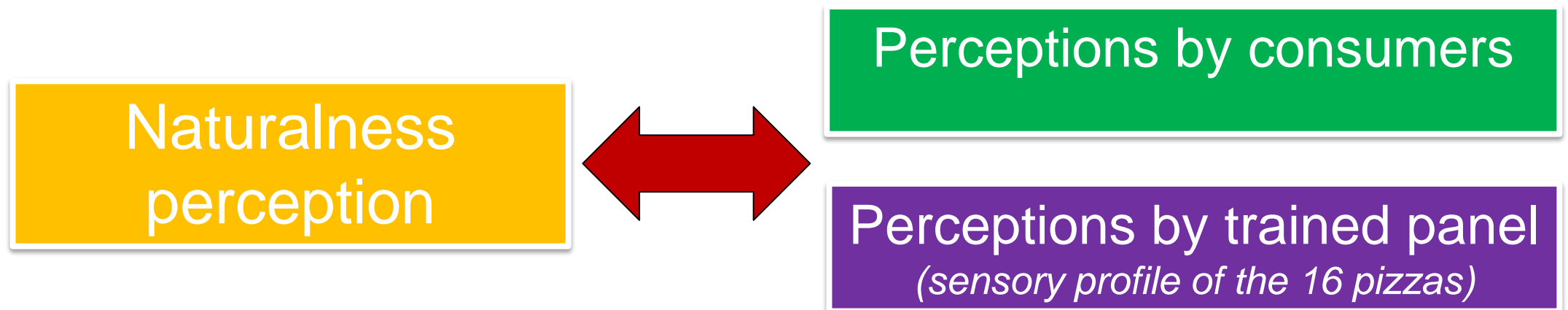
Large differences in naturalness perception between pizzas

### 3. Sensory determinants could explained naturalness perception?

No clear relationship between naturalness perception and « obj. scores »  
But High correlation between naturalness and liking!

→ **Could perception of naturalness be related to sensory determinants ?**

Used approach : External Cartography of « naturalness »



# Conclusions

- Great diversity within the evaluated pizzas:
  - as much on the nutritional, technological and environmental indicators,
  - as in terms of perception / appreciation
- Liking was highly related to naturalness perception, whereas a large range of objective indicators (nutritional, processing and sustainability) was highlighted
- Sensory drivers and limits to naturalness perception were identified with the natural mapping method.
- Some recommendations could be envisaged:
  - to build a healthier and sustainable offer in accordance with expectations and perception of consumers
  - to better communicate with consumers

# Thank you

Did'IT PAV project: *Diet Impact and Determinants – Interactions and Transition*

UMR 782

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