Conjoint Analysis 101: With examples for New Product Development

Quirks Chicago







Contents







Conjoint analysis

- What is conjoint analysis?
- How to set-up an experiment?
- 5 easy steps using a case study

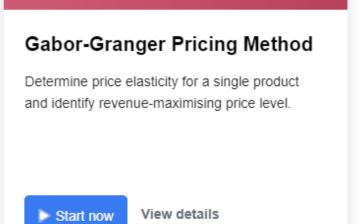


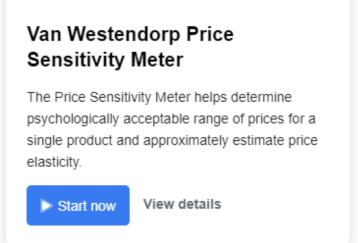
A closer look at the results

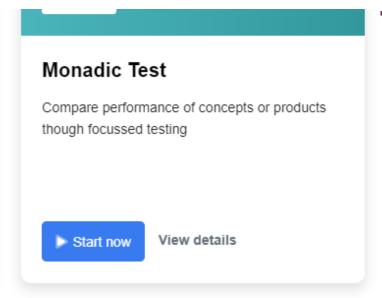


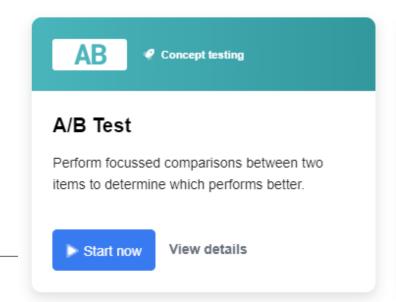
Q & A

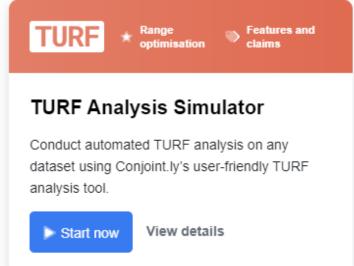
All-in-one survey research platform with easy-to-use advanced tools and expert support

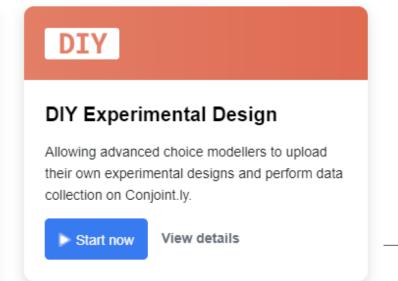












Your guide for today



Stijn Mentzel, PhD

Lecturer Quantitative Market Research

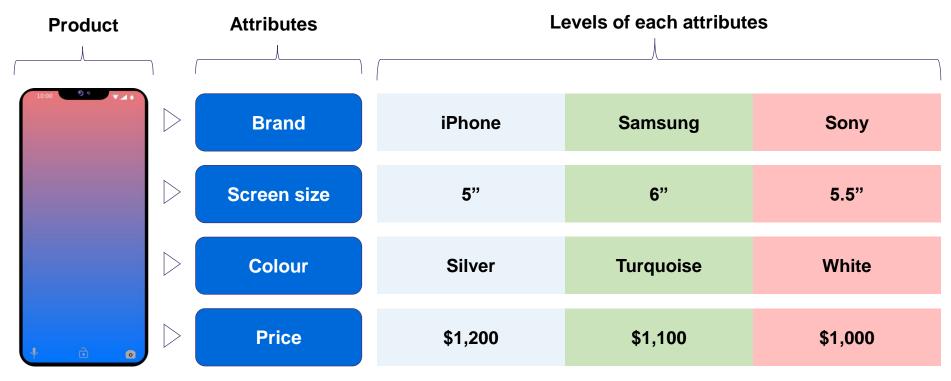
Stijn is a lecturer for quantitative market research at Conjoint.ly. He is specialized in data and analytics, with almost 10 years' experience in teaching research methodologies, statistics and behavioral psychology.

He has worked together with various companies and Universities around the world. Before delving into research, he studied human movement science. He is currently based near Amsterdam in the Netherlands.

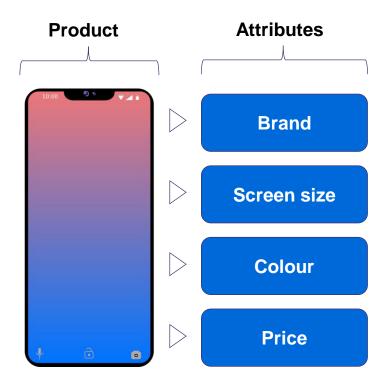
What is conjoint analysis?

Step 1: Break down a product into attributes and levels

Conjoint analysis works by **breaking a product or service down into its components** (referred to as <u>attributes</u> <u>and levels</u>) and then testing different combinations of these components to **identify ones that are more and less** preferred.



Step 1: How to specify your attributes?



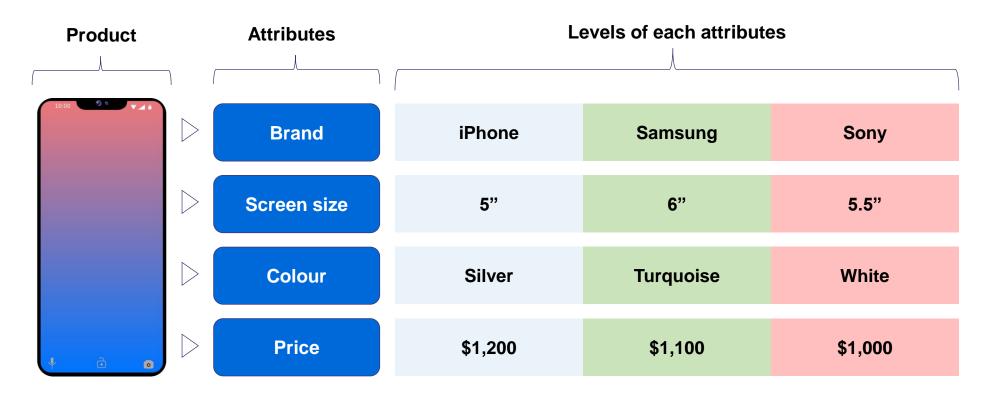
Attributes are 'dimensions' of your product. For example: price, colour, shape, size, brand, or location

- 1.Include the attributes that you believe are most important to your customers when they make buying decisions, as well as any attribute whose importance you would like to check
- 2. Try not to include more than seven attributes because it might confuse your respondents or may look too clunky, especially on mobile devices
- 3. Sometimes attributes are **binary** (i.e. yes/no or present /absent)

What is conjoint analysis?

Step 1: Break down a product into attributes and levels

Conjoint analysis works by **breaking a product or service down into its components** (referred to as **attributes and levels**) and then testing different combinations of these components to **identify ones that are more and less preferred**.





Step 1: How to specify your levels?

Levels are the 'values' that each attribute can take For example: 'colour' can have levels 'blue', 'red', 'transparent'

- Keep in mind that you need to have at least two levels per attribute. If an attribute only has one level, include it as a characteristic in your product description.
- **2.** Levels should be precise: e.g. the levels for device storage are '128 GB' or '500 GB', not 'fits 5.000 pictures' or 'stores over 30 hours of recording'
- 3. Make sure the **levels are mutually exclusive within** each attribute

Levels of each attributes

iPhone	Samsung	Sony
5"	6"	5.5"
Silver	Turquoise	White
\$1,200	\$1,100	\$1,000



Step 2: Create choice tasks

The process of **assembling attributes and levels** into alternatives and then into **choice sets** is called "experimental design" and requires extensive statistical analysis



Step 3: Set-up and launch an experiment

Business Study

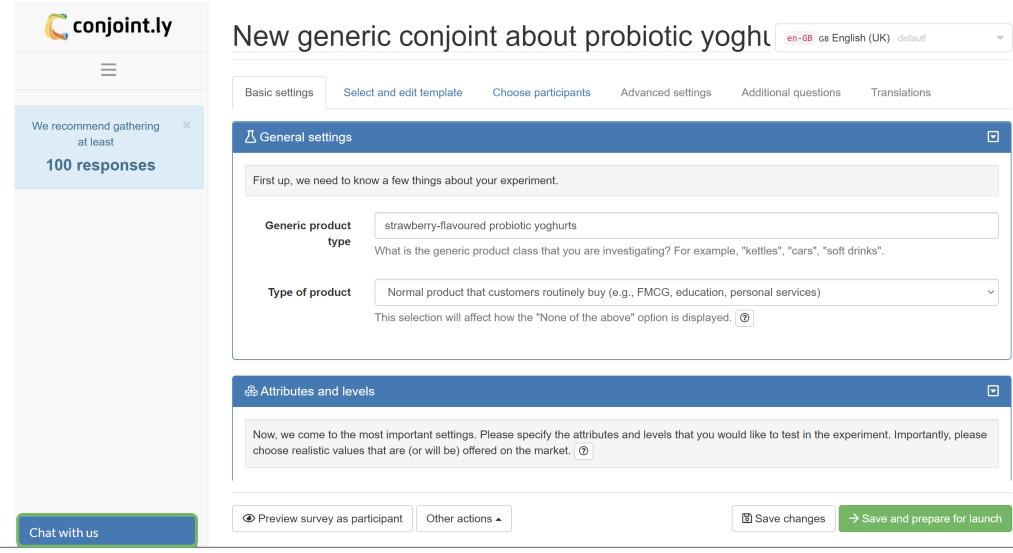
A company wants to **launch** an **NPD**, namely a **strawberry-flavoured probiotic yoghurt**

They want to gain more **insight** into the attributes: brand, probiotic content claims, pack type, volume, eco labelling, and pricing

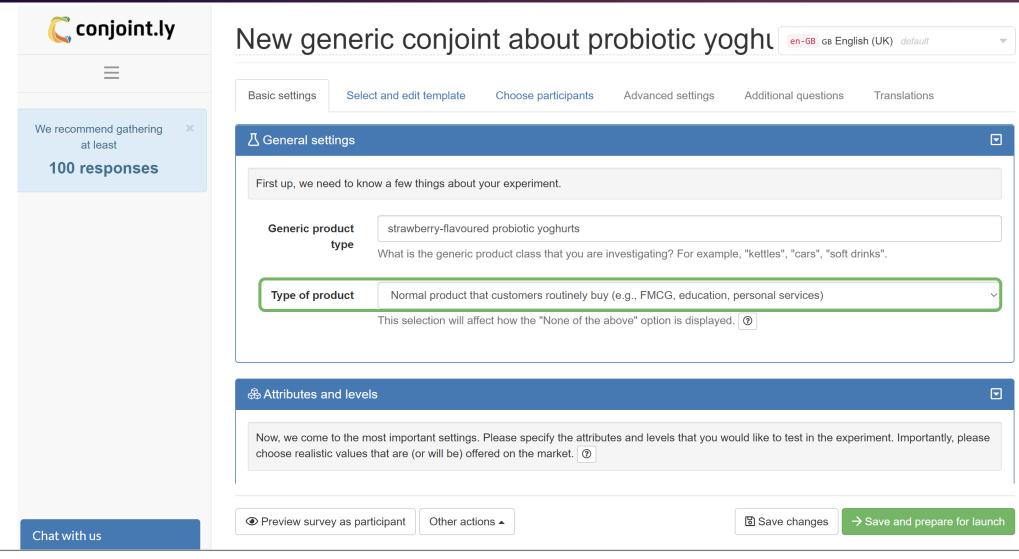
Their **main goal** is to find out which **combination** of attributes and levels is most **preferred**, as well as, how price **influences** preference share, revenue and gross margins

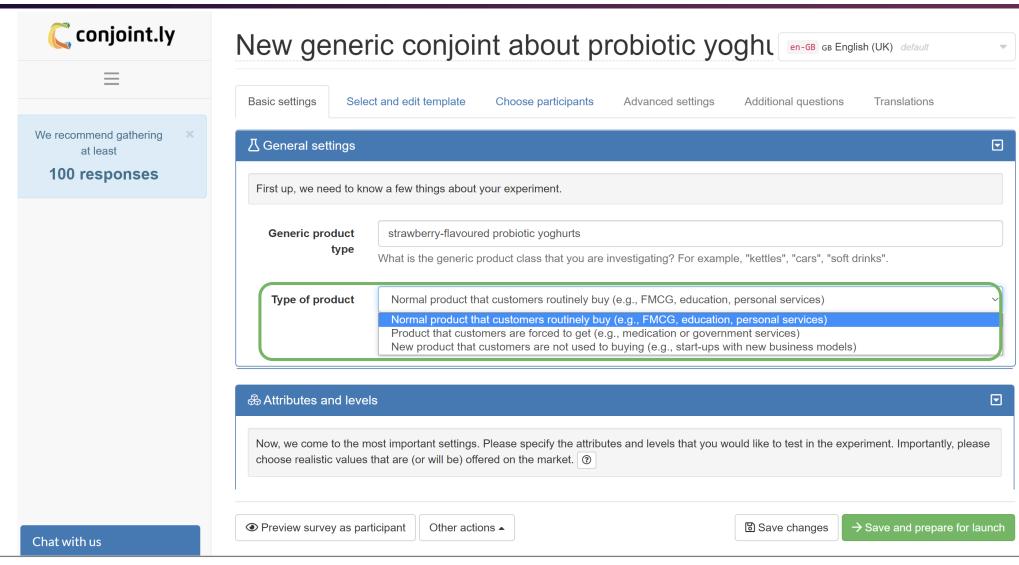


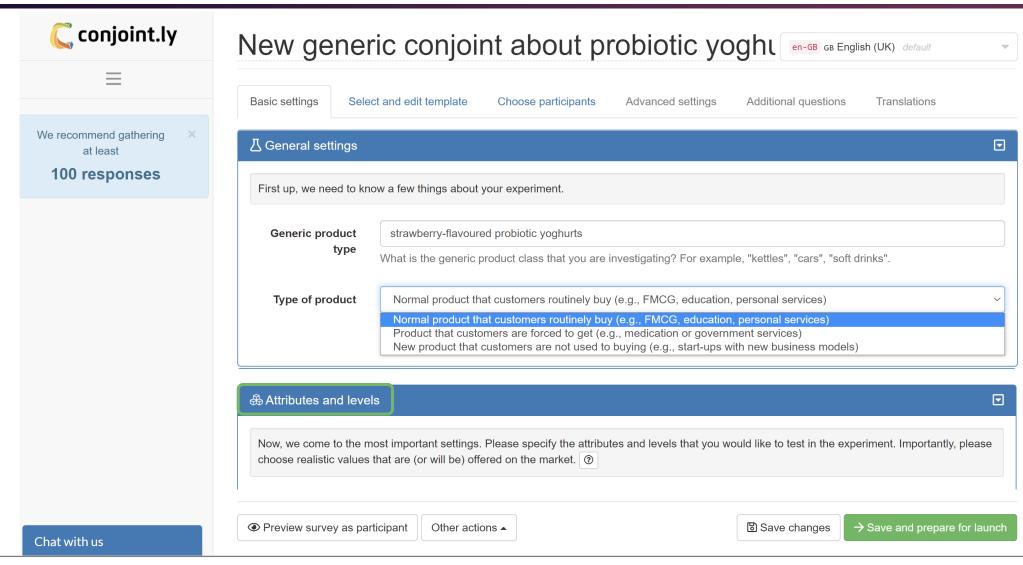


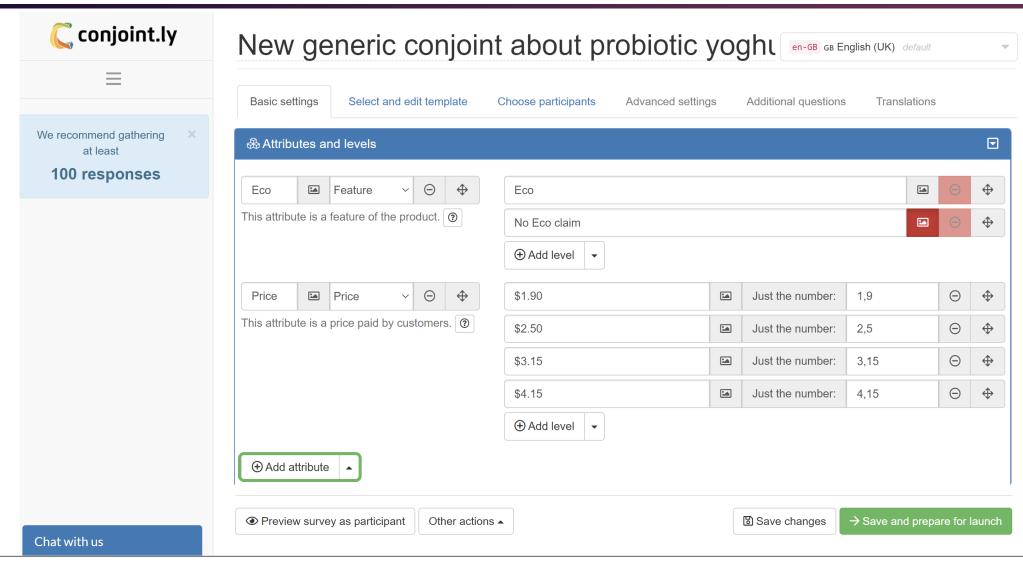












Which of the following strawberry-flavoured probiotic yoghurts would you choose?

Brand

Probiotic content claim

Pack type

Volume

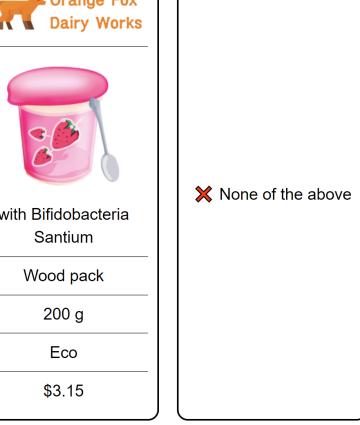
Eco

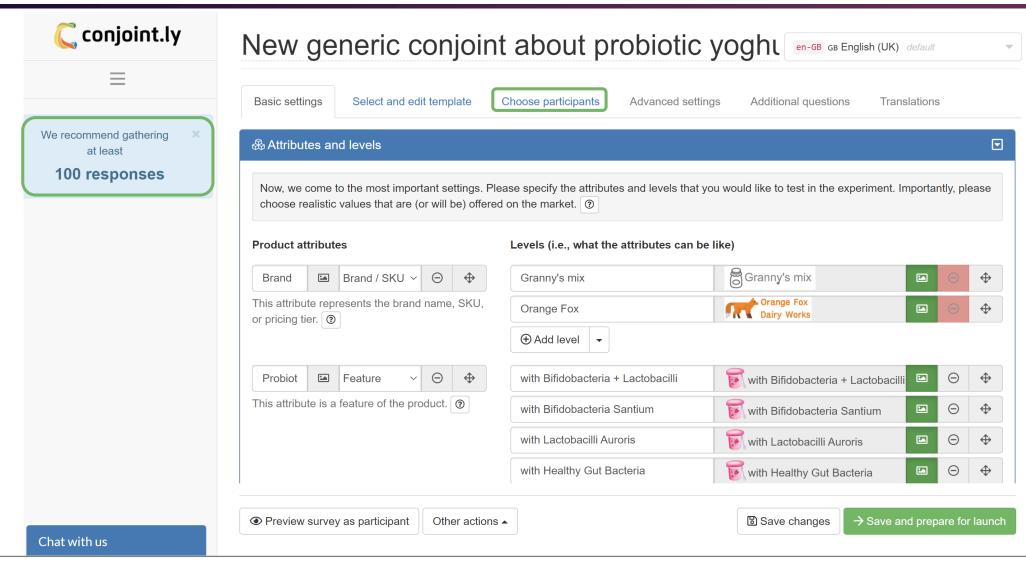
Price

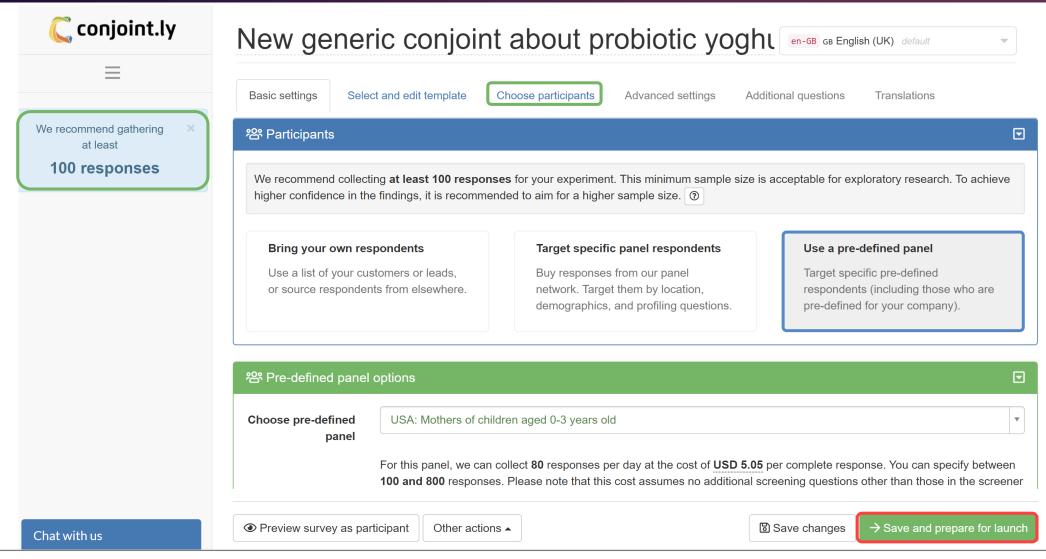












Step 3: How many respondents do you need?

The quickest way to get a precise number is to enter your attributes and levels into **Conjoint.ly**

The system will **estimate** the **required respondent size for robust results**, which depends on the number of combinations being examined:

> Number of attributes and levels



> Number of questions asked per respondent



> Number of alternatives in each choice set



> Complexity (such as prohibited pairs)





Step 3: Survey flow

The survey flow can be flexibly adjusted to answer your specific questions.

Most Conjoint analyses consist of:

Screening questions

- Country and region
- Age
- Occupation

Generic conjoint

- Collect data from respondents
- Each answers ~12 choice sets

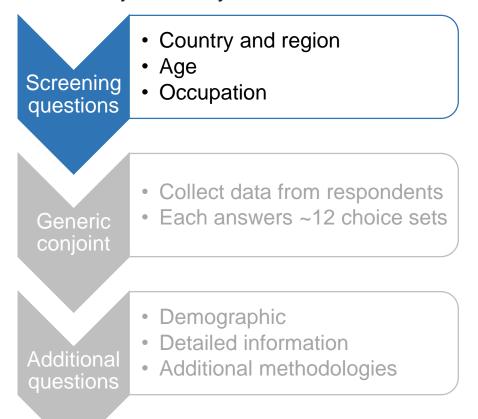
Additional questions

- Demographic
- Detailed information
- Additional methodologies

Step 3: Screening questions

The survey flow can be flexibly adjusted to answer your specific questions.

Most Conjoint analyses consist of:





Step 3: Generic Conjoint

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- Demographic
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Which of the following strawberry-flavoured probiotic yoghurts would you choose?

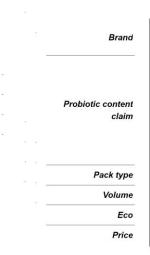
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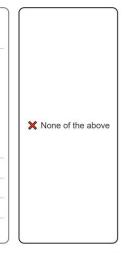
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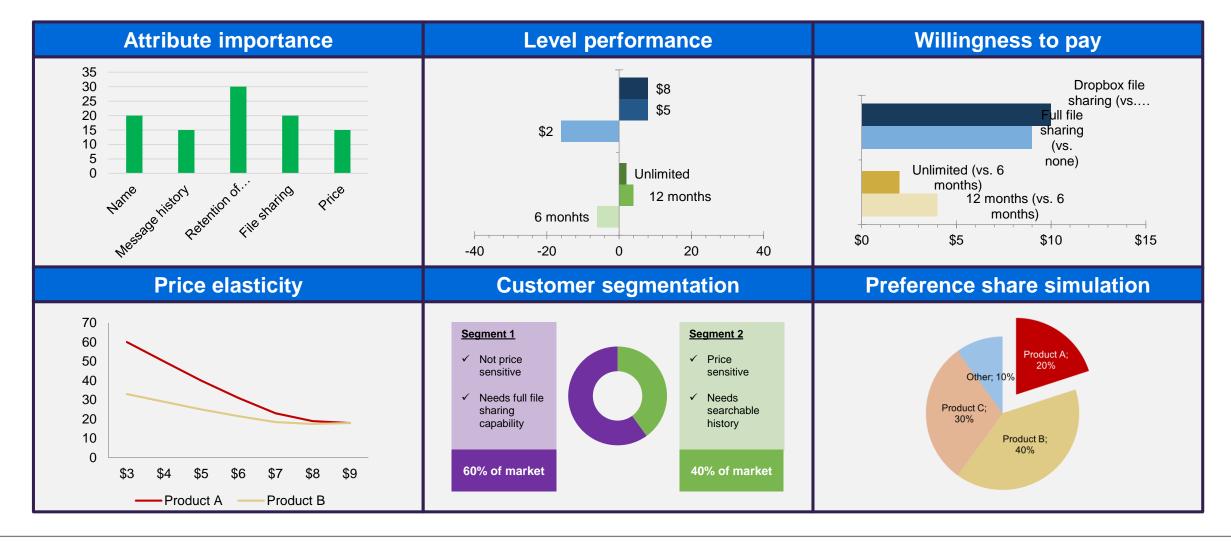
Additional questions

- Demographic
- Detailed information
- Additional methodologies

At least once every two weeks Once in 2 weeks to 2 months Less frequently than that At what price would you consider the following product to be...(Please insert only dollar amount) Strawberry flavored probiotic yoghurt. ...priced so low that you would feel the quality couldn't be very good? ...a bargain—a great buy for the money? ...starting to get expensive, so that it is not out of the question, but you would have to give some thought to buying it? ...so expensive that you would not consider buying it? Go back Continue Ø Other

How often do you buy yoghurths for your own consumption?

Step 5: Run various analyses



Step 5: What outputs do you receive?

Attribute importance

Level preference

Willingness to pay

Ranked list



Step 5: What outputs do you receive?

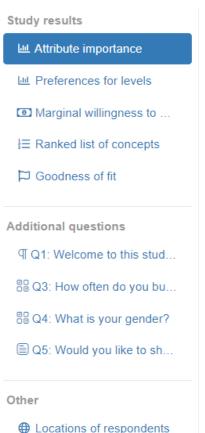


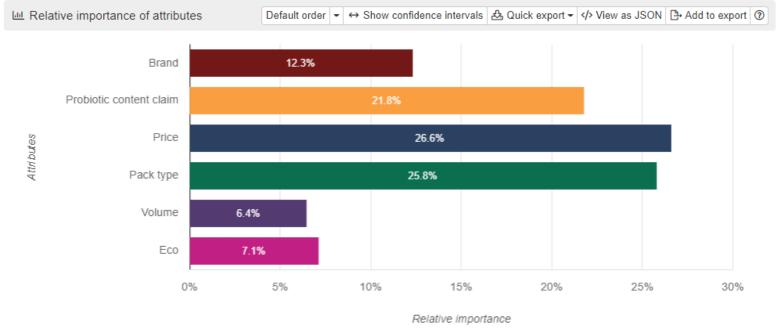
Attribute importance

Level preference Willingness to pay

Ranked list

Simulator





This chart shows the relative importance of attributes (averaged across consumers). Values in this chart sum up to 100%. It answers the question: How important is each attribute relative to the other attributes, across consumers (considering that each consumer values different product attributes)?

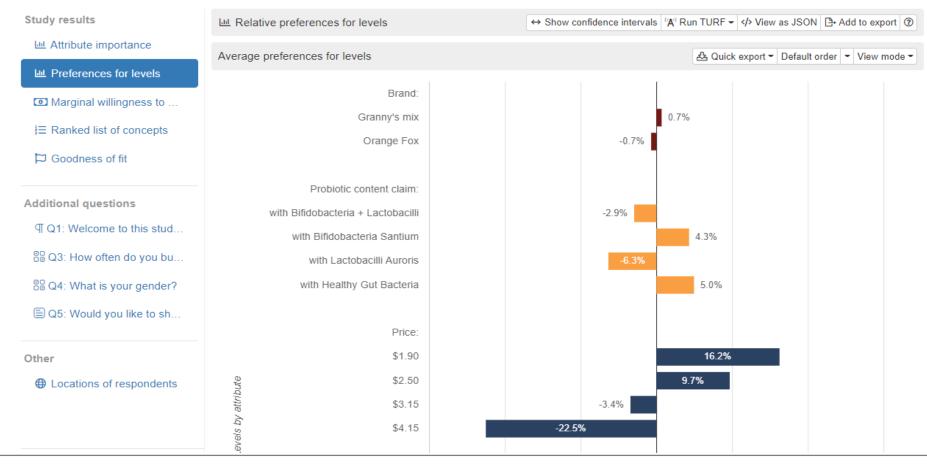
Step 5: Level preference

Attribute importance

Level preference

Willingness to pay

Ranked list



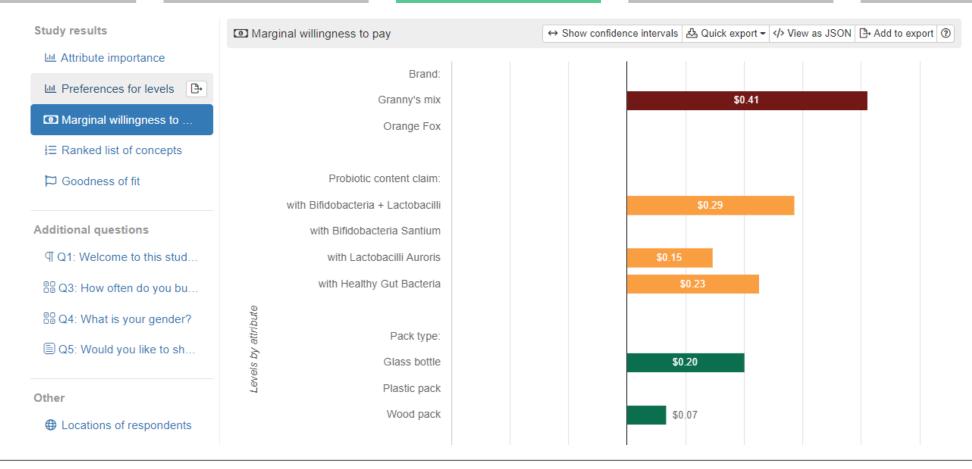
Step 5: Marginal Willingness to Pay

Attribute importance

Level preference

Willingness to pay

Ranked list



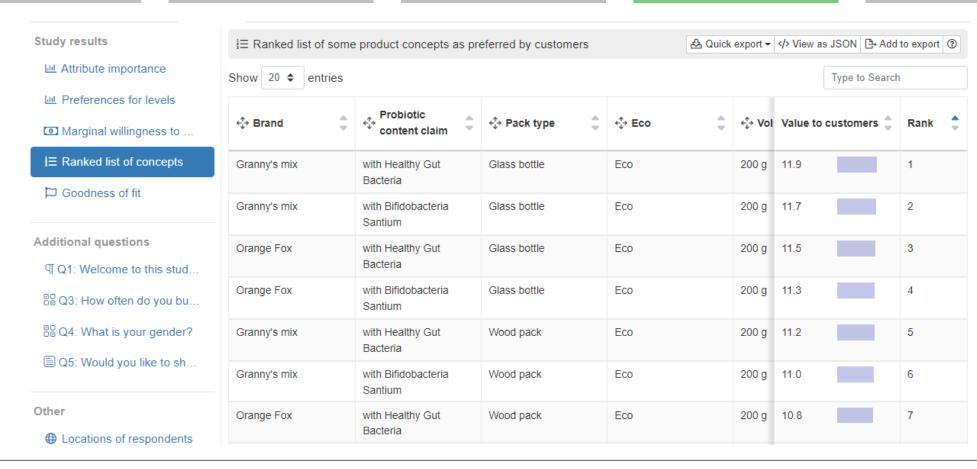
Step 5: Ranked list of top combinations

Attribute importance

Level preference

Willingness to pay

Ranked list



Attribute importance Level preference Willingness to pay Ranked list Simulator

Feedback from testers Insights Crosstab Simulations Pivot tables Segmentation Weights

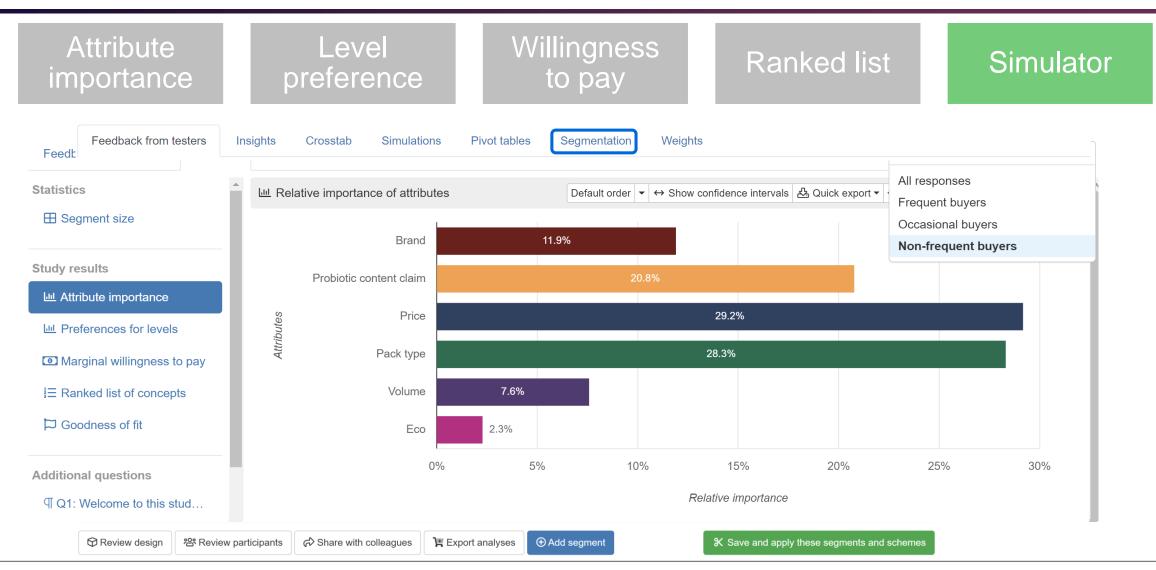
Attribute importance Level preference Willingness to pay Ranked list Simulator

Feedback from testers Insights Crosstab Simulations Pivot tables Segmentation Weights

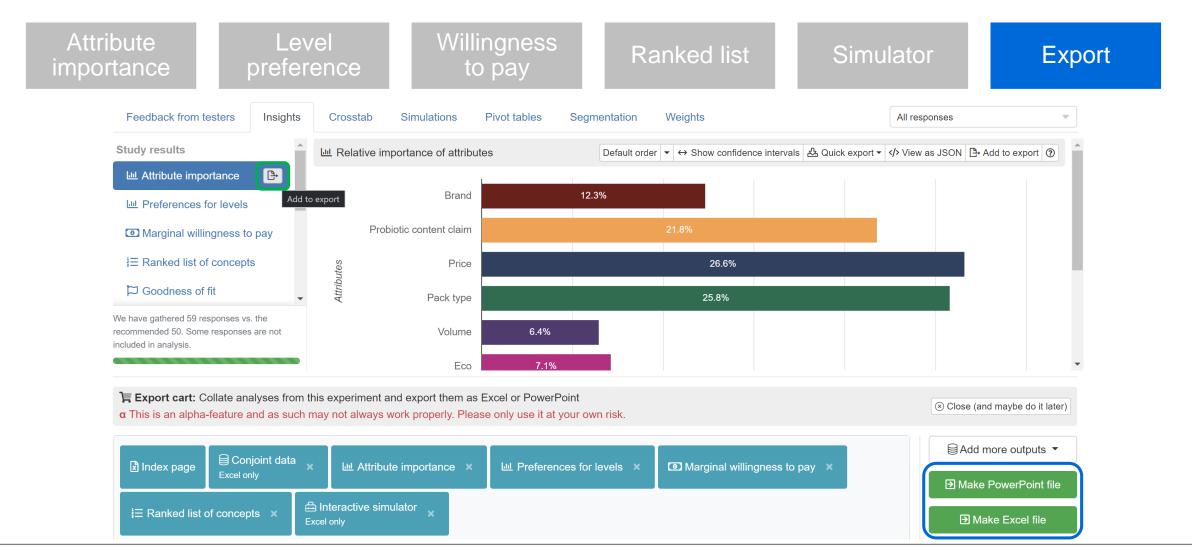
Attribute Level Willingness Ranked list Simulator importance preference to pay Feedback from testers Pivot tables Weights Insights Crosstab **Simulations** Segmentation Sensitivity to Price in Orange Fox Baseline Sensitivity to Probiotic conte. Preference shares Revenue projections (assuming 1,000 units offered) 60% \$2K Sensitivity to Price in Orang.. 50% Price elasticity of demand x 43.0% between \$1.9 and \$4.2 is -0.3. Demand is inelastic (i.e., an 30% \$1K s1k increase in price by 1% leads to less than 1% drop in 20% volume). ② \$1K 10% \$2.00 \$2.50 \$3.00 \$3.50 \$4.00 \$2.00 \$2.50 \$3.00 \$3.50 \$4.00 Price of Orange Fox Price of Orange Fox \$1.90 ₺ 🗇 🕀 \$2.50 \$3.15 \$4.15 Name **Brand** Probiotic content claim Price Pack type 2,5 f(x)Granny' Granny's mix Wood pack Orange Orange Fox Glass bottle None of the above

Attribute importance Level preference Willingness to pay Ranked list Simulator

Feedback from testers Insights Crosstab Simulations Pivot tables Segmentation Weights



Step 5: Export your findings



Key takeaway

- Price is the most important attribute, followed by pack type and probiotic content claim
- The brand **Granny's mix** was slightly **preferred** over **Orange Fox**, respondents were **willing to pay** \$0.41 **more** on average for Granny's mix
- PED was inelastic, indicating that a relative increase in price leads to a smaller drop in preference share
- The **top ranked combination** for both brands is:
 - with Healthy Gut Bacteria
 - Glass bottle
 - Eco labelling
 - 200 grams



Key takeaway

- ➤ Conjoint allows you to **understand** which **features** and **price levels** drive customers' **choice**
- A conjoint exercise is **easy** to **set-up**, **interpret**, and create a **professional report** for
- The simulator allows you to test any hypothetical product profiles and predict what percentage of respondents would go for each of those profiles
- ➤ The export function allows you to covert any analysis to Excel or PowerPoint with only one-click
- ➤ Brand-specific conjoint (alternative-specific design, ASD) is suitable for studies where potential characteristics vary across brands



Questions and answers



Any questions? Conjoint.ly is here and ready to help

Feel free to book a call with our team

Get in touch at support@conjointly.com

Or just walk up and talk to us 🙂



How Conjoint.ly works: Regardless of mode of engagement, we work in an agile fashion



Working with Conjoint.ly was a **truly agile experience**. Mondelez used the platform for an important PPA project for one of our core product lines. The expertise gave us the confidence to **make several critical product decisions** for the business.

Shopper Insights Lead, Mondelez International Melbourne. Australia

Automated solutions

Custom projects



Manager-friendly tools and intuitive online reports



Automated DIY research process (design, sampling, and analysis)



Costs: Licence + sample (or BYO respondents)



Timeframe: 5 hours to 2 weeks



Expert support readily available



Decision-ready reports



Research process fully managed by us



Costs: Labour + sample (or BYO respondents)



Timeframe: 5 days to 3 weeks



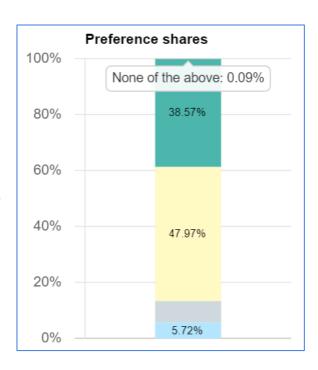
Expert support readily available

Step 5: What is preference share simulation?

Preference share simulation is about:

- Creating a set of hypothetical product profiles, and then
- Predicting what percentage of respondents would go for each of those profiles
- Can include additional attributes/levels into the simulation

Name		Brand		Screen size		Colour		Price				
White iPhone mini	Θ	iPhone	\$	f(×)	5"	\$	f(×)	White	\$	f(×)	1100	f(×)
Silver iPhone mini	Θ	iPhone	\$	f(×)	5"	\$	f(×)	Silver	\$	f(×)	1050	f(×)
Samsung white	Θ	Samsung	\$	f(×)	5.5"	*	f(×)	White	\$	f(×)	1220	f(×)
Samsung turquoise	Θ	Samsung	\$	f(×)	5.5"	\$	f(×)	Turquoise	\$	f(×)	1120	f(×)
None of the above												



Comparison between Conjoint Methods

	Generic Conjoint	Brand Specific Conjoint	Product Variant Selector	Brand-Price Trade-Off (BPTO)	Claims Test			
Respondent view	Which of the Salveng missistens (2004) would you obsculed. Day (this Salvenum with the Salvenum will be salvenum will be salvenum with the Salvenum will be	Which of the following moderationers (CRON) model price choose? CRONS CRONS CRONS CRONS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS CROSS C	Which of the following fact Disc Care (this filescented) would grow buy? Foul Danger Compart Foul Limits F	Which of the following between would make you work to purchase motiviness the most? Stripter branch Market Medical Mar	Witch of the following with driving would you purchase?			
Business objective	 Identifying the most preferred features in a product. Identifying the maximum price consumers are willing to pay for an upgrade on an attribute of a product. 	Identifying the most preferred features in a product reflecting the market reality and calculate preferences at the brand level.	Selecting the most preferred variant of a product (pack design, flavour, colour).	 Test potential of NPDs on the current market Re-pricing existing products. Portfolio optimisation based on preference share and revenue of NPDs. 	 Creating, updating or improving communication about the product. 			
When do we use it?	Looking for the most preferred combination of features (NPD, bundle) at the optimal price level.	Investigating choices in features and prices of products specific to selected brands (e.g. premium brand displayed with higher price points).	 To identify the most appealing product variant. To find the combination of variants with the highest reach. 	Investigating finalised products with different price points in a competitive landscape.	To identify the most convincing (set of) claims for brands or product categories.			
Similarities between methods	 Discrete choice-based models. Simulate real life buying situations. Allow to assess product, service, and ideas in a competitive environment. Estimates trade-offs in consumer choices. Allow to identify segmentation in response choices (e.g. preferences by gender age). 							
Differences between methods	 Allows to identify must-have versus nice-to-have features. Allow to assess marginal willingness to pay. Allows to test multiple attributes at the same time. Most useful for new product development or creating bundles. Most useful for products from a single brand or commoditised products. 	 Product characteristics can vary substantially by brand or product. Allows to identify must-have versus nice-to-have features by brand. Requires a bigger sample size due to the rules for feature combination per brand. Provides a more realistic approach to the market than generic conjoint. 	 Focuses on variants of a single product (e.g. flavours of a soda). Most adequate for testing which new variants of a product will be the most preferred in the market. 	 Combination of two features: product + price Most adequate for finalised products. Most adequate to investigate price points of new products or re-pricing of an existing product. 	 Focuses on claims associated to a product or brand (benefits, RTBs etc.). Most adequate for choosing the most convincing claims for a brand or product category. Allow to observe both positive and negative reactions to each claim. 			



Comparison between Conjoint Methods

	Generic Conjoint	Brand-Specific Conjoint	Product Variant Selector	Brand-Price Trade-Off (BPTO)	Claims Test
Type of information you will obtain	Relative importance of individual features. Relative value by levels Marginal willingness to pay. Share of preference simulation. Ranked list of product constructs. Price elasticity of demand. Segmentation of the market.	Relative performance of brands. Share of preference simulation. Revenue projections based on amount of interest in new product launches. Price elasticity of demand. Ranked list of product constructs. Segmentation of the market.	 Summary of preferences and diagnostics for each product idea. Summary of responses for multiple choice diagnostic questions. Summary of preferences and diagnostics by topic. Correlations of relative preferences for variants among respondents. Brand associations for each product idea. Passport of a product idea. Total Unduplicated Reach and Frequency (TURF) analysis. Segmentation of the market. 	Revenue/Profits index. New Product Development (NPD) volume share simulation. Source of Business. Price elasticity. Segmentation of the market.	 Summary of preferences and diagnostics for each claim. Summary of preferences and diagnostics by topic. Correlations of relative preferences for claims among respondents. Brand associations for each claim. Passport of a claim. TURF analysis. Segmentation of the market.
Examples of use	Your health insurance company wants to select the best combination of features for creating premium categories with different price levels. For example, you want to assess if dental care would be best suited for a basic or complete premium. You also want to know the willingness to pay for a complete premium containing more benefits than a basic premium.	You want to investigate which features a new phone must have, taking into account that your brand of phones must always have a determined operating system, and the competing brands must always have another operating system. Thus the operating system feature is brand-specific.	You want to add more flavours to the range of yogurts of your brand. You have a new kiwi and orange flavours, but you want to release only one of these. Therefore, you want to know which of these flavours (i.e. variants of your product) would be the most preferred and would have the highest market penetration.	Your make-up company has worked hard on designing a new range of lipsticks, including moisturizing, antiaging, and colourchanging lipsticks. All the features of these lipsticks are defined but you still do not know which price points are adequate for each of these lipsticks, compared with competitors prices. You want to know which portion of market share would each of these new lipsticks have.	You want to find an ideal claim to increase the use of a sunscreen product. You have thought about the following claims and categories: "Dermatologically tested", "Antiaging properties", "Natural ingredients", and "Coral reef safe". You want to know which category or combination of claim categories, would be the most effective.





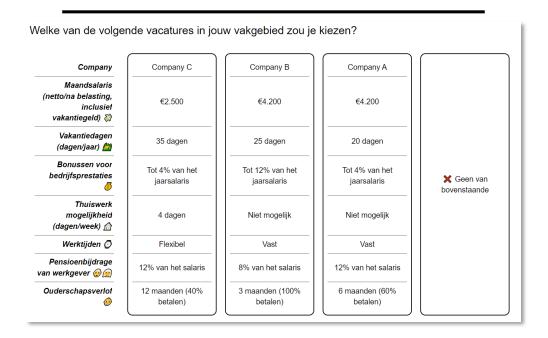
Alternative – Brand-specific Conjoint

- Brand-specific Conjoint is suitable for studies that include a variety of brands or companies, where potential product characteristics vary across the brands or companies
- Certain levels are limited to certain brands or companies. Ideal for comparing subsidiaries.
- Benefits, location, workplace environment, mission and company vision can be brand-specific.

Setting up a Brand-Specific Conjoint

> Applicability of levels across brands Use this table to allocate which levels are applicable to which brands. For better insights into differences in preferences across brands, make sure there are at least two or three levels of each attribute applicable to each brand. LEX Export to CSV or XLSX Levels Company A Company B Company C Monthly base salary (netto/after taxes) 2 €1.700 **✓** 2 €2.000 **~ ~** 2 €2.500 **~** ✓ 3 €3.300 **✓** 2 €4.200 2 €5.000

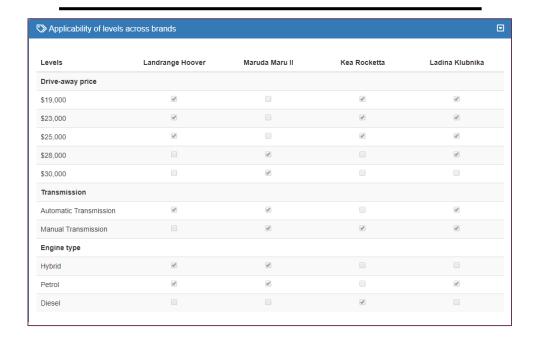
What respondents see



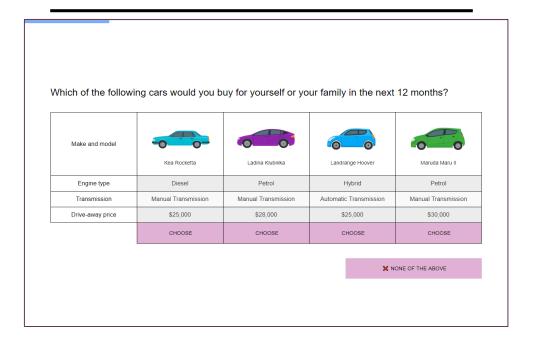
4 Brand-specific Conjoint

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Setting up a Brand-Specific Conjoint

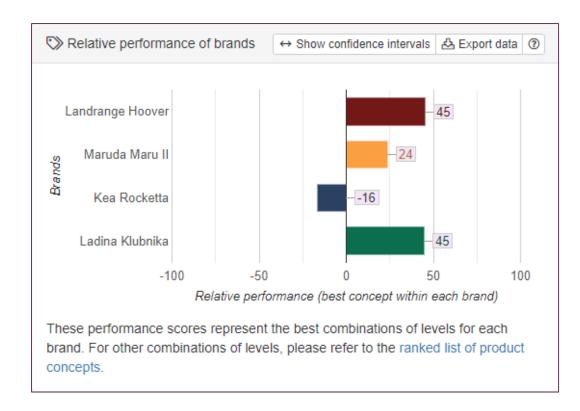


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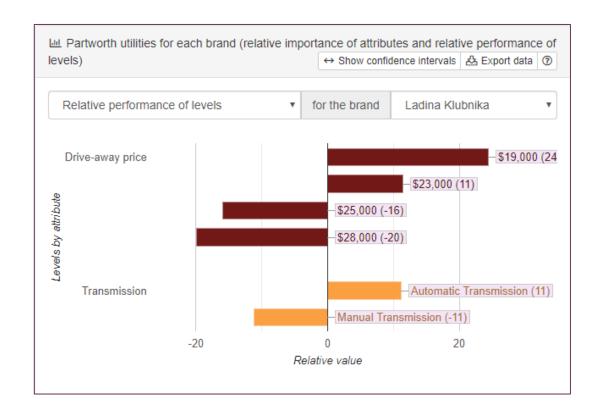


4 Brand-specific Conjoint – Output

Top performing brands or companies

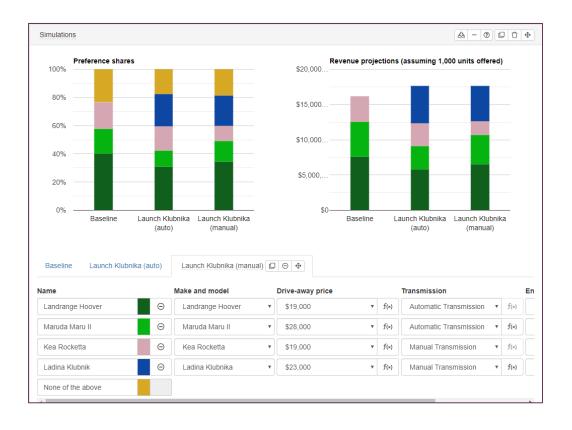


Relative performance of levels

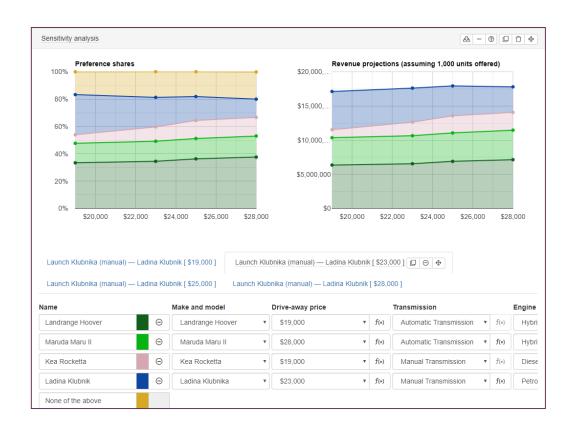


4 Brand-specific Conjoint - Simulator

Preference share by brands

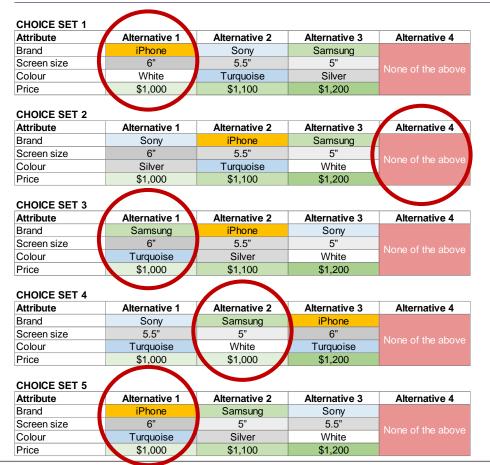


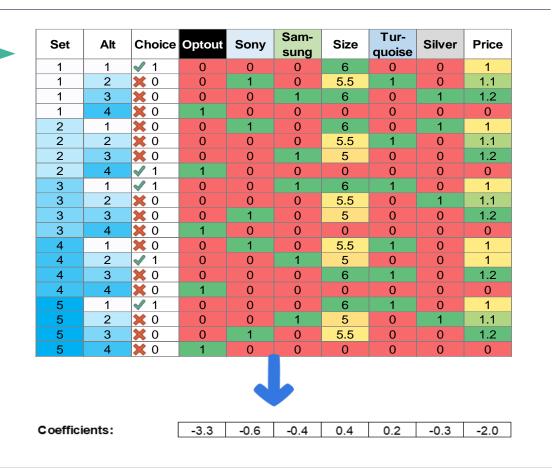
Get optimal prices



Step 4: Calculate individual preference profiles

We gather original answers





Step 4: Calculate individual preference profiles

We can understand what they like...

This respondent "Cindy":

 Tends not to pick "none of the above" (optout)



- Relative to iPhone, dislikes Sony and Samsung (i.e. likes iPhone the most out of the three)
- Prefers larger phone sizes
- Relative to white, prefers turquoise, but dislikes silver
- Prefers lower prices

... based on the trade-offs

Set	Alt	Choice	Optout	Sony	Sam- sung	Size	Tur- quoise	Silver	Price
1	1	√ 1	0	0	0	6	0	0	1
1	2	※ 0	0	1	0	5.5	1	0	1.1
1	3	※ 0	0	0	1	6	0	1	1.2
1	4	※ 0	1	0	0	0	0	0	0
2	1	※ 0	0	1	0	6	0	1	1
2	2	※ 0	0	0	0	5.5	1	0	1.1
2	3	※ 0	0	0	1	5	0	0	1.2
2	4	√ 1	1	0	0	0	0	0	0
3	1	√ 1	0	0	1	6	1	0	1
3	2	※ 0	0	0	0	5.5	0	1	1.1
3	3	※ 0	0	1	0	5	0	0	1.2
3	4	※ 0	1	0	0	0	0	0	0
4	1	※ 0	0	1	0	5.5	1	0	1
4	2	√ 1	0	0	1	5	0	0	1
4	3	※ 0	0	0	0	6	1	0	1.2
4	4	※ 0	1	0	0	0	0	0	0
5	1	√ 1	0	0	0	6	1	0	1
5	2	※ 0	0	0	1	5	0	1	1.1
5	3	※ 0	0	1	0	5.5	0	0	1.2
	4	※ 0	1	0	0	0	0	0	0
Coeffic	ients:		-3.3	-0.6	-0.4	0.4	0.2	-0.3	-2.0

Step 5: Attribute importance



What are the different types of conjoint analysis?



By response type

- Choice-based conjoint (CBC)
- Rating-based conjoint
- Ranking-based conjoint
- Chip allocation
- Amount to purchase
- Best-worst conjoint (MaxDiff)



By type of design

- Generic conjoint (generic or unlabelled design)
 allows you to understand which features and price
 levels drive customers' choice. It is used for studying
 either a single brand, or commoditised products
- Brand-specific (alternative-specific conjoint, alternative-specific design, ASD, or labelled design) is suitable for studies that include a variety of brands, where potential product characteristics vary across brands.



By questioning approach

- Standard conjoint: In standard conjoint, the questionnaires are developed beforehand
- Adaptive conjoint: In adaptive conjoint, the questionnaire is constructed during the interview. It "adapts" to participants' responses to optimise a certain parameter:
 - Minimising confidence intervals for partworth utilities,
 - Excluding options that they would not consider



By whether all attributes are shown in every question

- Full profile: All attributes are shown in every choice set. It is recommended that the number of attributes is limited to about six because it is hard for respondents to digest more information.
- Partial profile: Only a subset of attributes is shown in each choice set.
 For example, the study may include 12 attributes, but only 6 will be
 shown in each question. This is a useful technique when you need to
 select different features for your product.

