Food | Consumer | Health

Designing a world-class infrastructure to facilitate research

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Measuring food choice and consumption behaviour with real, fake or virtual food realities – a comparative approach from the RICHFIELDS program

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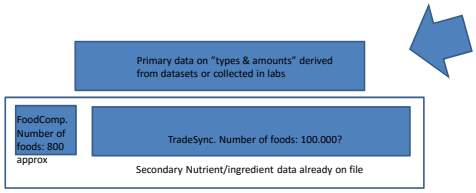
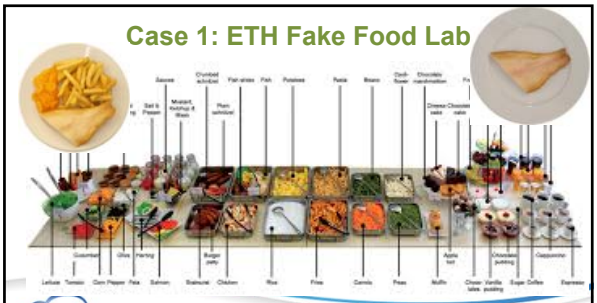
Primary & secondary data



Purpose

- To present an overview of selected food labs and discuss the options they present for consumer research.
- Strengths & weaknesses of 3 food labs analysed
  - Fake food experiments at the Fake Food Buffet (CH)
  - Real food experiments: "Restaurant of the Future" (NL) and FoodScapeLab (DK)
  - Virtual experiments in the "Restaurant of the Future" (NL) and the FoodScapeLab (DK)

Case 1: ETH Fake Food Lab



Case 1: ETH Fake Food Lab

- Can overcome common practical limitations (e.g. high costs, limited availability of suitable infrastructure and the effort of preparing food)
- Uses food replicas to investigate daily food choice (e.g. product choice, portion size choice or meal composition) under controlled laboratory conditions
- Example of studies:
  - investigation of nutrient and health claims or nutrient information on food choice
  - nudging effects
  - educational interventions as well as other manipulations

Case 2: Restaurant of the Future (NL)

Case 2: Restaurant of the Future (NL)

- Real-life canteen with food lab facilities situated at the Campus of Wageningen University and Research Centre
- The canteen consists of a buffet area with counters and a lunch area
- Cameras are used to track visitors´ behavior in the canteen
- Both daily visitors, occasional visitors and one-time visitors can be used

Case 2: Restaurant of the Future (NL)

Examples of research topics

- Food purchases (e.g. reactions on price changes or on changes on food labels)
- Tracking of the walking route by use of (tracking) cameras
- Insights in consumption behaviour over longer periods of time
- Impact of changes in the environment (light, sound, smell, position)

Case 2: Restaurant of the Future (NL)

Advantages

- The mix of participants (both daily visitors and occasional/one-time visitors)
- Apart from a (semi)natural context for the customers, the Restaurant of the Future provides a combination of opportunities for observational research and changeable surroundings
- Flexibility (The order of the buffet, positioning of the food, lightning, music, scent, price labels and food information are changeable)
- The combination of control over the surrounding, observation methods, and a population that comes in naturally, makes this a distinctive research facility

Case 2: Restaurant of the Future (NL)

Drawbacks

- Daily visitors may become aware of changes
- Occasional or one-time visitors may have the bias of not shoeing habitual behavior and being aware of the research context
- The representativeness of the sample is naturally biased due to the large(r) number of highly educated people at a university campus
- The analysis of camera images is time-consuming
- The set-up gives little freedom to run multiple settings simultaneously, which limits the experimental designs

Case 3: AAU FoodScape Lab (DK)

www.foodscapelabstudies.aau.dk

Case 3: AAU FoodScape Lab (DK)

- A real and virtual food lab where behavioral studies can be conducted
- The lab is funded on the idea that it is possible to define foodscapes as a conglomerate of food, people and spaces.
- The purpose of the lab is to study the interactions taking place in foodscapes.
- The lab is divided into three areas (cooking, serving and eating) depending on the focus of the study.
- The data outcomes are very structured and are interfaced with background data (e.g. food composition databases and ingredient prices).
- In this study, the devices and functionalities used in the lab are related to the intelligent buffet and the foodscape tracking. Both use real food and the virtual food choice simulator.

Case 3: AAU FoodScape Lab (DK)
The intelligent buffet

Subject, no	Time, hour: minute: second	Change of weight, grams	Scan, no
1	00:01:55	23	1
5	00:02:59	50	8
8	00:01:39	76	7
9	00:01:49	34	6
3	00:02:51	55	5
4	00:01:50	67	5

- Designed to automatically detect food choices under experimental conditions (FoodScapeLab) or field conditions
- Consists of a traditional buffet, which has been further developed and equipped with scales and sensors
- Comes in a mobile version and in a stationary version
- Bracelet sensors detect the subjects. the amounts of food taken from a particular scale are registered and their behaviors are recorded using video equipment
- Apart from the bracelet, there is nothing unusual and therefore a minimum bias

Case 3: AAU FoodScape Lab (DK)
FoodScape tracking

- Foodscape Tracking technology can be used to track the motion pattern of consumers in micro foodscapes (for instance in order to track choice dynamics around a buffet)
- At the same time, context sensitive questions can be asked background questionnaire. It allows a real time ethnographic approach, where the consumers are asked in the actual behavioral situations

"Food" Technology	Cases	Description of "food tech"	Description of data capture = outcome measure	Strengths +	Weaknesses −
Real food	FSL	A facility with a Cook, Eat & Serve area	Observer XT, Intelligent Buffet, Heat Mapping, eTracking	Familiarity	Costs, preparation, cleaning
Real food	WUR	A canteen set-up with a (real) buffet, counters and a lunch area.	Purchase data, video of the buffet and lunch area, tracking and possibilities to measure food waste.	A real-life canteen context	Data structure, costs, single experimental condition at one moment in time
Fake food buffet	ETHZ, UoN, Konstanz (and further labs planned in 2016)	A buffet with replica food items from which subjects choose from	Portion sizes, meal composition, applied knowledge, alignment with dietary guidelines (%GDA, RDA)	low costs, no cleaning, highly controllable environment, reproducibility and validity, experiments, assessment of meal composition (complex choices) environmental influences, applied knowledge	No consumption, or food odours
Virtual food	FSL AAU	A virtual food environment that (VFCS – virtual food choice simulator) can be shaped in any style and	Software/hardware based (for instance put on shopping trolley, brought to check out aisle, purchased with "virtual	Low cost, easy to set up experiment, no cleaning, easy and fully automatic data capture	Unfamiliarity, unknown validity

Conclusion

- New avenues for studying food choice under experimental conditions
- Development and maintenance of such facilities is both knowledge, labour and cost intensive
- Increased cooperation, knowledge sharing and research infrastructure creation would be ways to meet that challenge

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Dont forget to sign in for the Special Interest Groups: food & devices and big food data

Food & Devices

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