What market research technique allows you to find the answers to…

- Estimating and forecasting demand
- Optimizing a product offering
- Finding the revenue maximizing price
- Measuring customers' willingness to pay for product
- Segmenting customers

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CONJOINT ANALYSIS

Optimize Product and Pricing Using Conjoint Analysis and MaxDiff

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Hello!

My name is Miklos Kremser, I represent Sawtooth Software, the world's best-known Conjoint Analysis software company.
For the past decade, I have been helping marketers and market researchers around the world answer some of the toughest questions – using Conjoint Analysis.

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Industry leading expertise

Sawtooth Software executives (Bryan Orme and Keith Chrzan) have been among the most published experts in the area of Choice-Based Conjoint Analysis and they lead the field with continuous experimentation and improvement.

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What is conjoint analysis?

Conjoint analysis is an advanced, quantitative marketing research method, popular for product and pricing research, that **quantifies the value** consumers place on the attributes of a product or service.

Conjoint analysis has become extremely popular over the past years mainly because the conjoint survey questions mimic the tradeoffs people make every day in the real world.

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How does conjoint analysis work?

Conjoint analysis is a survey-based approach.

The first phase is what is called the '**choice task**,' where survey respondents are shown different product options. They are asked to evaluate each and select the one they prefer the most.

	PRODUCT 1:	PRODUCT 2:	PRODUCT 3:
Brand	CHASE	WELLS FARGO	Bank of America
Card Type	VISA	mastercard	mastercard
Annual Fee	$120 annual fee	$75 annual fee	No annual fee
Intro Puchase APR	0% for 12 months	0% for 6 months	0% for 6 months
Cash Back	-	1.50%	-
Points	2X points on travel 1X point on all other	2X points on travel 1X point on all other	1.5X points on all for 18 months
Miles Earned	1 Mile for every dollar We match your miles at year-end	1.5 Miles for every dollar	1.5 Miles for every dollar
Balance Transfer Offer	Yes - 10% fee	Yes - 15% fee	Yes - 10% fee
	☐	☐	☐

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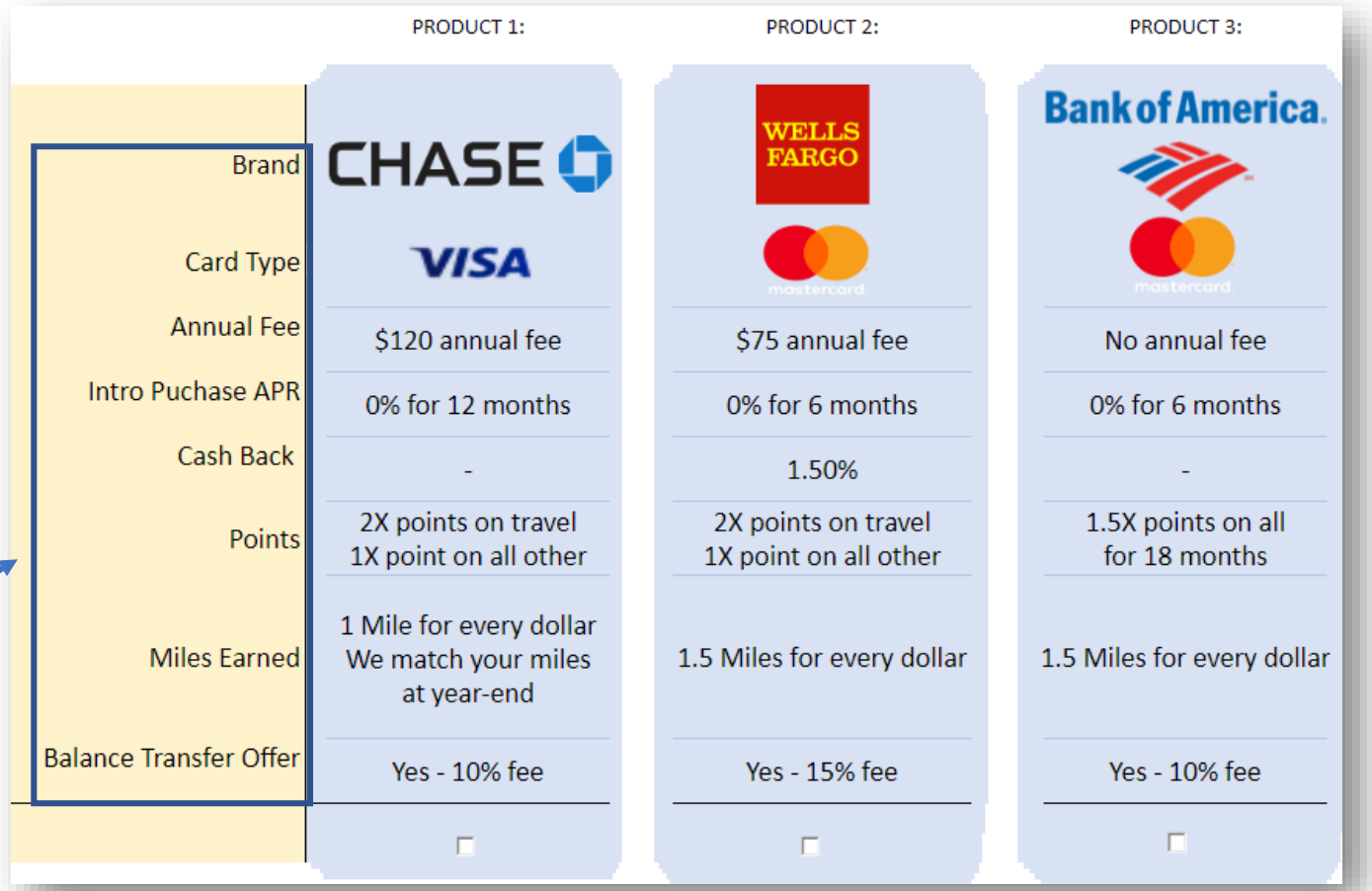
Attributes and their levels

Respondents evaluate the product options based on several key (and relevant!) attributes.

The products vary on the attributes. Each attribute can have many '**levels**.'

Product Attributes



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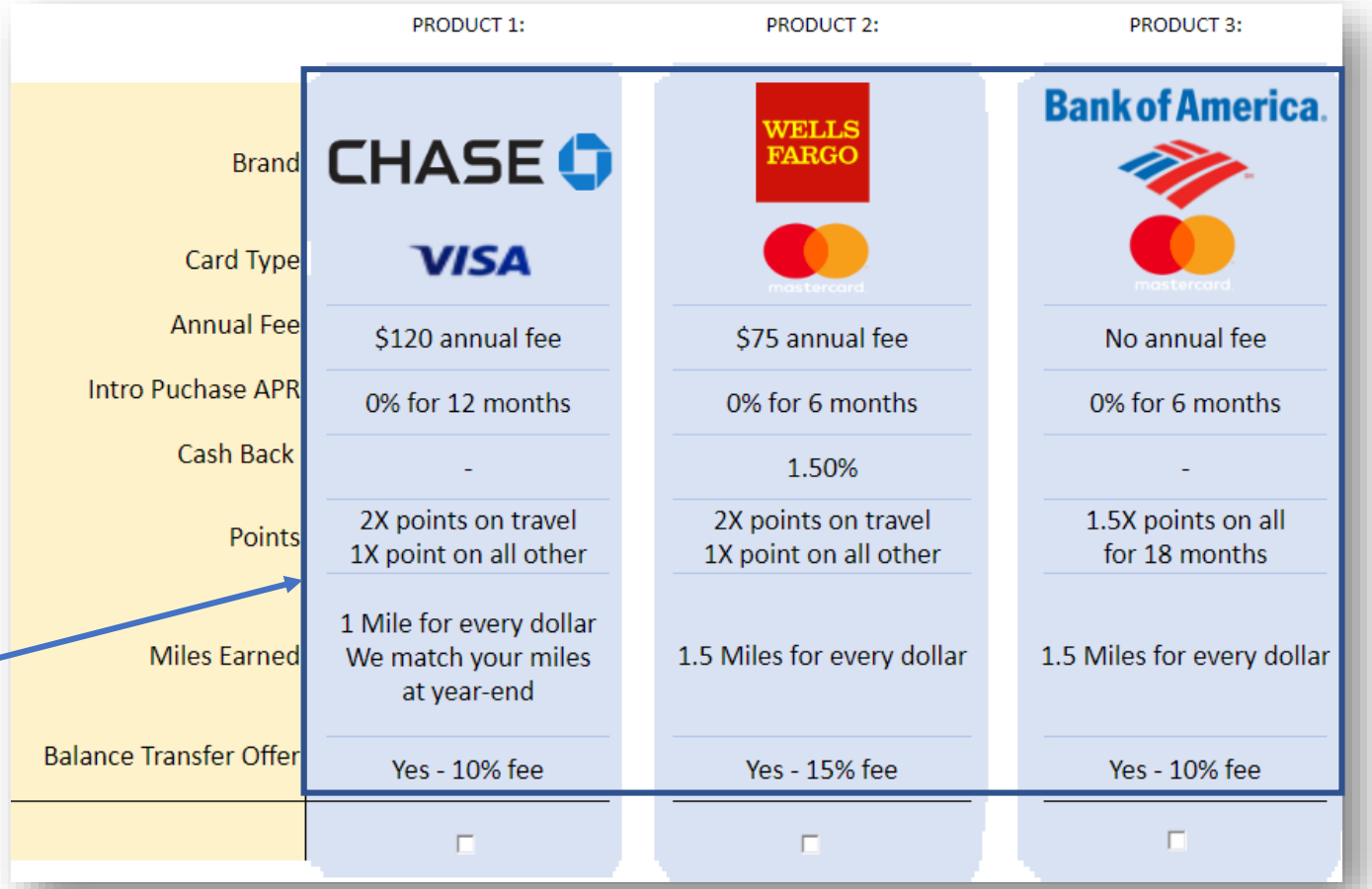
The levels of the attributes



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	☐	☐	☐

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It’s not a product concept test!

The survey choice task ‘trains the data’ as hundreds of survey respondents select among thousands of product combinations.

The product combinations may or may not be realistic. The purpose here is to ‘learn’ how customers tend to select in that particular category.

	PRODUCT 1:	PRODUCT 2:	PRODUCT 3:
Brand	CHEVROLET	Ford	TESLA
Car Type	Sedan	Sedan	Sedan
Price	$54,000	$60,000	$10,000
Capacity	5 seat	5 seat	6 seat
Color	purple	orange	white
Acceleration (0 to 60)	5 seconds	4 seconds	2 seconds
Engine Type	Electric	Gas	Electic
Financing Available	No	No	Yes, 50% down
	☐	☐	☐

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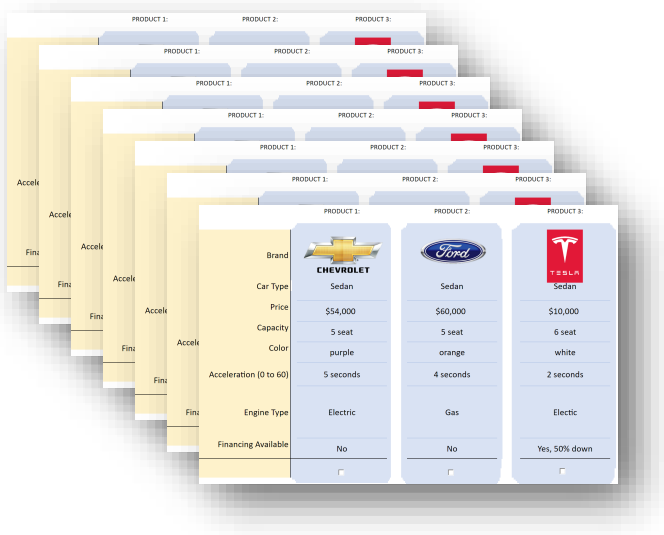
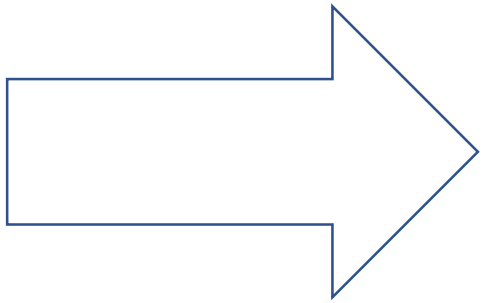
From choices to data





Respondent	Attribute 1	Attribute 2	Attribute 3	Attribute 4	Attribute 5	Attribute 6	Attribute 7	Attribute 8	Attribute 9	Attribute 10	Choice
1989524	0	0	1	0	0	1	1	1	0	1	0
5470241	1	1	0	1	0	0	1	0	0	0	1
5655793	1	0	0	0	1	1	1	1	1	1	0
4552863	1	0	1	1	0	1	1	1	1	0	1
5359548	0	0	0	0	0	0	1	0	1	0	1
5616253	0	0	1	0	0	1	1	0	1	1	1
894068	1	0	1	0	0	0	1	1	0	0	1
806283	0	1	1	0	1	0	0	0	1	1	0
9276627	1	0	0	1	0	0	0	0	1	0	0
4765281	0	0	0	1	1	0	0	0	1	1	0
5747233	0	1	1	0	1	0	0	1	0	1	1
4058077	0	1	0	0	1	0	0	0	0	0	1
686557	0	0	1	1	0	0	0	0	1	1	1
6089022	0	0	1	1	1	1	1	1	1	0	0
4958267	0	1	0	0	1	1	1	0	0	0	0
296020	1	0	1	0	0	1	1	0	1	0	1
2415029	1	1	1	0	0	1	1	1	0	0	0
6635525	1	0	1	1	1	1	0	1	1	0	0
1768927	1	0	1	1	0	0	0	0	0	1	1
5976802	0	0	0	1	1	0	0	1	0	0	1
2031299	0	0	1	1	1	1	0	1	0	1	0
4085411	1	1	0	1	0	0	1	1	0	1	0
4689869	0	1	1	1	0	0	1	0	1	0	0
8974901	0	0	0	1	1	1	0	1	1	1	1
5007274	1	0	0	1	1	1	0	0	0	1	1
1800080	1	1	1	1	0	0	1	0	1	0	1
167753	1	1	0	0	0	0	1	0	0	0	1
3670817	0	1	1	1	1	1	1	1	1	1	1
7228596	0	0	0	0	0	1	1	1	1	0	0
192578	1	1	1	1	1	1	0	1	1	0	1
7704724	1	1	0	1	1	1	0	1	0	0	0
6115184	1	1	0	1	1	1	1	0	0	0	0

Thousands of respondents' choices get recorded in a database, ready for conjoint analysis to take place.

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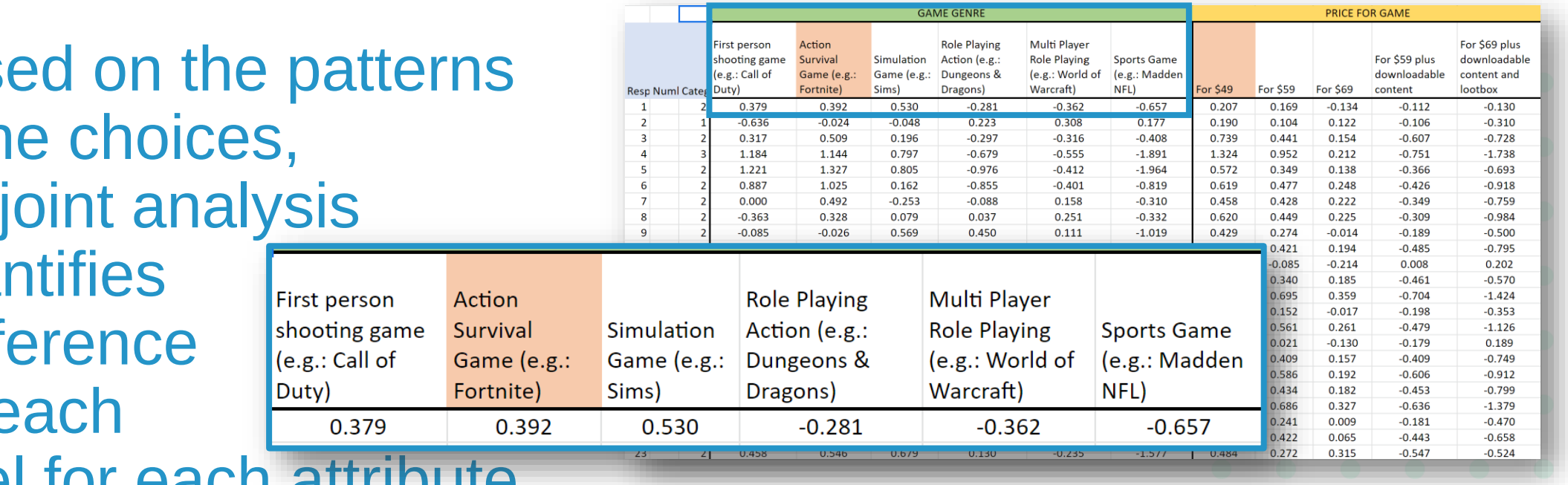
Quantifying preference: The utility scores

Based on the patterns in the choices, conjoint analysis quantifies preference for each level for each attribute for each respondent



		GAME GENRE						PRICE FOR GAME				
Resp Num	Cate	First person shooting game (e.g.: Call of Duty)	Action Survival Game (e.g.: Fortnite)	Simulation Game (e.g.: Sims)	Role Playing Action (e.g.: Dungeons & Dragons)	Multi Player Role Playing (e.g.: World of Warcraft)	Sports Game (e.g.: Madden NFL)	For $49	For $59	For $69	For $59 plus downloadable content	For $69 plus downloadable content and lootbox
1	2	0.379	0.392	0.530	-0.281	-0.362	-0.657	0.207	0.169	-0.134	-0.112	-0.130
2	1	-0.636	-0.024	-0.048	0.223	0.308	0.177	0.190	0.104	0.122	-0.106	-0.310
3	2	0.317	0.509	0.196	-0.297	-0.316	-0.408	0.739	0.441	0.154	-0.607	-0.728
4	3	1.184	1.144	0.797	-0.679	-0.555	-1.891	1.324	0.952	0.212	-0.751	-1.738
5	2	1.221	1.327	0.805	-0.976	-0.412	-1.964	0.572	0.349	0.138	-0.366	-0.693
6	2	0.887	1.025	0.162	-0.855	-0.401	-0.819	0.619	0.477	0.248	-0.426	-0.918
7	2	0.000	0.492	-0.253	-0.088	0.158	-0.310	0.458	0.428	0.222	-0.349	-0.759
8	2	-0.363	0.328	0.079	0.037	0.251	-0.332	0.620	0.449	0.225	-0.309	-0.984
9	2	-0.085	-0.026	0.569	0.450	0.111	-1.019	0.429	0.274	-0.014	-0.189	-0.500
									0.421	0.194	-0.485	-0.795
									-0.085	-0.214	0.008	0.202
									0.340	0.185	-0.461	-0.570
									0.695	0.359	-0.704	-1.424
									0.152	-0.017	-0.198	-0.353
									0.561	0.261	-0.479	-1.126
									0.021	-0.130	-0.179	0.189
									0.409	0.157	-0.409	-0.749
									0.586	0.192	-0.606	-0.912
									0.434	0.182	-0.453	-0.799
									0.686	0.327	-0.636	-1.379
									0.241	0.009	-0.181	-0.470
									0.422	0.065	-0.443	-0.658
23	2	0.458	0.546	0.679	0.130	-0.235	-1.577	0.484	0.272	0.315	-0.547	-0.524

First person shooting game (e.g.: Call of Duty)	Action Survival Game (e.g.: Fortnite)	Simulation Game (e.g.: Sims)	Role Playing Action (e.g.: Dungeons & Dragons)	Multi Player Role Playing (e.g.: World of Warcraft)	Sports Game (e.g.: Madden NFL)
0.379	0.392	0.530	-0.281	-0.362	-0.657

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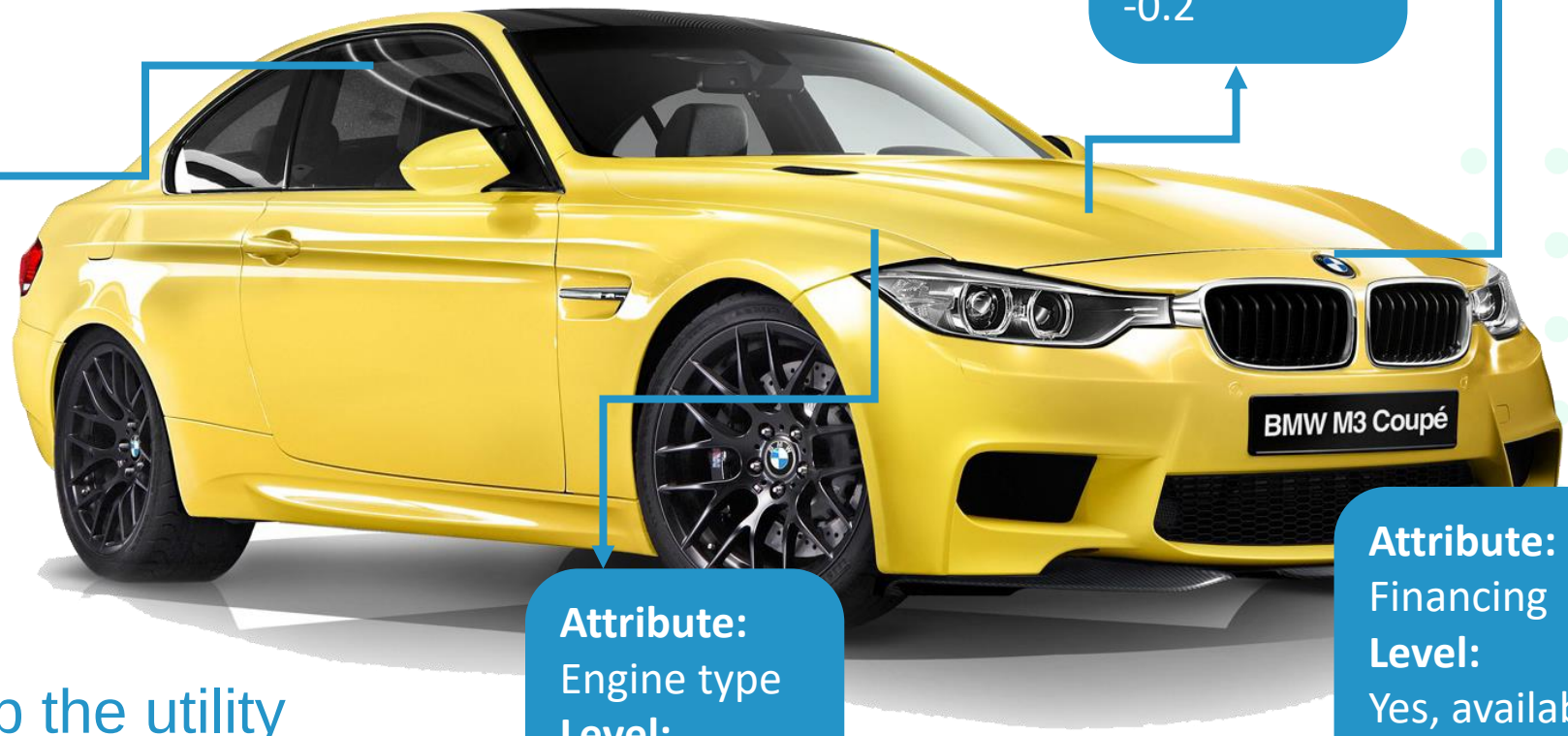
An example

Attribute:
Color
Level:
yellow
Utility:
-0.2

Attribute:
Brand
Level:
BMW
Utility:
0.8

Attribute:
Capacity
Level:
4-seater
Utility:
0.7



Attribute:
Engine type
Level:
gasoline
Utility:
-0.5

Attribute:
Financing
Level:
Yes, available
Utility:
0.5

Adding up the utility parts, this product has a **total utility of 1.3**

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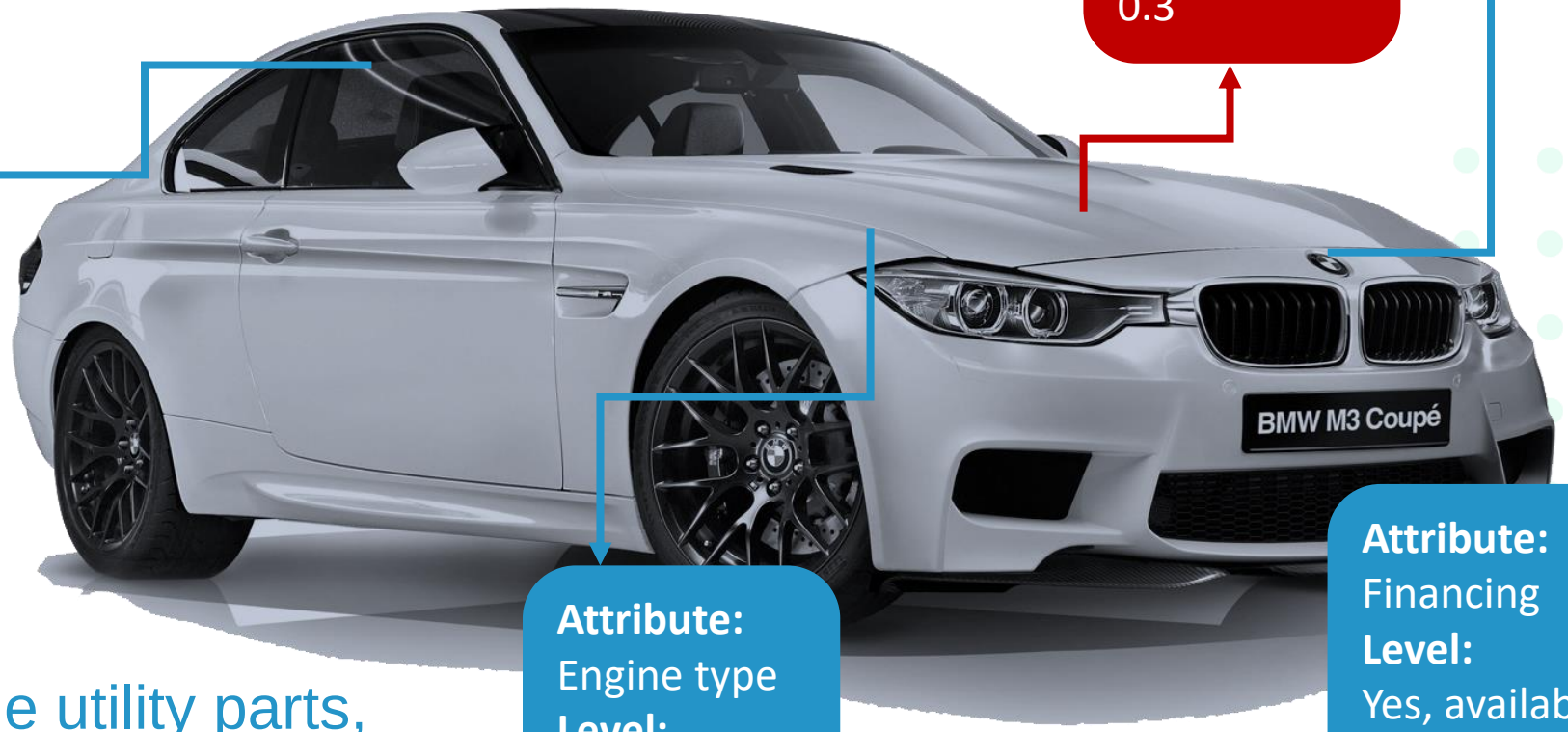
An example

Attribute:
Color
Level:
grey
Utility:
0.3

Attribute:
Brand
Level:
BMW
Utility:
0.8

Attribute:
Capacity
Level:
4-seater
Utility:
0.7



Attribute:
Engine type
Level:
gasoline
Utility:
-0.5

Attribute:
Financing
Level:
Yes, available
Utility:
0.5

Adding up the utility parts, this product has a **higher total utility of 1.8**

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Preference share

- The total product utilities can be used to calculate ‘preference share’ or the probability *that particular product* would be selected out of a set of product choices. Preference share is a good indicator of potential market share.

Total Utility:	**1.3**	**1.8**	**0.7**
Preference Share:	**31%**	**52%**	**17%**

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Now… if observing how customers choose allows us to measure the value they place on each product attribute, what all can we use it for?

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The sky is the limit!

OPTIMIZING A PRODUCT OFFERING

FINDING REVENUE MAXIMIZING PRICE

ESTIMATING AND FORECASTING DEMAND

SEGMENTING CUSTOMERS

FINDING CUSTOMERS' WILLINGNESS TO PAY FOR PRODUCT

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The market simulator

Having the utility scores for each product attribute and their levels allows us to create a ‘market simulator’ and evaluate what-if scenarios if any of our product’s or competitor product’s attribute changed: whether it’s changing price, changing packaging, flavor, etc…

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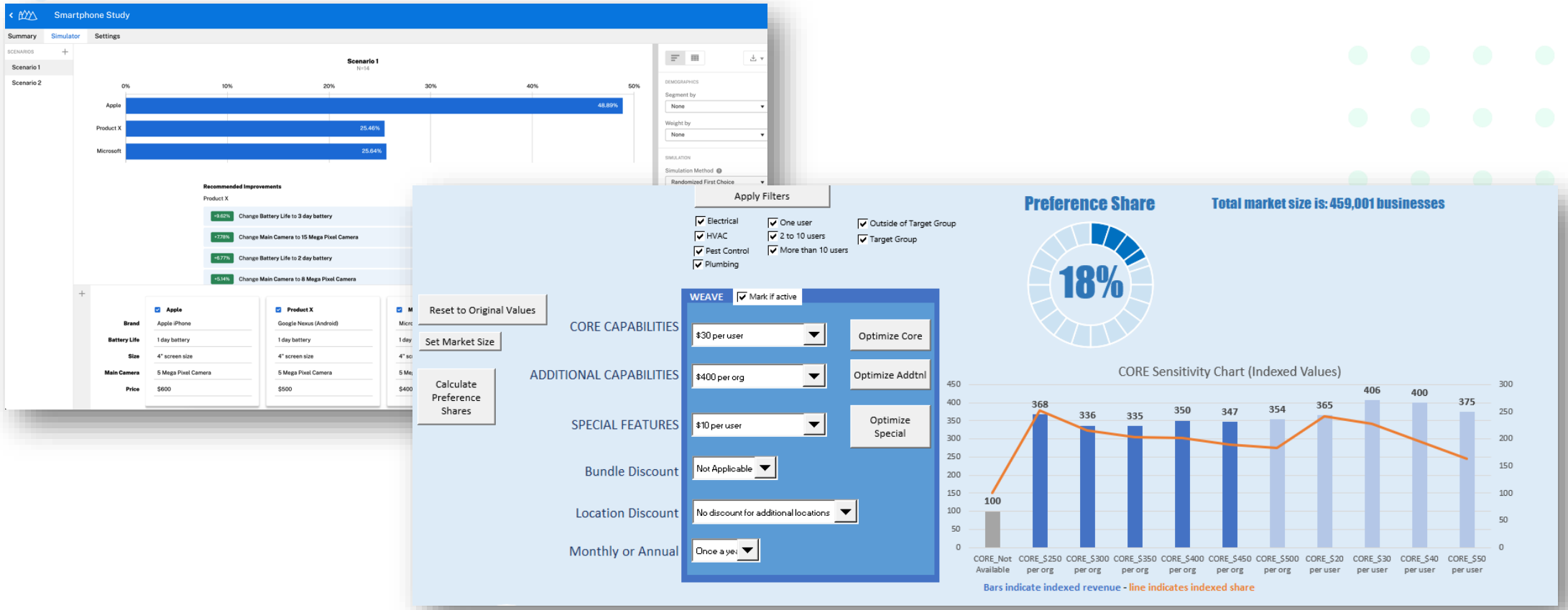
Optimizing a product offering

Conjoint analysis allows us to optimize our product offering by selecting the attribute levels that maximize total utility.



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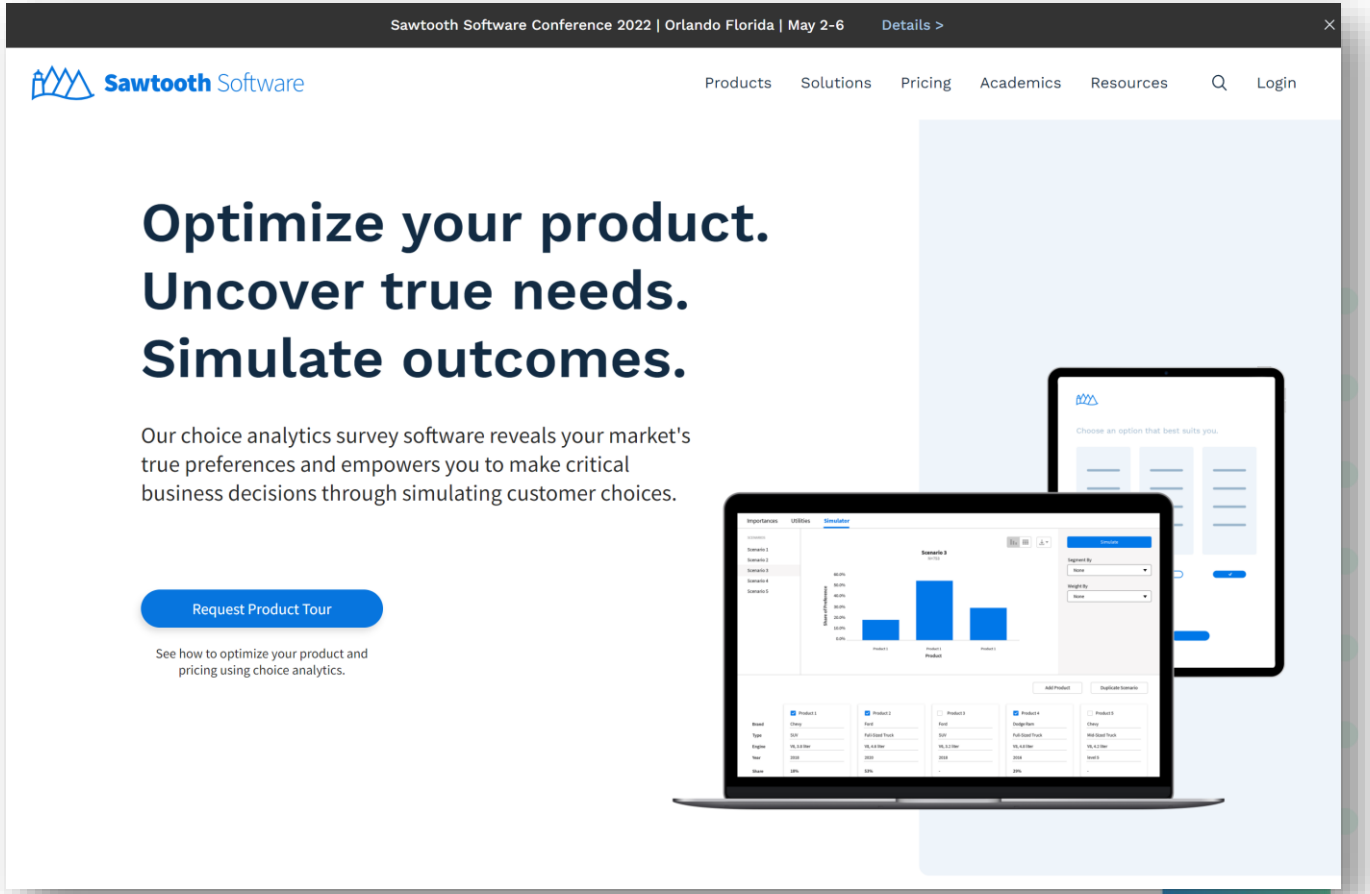
The power of conjoint analysis

This was only a short introduction into the seemingly limitless power of using conjoint analysis – an increasingly powerful market research technique that is being used by leading corporations to gain deeper insights into their customers' purchasing habits.

I encourage you to look deeper and find out more about the possibilities of conjoint analysis at **Sawtoothsoftware.com**

On the site you can sign in to a trial version of **Discover**, the online conjoint analysis tool.



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