SKIM's Conjoint Seminar Part 1

Getting started with conjoint

April 2021

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SKIM's Conjoint Seminar

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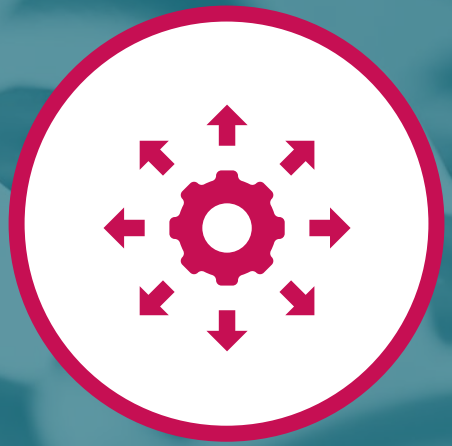
Part 1 Content

Quick introduction

What is conjoint?



Conjoint methodology overview

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SKIM is boutique research agency with a global presence, but is still small enough to offer customized solutions

9 offices in 7 countries
~ 190 employees

● = Current locations
● = Data Science

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A little bit about us

SKIM | Data Science

Decision behavior **Experts** since 1979

Team of **dedicated** decision behavior modelers and conjoint **trainers**

Sawtooth Software

BCG

McKinsey & Company

SIMON • KUCHER & PARTNERS

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What is Conjoint?

A quick introduction

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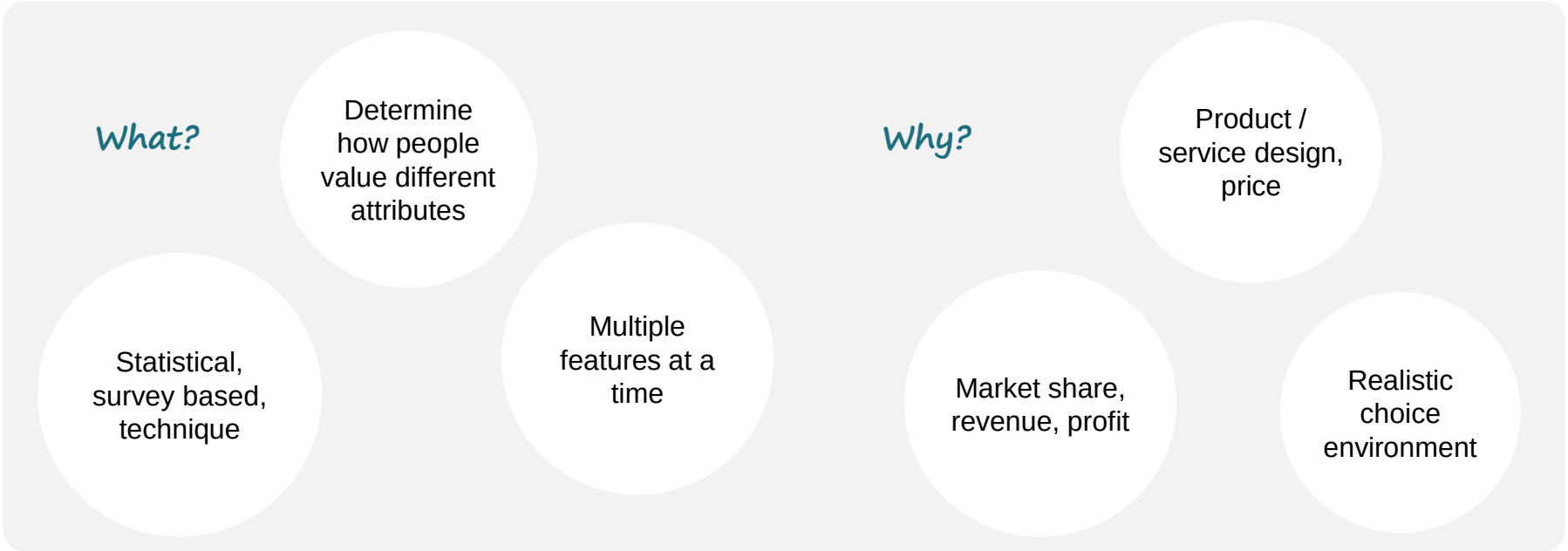
What is Conjoint Analysis and when to use it?



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How does Conjoint work?

How it works

Which product would you buy?

Asked **multiple times** – 1 or more attribute(s) change(s)

Benefits

- **Realistic as context is taken into account**
- **Handles several attributes**
- **Intuitive**

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Which of these 2 beverages would you buy?

OR

$2

$2

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Which of these 2 beverages would you buy now?

$2

OR

$1

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…and now?

OR

$1

$2

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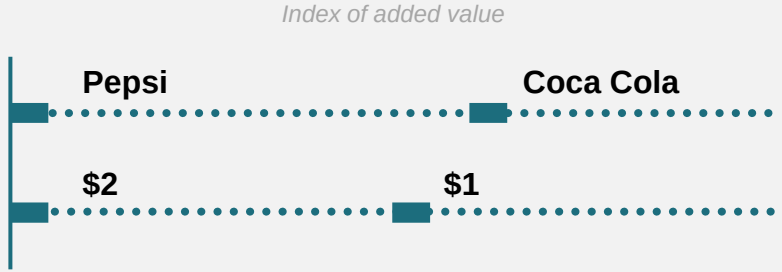
The survey provides us with utility values that reflect respondent's perceived value



The choices indicate that

- The respondent prefers Coca Cola
- Offering a price reduction of $1 is NOT enough to change his/her mind

The added value of Coca Cola is **LARGER** than the added value of a price reduction of $1

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The survey provides us with utility values that reflect respondent's perceived value

The choices indicate that

- The respondent prefers Coca Cola
- Offering a price reduction of $1 is ENOUGH to change his/her mind

The added value of Coca Cola is **SMALLER** than the added value of a price reduction of $1.

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Conjoint: capture **what really drives people** when choosing a product or service

1. Mimic the actual choice process
2. Respondents will show their actual choice behavior
3. Determine the preferences for different product features

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The key to Conjoint Analysis is to think about products as a collection of different features

Make sure to include all **important** features, and at the same time exclude all **unimportant** features

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Conjoint consists of a list of (product) features

Imagine you are in the market to buy a new compact camera. Assuming the here models below are the current market's offer, which would you choose?

Attributes

	Option 1	Option 2	Option 3	Option 4
				
Brand	Nosy	Olympiad	Sonic Panna	Kadok
Resolution	18 MP	12 MP	18 MP	8 MP
Optical Zoom	8x	4x	8x	10x
Battery Life	300-400 phots	<200 photos	<200 photos	300-400 photos
Images Stabilizer	Yes	No	NO	Yes
Price	**€179**	**€179**	**€179**	**€179**

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Conjoint consists of a list of (product) features

Imagine you are in the market to buy a new compact camera. Assuming the here models below are the current market's offer, which would you choose?

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Battery Life	300-400 phots	<200 photos	<200 photos	300-400 photos
Images Stabilizer	Yes	No	NO	Yes
Price	**€179**	**€179**	**€179**	**€179**

Levels

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Utility of the features

Each attribute level has a certain value for every respondent / buyer

This relative value is called ‘utility’

Utility of product

combined utility of all attribute levels of that product

$$U_{product} = U_{levelfeature\ 1} + U_{levelfeature\ 2} + U_{levelfeature\ 3}$$

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Utility of the features

Example: mobile phone has 3 attributes Brand, screen resolution and price

Brand	Screen resolution	Price
iPhone	720×1280	€100
Samsung	640×1136	€200
Huawei	1080×1920	€300

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Utility of the features

Example: respondent 1 has the following utilities for three mobile phone attributes

Brand	Screen resolution	Price
iPhone +20	720×1280	€100
Samsung -15	640×1136	€200
Huawei -5	1080×1920	€300

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Utility of the features

Example: respondent 1 has the following utilities for three mobile phone attributes

Brand	Screen resolution	Price
iPhone	720×1280 -10	€100
Samsung	640×1136 +3	€200
Huawei	1080×1920 +7	€300

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Utility of the features

Example: respondent 1 has the following utilities for three mobile phone attributes

Brand	Screen resolution	Price
iPhone	720×1280	€100 +30
Samsung	640×1136	€200 -5
Huawei	1080×1920	€300 -25

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Utility of the features

The utilities for the following products are thus as follows

Brand	Screen resolution	Price	Total
iPhone +20	720×1280 -10	€100 +30	= +40
Samsung -15	640×1136 +3	€200 -5	= -17
Huawei -5	1080×1920 +7	€300 -25	= -23

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Utility of the features

The utilities for the following products are thus as follows

Brand	Screen resolution	Price	Total
iPhone +20	No games -10	€100 +30	= +40
Samsung -15	640×1136 +3	€200 -5	= -17
Huawei -5	1080×1920 +7	€300 -25	= -23

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Utility of the features

The utilities for the following products are thus as follows

Brand	Screen resolution	Price	Total
iPhone +20	No games -10	€100 +30	= +40
Samsung -15	640×1136 +3	€200 -5	= -17
Huawei -5	1080×1920 +7	€300 -25	= -23

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Utility of the features

They represent the ‘added value’ of the different attribute levels (per respondent)

The utilities are the key output of Conjoint Analysis

They determine which attributes are most important

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Conjoint methodology overview

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Different markets call for different conjoint techniques

MaxDiff

For screening items to determine top to bottom rank and line optimization

(Adaptive) Choice-Based Conjoint

Product configuration and portfolio optimization

Menu-Based Conjoint

For cross-selling or upselling optimization

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Conjoint methodology overview

Maximum Differential Scaling (MaxDiff)

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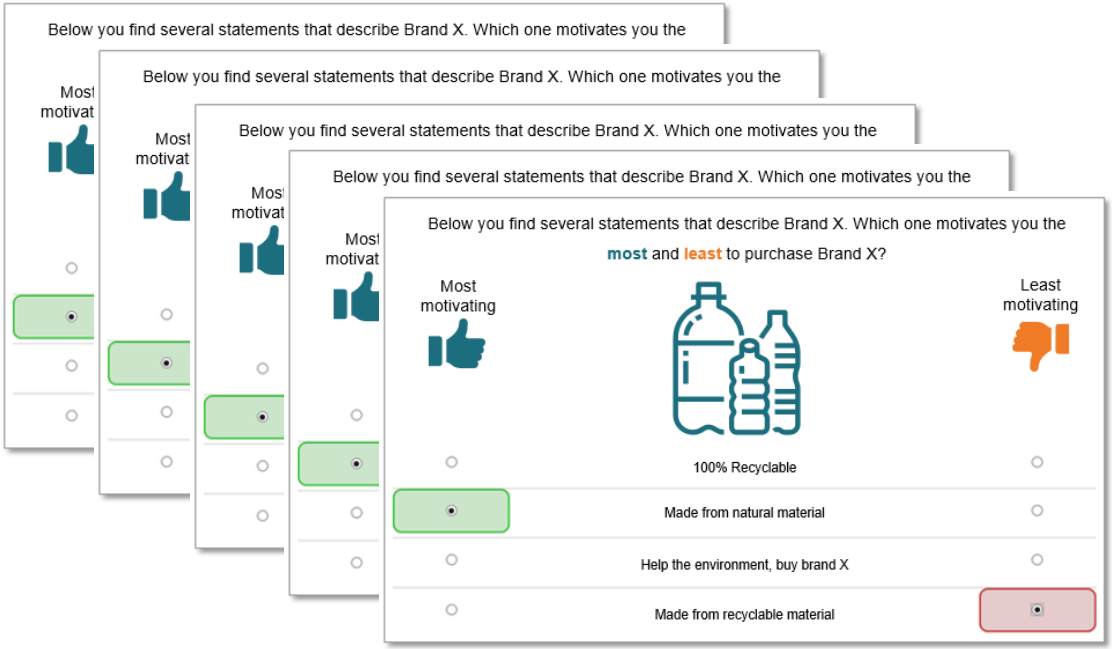
How it works: Respondents choose best and worst options across multiple different choices



Maximum Difference Scaling – Principals

Efficient alternative to traditional rating and ranking

- Rating: does not show much differentiation
- Ranking: not able to measure slight differences between ranks
- Ranking: difficult with a lot of items to test

MaxDiff

- Provides rank order position across items
- Provides distances between items in the rank

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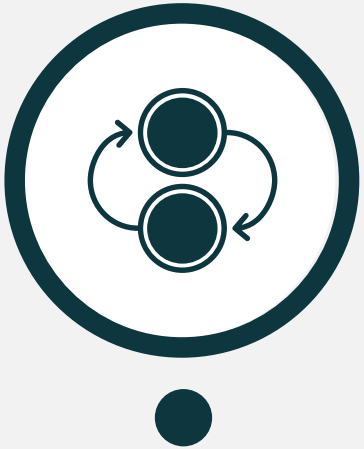
When do you use a MaxDiff?

Items need to be ranked from top to bottom based on consumer preferences

Optimize portfolio without having to consider price changes



Compare different countries (scale free)

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Benefits and limitations of using MaxDiff

Benefits

- Better Ranking
- More items can be tested
- Less bias on the ranking
- More engaging

Limitations

- Ranking is relative
- Ranking is for individual items (cannot test combinations)
- Respondent fatigue if many items are tested (too many screens)

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Conjoint methodology overview

Choice-Based Conjoint (CBC)

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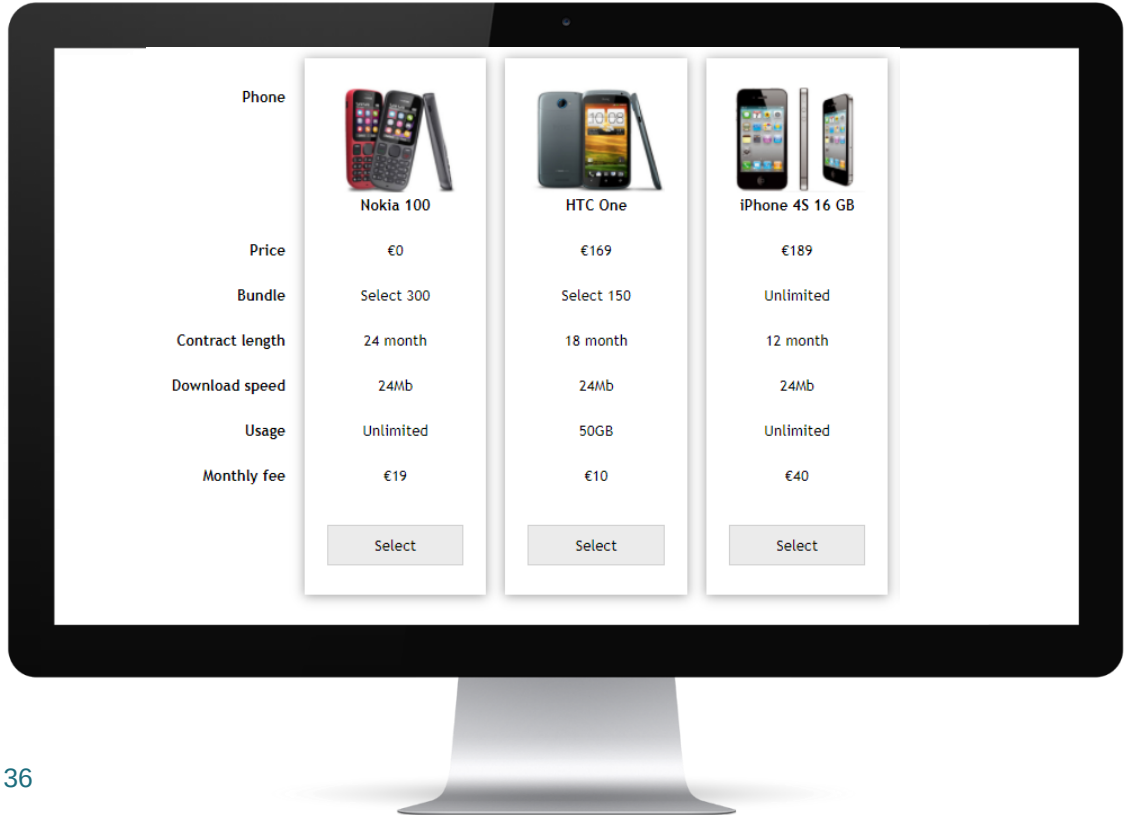
Example: Which mobile subscription will you buy from these options



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When do you use a choice-based conjoint?

What are consumers willing to pay for (new) products or features?

Want to understand what consumers prefer when designing new product

There are complex design rules for realistic scenarios

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Design considerations: multi-attribute CBC

1	2	3	4	5
What attributes do you want to test, how many attributes do we select	**What levels do we want to test, how many levels do we want to test**	**How many concepts per task**	**How many tasks per survey**	**Do we include a "none" option**
Up to 10 attributes	Up to 5 levels	3-5 concepts	10-12 tasks	If you want to test a 'non-purchase' option

Recommendation for multi-attribute CBC

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Example: Which soft drink will you buy from these options

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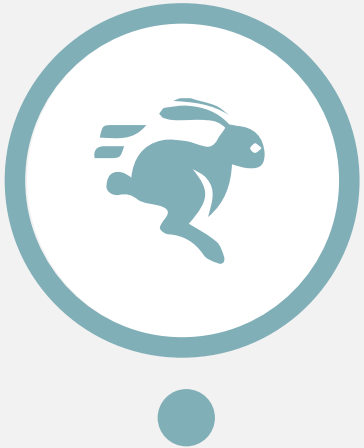
When do you use a choice-based shelf test?



Fast moving consumer goods, where the product category is sold on a shelf or through e-commerce

Want to understand consumer preferences when designing new product

The focus of the research is on price / price elasticity and / or portfolio management

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Design considerations: CBC shelf test

1	2	3	4	5
What attributes do you want to test, how many attributes do we select	**What levels do we want to test, how many levels do we want to test**	**How many concepts per task**	**How many tasks per survey**	**Do we include a "none" option**
Maximum 40 products (covering at least 70% of the market)	Up to 5 levels per attribute per product	Guideline: show about 75% of products per screen	10-12 tasks	If you want to test a 'non-purchase' option

Recommendation for CBC shelf test

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Benefits and Limitations of using a choice-based conjoint

Benefits

- Interactions and trade-offs between attributes can be analyzed
- Full flexibility in the design of the exercise to make it very realistic
- Can control statistical design to make the levels more balanced

Limitations

- Limited number of attributes / levels can be tested
- Respondents cannot choose individual features
- Not adaptive

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Conjoint methodology overview

Adaptive Choice-Based Conjoint (ACBC)

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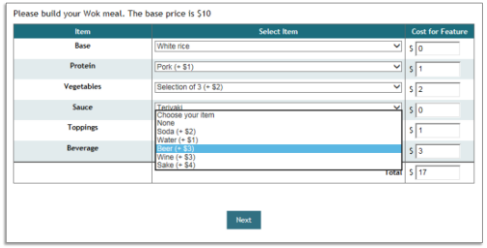
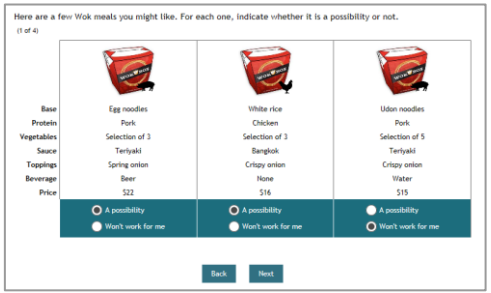
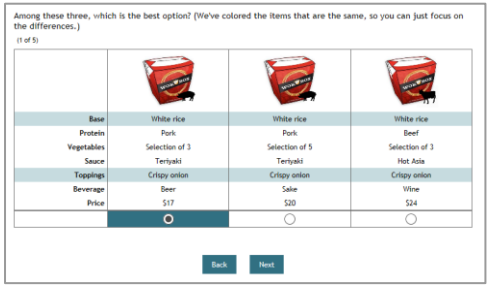
Overview: An adaptive choice-based conjoint contains three components



Build your own



Screening section



Choice tournament

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When do you use an adaptive choice-based conjoint?

Complex categories with many different products and/or attributes

Focus on the core attributes and levels that really matter to each respondent

Need to ensure that the price shown is realistic

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Benefits and limitations of using adaptive choice-based conjoint

Benefits

- More relevant tradeoffs
- More interactive
- More accurate responses at the individual level
- More realistic pricing bands

Limitations

- No control over the design - can become imbalanced
- More response time required
- Respondents may build unrealistic options
- Does not work so well with many prohibitions and alternative specific attribute relations

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Conjoint methodology overview

Menu Based Conjoint (MBC)

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MBC vs CBC/ACBC: Respondents can choose their own combinations of items

In CBC, respondents make a single choice among predefined products/services

In MBC, respondents make between zero and multiple selections of the items on screen to build their own product/service

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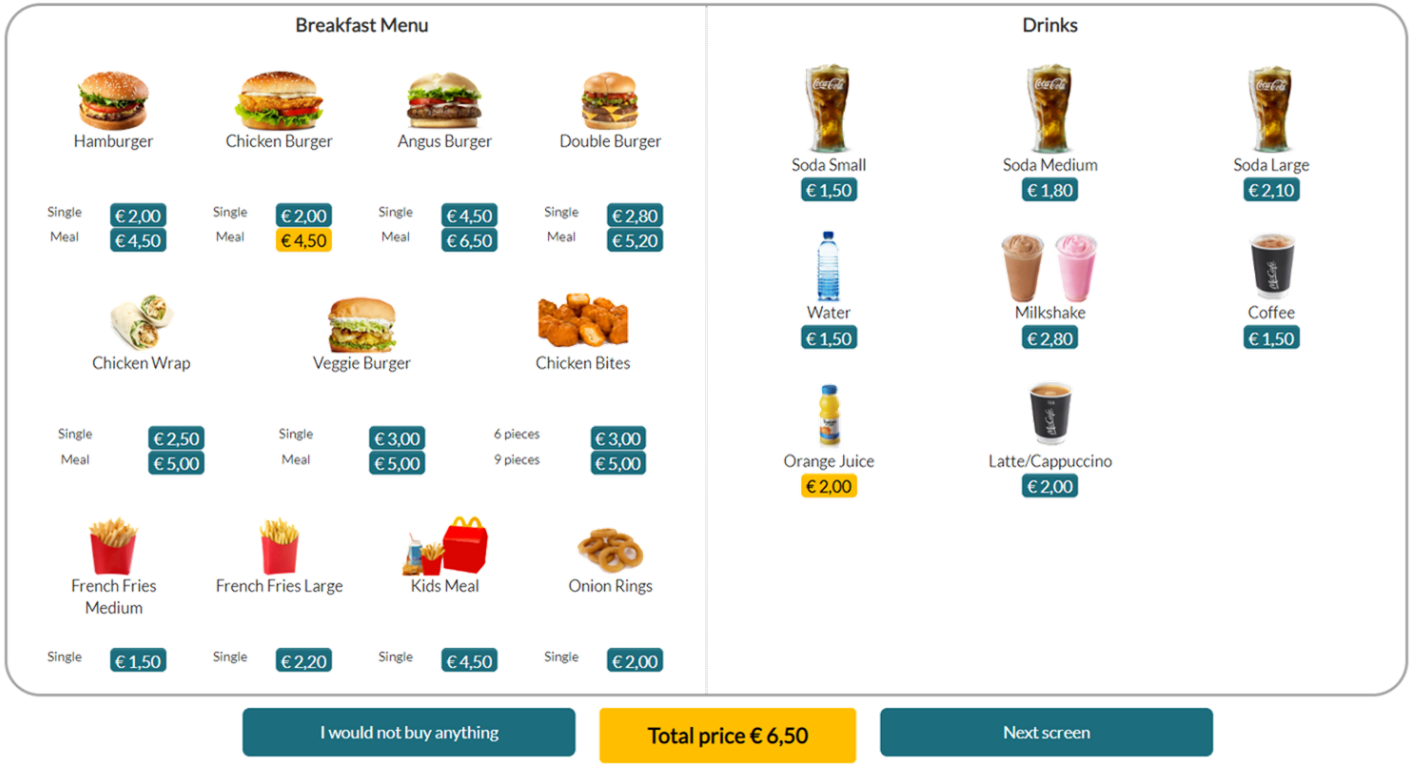
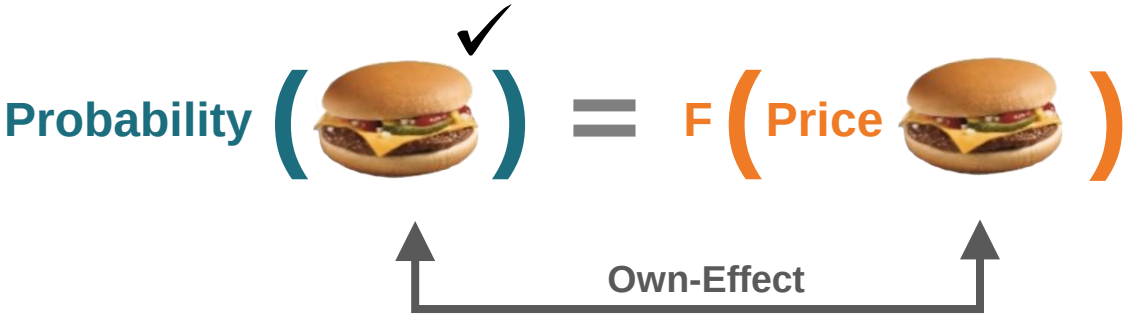
How it works: Respondents choose from a full menu of available options



Menu-based conjoint looks at own-price effect and cross-price effect

Own-price effect: Effect of a menu item's price on the probability that it will be chosen by the respondent

Cross-price effect: Effect of a menu item's price on the probability of choice of a different item



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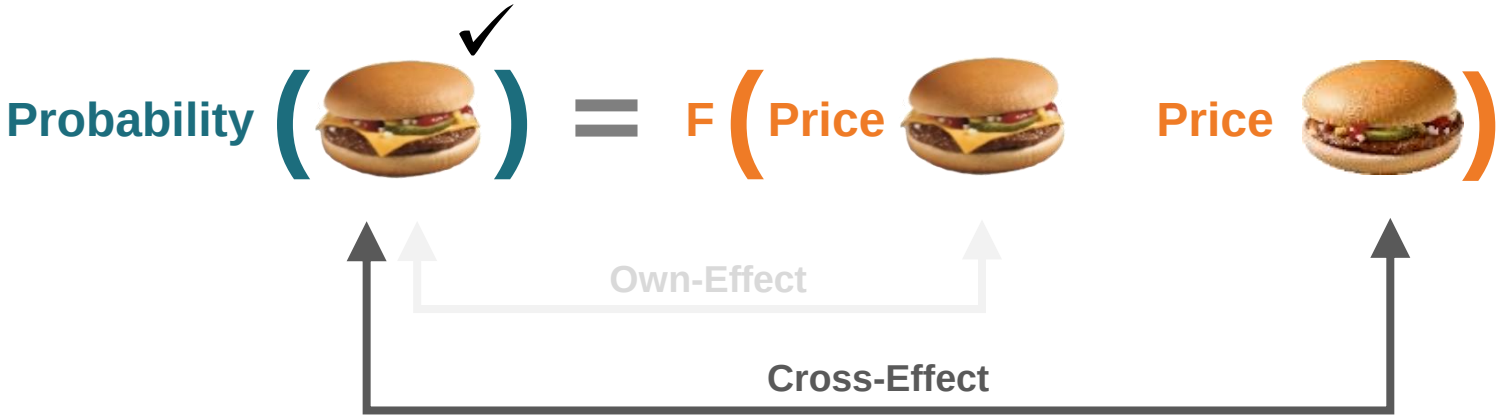

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MBC can be used in almost any market

example: TV options

1

Basic
Digital TV - €25

Comfort
Digital TV &
Record - €32.50

Comfort ++
Digitale TV & Record &
Tablet - €37.50

2

Extra options

- [ ] HD TV - €4
- [x] Extra media box - €4
- [ ] Led light media box - €1

Extra channels

- [ ] 95 Extra channels - €5
- [ ] Movie Package - €8
- [x] Sport package €17

3

Your total price
€53,50

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MBC can be used in almost any market

example: car options

Base price: €10,000

Driver comfort € 500

- Comfort Seat € 90
- ✓ **Parking sensors € 195**
- Rain sensor € 265

✓ **Sport package** € 660

- ✓ **Metallic paint € 450**
- ✓ **Heated mirrors € 150**
- ✓ **Alloy Wheels € 350**

Cabin Comfort Plus € 165 ✓

- ✓ **Air conditioning € 90**
- ✓ **Audio system € 75**
- ✓ **Heating seats € 165**

Navigation Pack € 275

- GPS navigator €150
- GPS alarm € 320

Total price: €11,395

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When do you use a menu-based conjoint?

Several individual items can be chosen separately to compose a customized menu of services/products

Determine price elasticity per product/item on the menu and optimize offerings

Need to understand the most chosen combinations of items

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Benefits and limitations of using menu-based conjoint

Benefits

- Realistic decision making process
- Can model the interaction effects
- Can test a lot of options

Limitations

- More complicated to execute
- Typically does not include competition

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Conjoint methodology overview

What's in it for me?

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What you get out of it

Market Simulation Tool
to test impact of product/portfolio changes on preference shares, for total sample or sub-groups

Segmentation
(e.g. Latent Class) based on similar preference structures

Share: Revenue and Profit Calculations
to understand impact of various scenarios

Scenario Runner / Optimizations
to calculate best product/portfolio

Features Value
to understand the price the sensitivity of respondents for various features

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Thank you

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