

# Exploring consumer acceptance of novel food technologies

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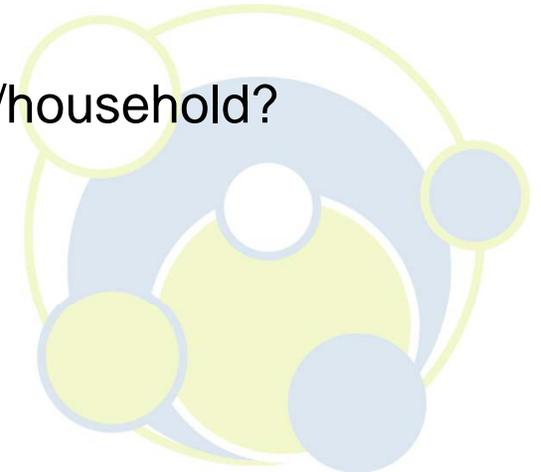
- **Who is the “Food Consumer”?**

- Individuals/Households who consume food as part of our daily lives
- All of us then!!!
- We lead diverse, complex lifestyles with a wide array of goals and values and our food choices are heavily influenced by all of these.
- Food (related)Technologies are an integral part of all our lives:
  - Kitchen based technology (fridges; freezers; bread makers; cupcake makers...)
  - Product Technology (functional foods; nano-encapsulation; nano-scale sensors)
  - Production Technology (Genetic Modification; production; Organic production; Precision Agriculture)
  - Process Technology (Irradiation; High Pressure Processing; Pulsed Electric Fields; Nanotechnology)
  - Packaging Technology (Smart Packaging; Degradable Packaging)
  - Logistical Technology (Web Connected Fridges; Mobile Apps for food ordering; Refrigerated delivery units)

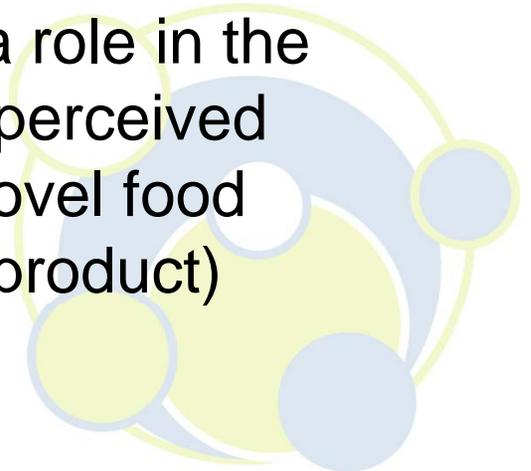


- **What is a novel food technology?**

- Is it a completely new technological discovery that can be applied to food?
- Is it a new technological way of doing something we already do to food?
- Is it the application of a existing non food specific technology to produce/process existing food products?
- Is it a completely new type of food developed using existing production/processing technology?
- Is it a technology that is new to an individual/household?
- **It is all of these to the Food Consumer.**



- **What do we mean by the consumer acceptance?**
  - The delivery of tangible and valued benefits to individual consumers/households
  - Perceived benefits/positive effect must outweigh perceived risks/negative effects
  - Acceptance influence by a complex mix of Psychological, Sociological, Sensory and Environmental factors which all play a role in the trade off assessment made between perceived benefits and risks presented by the novel food technology (and the associated food product)

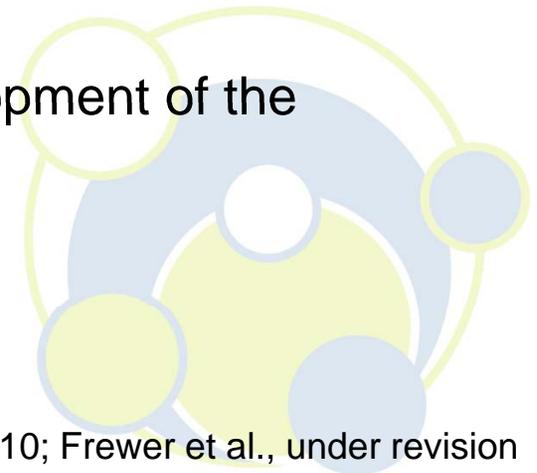


## Issues impacting on acceptability of Novel Food Technologies

- Perceived Personal Benefits (Financial; Taste; Health promoting; Emotional support; convenience; psychological; experiential; esteem; hunger satiating; socially conscious)
- Perceived Societal Benefits (Financial; Taste; Health promoting; Emotional support; convenience; psychological; experiential; esteem; hunger satiating; socially conscious)
- Differential accrument of risk and benefits (Fairness/Equity)
- Ethical Concerns
- Perceived Personal Risks (Health; Economic; Social; Environmental)
- Perceived Societal Risks (Health; Economic; Social; Environmental)
- Perceived Efficacy of Regulatory Framework

## Issues impacting on acceptability of Novel Food Technologies

- Cognitive associations/attitude activation
- Public awareness/familiarity
- Perceived Scientific Knowledge/Uncertainty
- Ambivalence
- Perceived Naturalness
- Controllability/Choice (labelling/traceability)
- Level of Consumer/Public involvement in development of the technology and associated food products
- Trust in science & regulation
- Socio-cultural differences



## The Case of Nanotechnology & Food

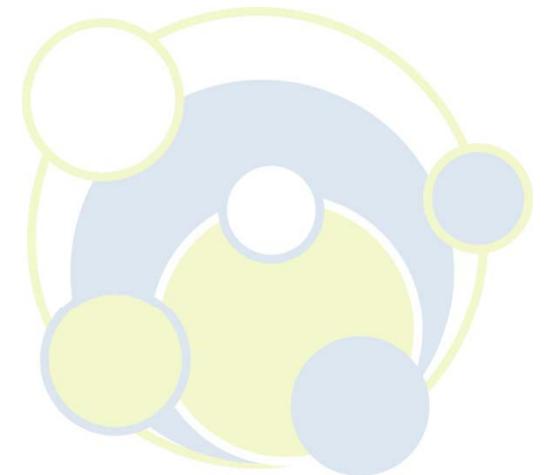
- Research has shown that the majority of people are unfamiliar with Nanotechnology
- Some evidence from US/Canada that consumers perceived Nanotechnology in a more positive light, as less risky and more beneficial than GM (Currall *et al.*, 2006) although food-related applications in general are viewed less positively, or at least differently, to other areas of application (Cobb & Macoubrie, 2004)
- Evidence that perceived individual benefits increase willingness to buy food produced using nanotechnology applications.
- Nanotechnology food packaging is more accepted than nanotechnology food
- Perceived societal benefits low



## The Case of Nanotechnology & Food

- Level of perceived risk (individual/societal) varies across applications with food associated with higher risks (not a one size fits all perception of risk)
- Ethical concerns associated with those linked to GM Food (differential accrue ment of benefits; unknown biological impacts including impact on biodiversity and sustainability)
- Concerns over the adequacy and perceived control of existing government and regulatory structures for nanotechnology and food.
- Perceptions of the naturalness of nanotechnology important in determining how consumers perceive of nanotechnology and may become a more relevant issue for specific applications.
- Evidence suggests that perceived ‘unnaturalness’ of a technology in itself does not reduce consumer acceptance, but that perceptions of ‘uncontained bioactivity’ associated with a technological application (including nanotechnology applications) may result in rejection.
- Some public engagement in the development of nanotechnology applications in the agri-food sector and the issues raised are similar to those raised for GM Food.
- Perceived trust in the industries associated with nanotechnology is not high

But is Consumer Acceptance a single stage process and do all consumers follow a similar path to acceptance of novel food technologies?



## What do we mean by the consumer acceptance?

- The Food Consumer is not a homogenous entity when it comes to responding to and accepting novel food technologies (Kuznesof, 2010)

Novel Food Consumer Typologies	
Critically Concerned	High levels of interest and concern about food. Strongly linked to their value system.
Benefit Trade-Off	Express a rang of concerns about food and interest is aroused by personal concerns about food safety
Price Conscious	Food is a lover priority compared to other life issues. Low level of underlying concern about food safety. If it is on the retailers shelf they consider it safe.
Taste Focused	Relatively unconcerned about food safety assuming that foods which are available are safe to east. Pace a great emphasis on the taste and please experience associated with novel foods. Are curious and willing to try new foods



Stages of Acceptance	Definition of stages	Key Factors influencing acceptance
Conceptual Acceptance	Refers to the engagement with and approval of a novel food and method of production by an individual	Personal relevance; Interest in food; emotional reaction
Connective Acceptance	Interplay between an individual and a novel food and the personally relevant connections that make with a novel food	Comprehending the novel attributes; identifying perceived personal benefits; visualising perceived personal need
Evaluative Acceptance	Refers to the comparisons and trade-offs made by consumers when evaluating novel foods	Comparison of novel food with available alternatives (incl. personal, situation; product)
Taste Acceptance	Refers to the taste experience of a novel food, the practices associated with its preparation and the novel foods impact on their well being.	Food Preparation; Taste; Sense of wellbeing
Dietary Acceptance	Refers to how complementary the novel food is with the structure of existing meal patterns and the substitutability of the novel food with existing foods within the diet.	Meal Patterns; Meal Ingredients

## Acceptance States & Novel Food Consumer Typologies

Acceptance State	Critically Concerned	Benefit Trade off	Price Conscious	Taste Focused
Conceptual Acceptance	*			
Connective Acceptance	*	*		
Evaluative Acceptance	*	*	*	
Taste Acceptance	*	*	*	*
Dietary Acceptance	*	*	*	*

