



PM: Product Management and Development

Week 8 – Product Solution Design

Module Overview


Consumer Preferences

Explicit Response

- Rating scales (on 5-point or 7-point scale)
- Rank Ordering
- Constant Sum Scales
- Magnitude Estimation Scales
- Paired Comparisons
- Max-Diff Design
- Kano Method

Conjoint Analysis: Implicit Response

Implicit Response Function

- 
- Which attributes are important and how does it help managers understand them?
 - How can attributes be quantified better?

Quantify Product Benefits



- How much will consumers care about a fancy roof ?
- How much will consumers be ready to pay more?
- What would be the market share of the launched product?

Conjoint Motivation

Target Segment and Existing Products



Display	6.5 inch	5.8 inch	5.5 inch
Storage	64GB	128GB	256GB
RAM	3GB	2GB	4GB
Battery	3400 mAh	3200 mAh	3300 mAh
Camera	12MP	16MP	13MP

Target segment: ₹ 30,000

Product and Its Attributes



The explicit response function is used to understand the importance of different attributes.

Product Design and Value



A product should be designed keeping in mind important attributes.

Product + Improved attribute

How much extra money can be charged?

How much extra value do consumers derive?

Consumer Responses

Asking customers about the importance of different attributes is not sufficient.



Consumers will choose better features at the lowest prices.

Conjoint Analysis

Conjoint analysis helps develop cost-effective products that consumers value



Conjoint analysis:

- Is a systematic approach
- Is a powerful marketing tool
- Is used for consumer non-durables
- Is used across all industries

Product and Attributes: Relationship



The product is a composite or an addition of a lot of attributes.

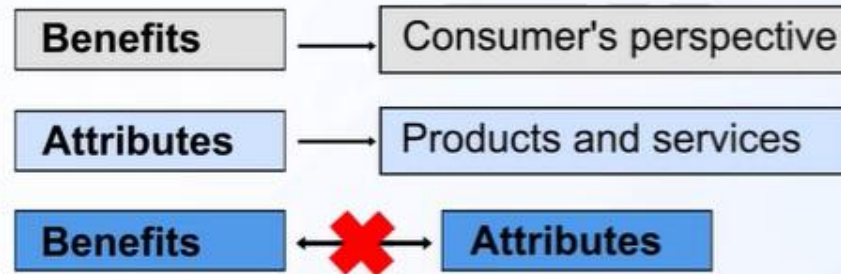
Example: Credit Card



Credit Card = APR + Interest rate + Brand + Credit limit

Various attributes help the customer choose among available products.

Benefits and Attributes



The conjoint analysis is about understanding consumer preferences.

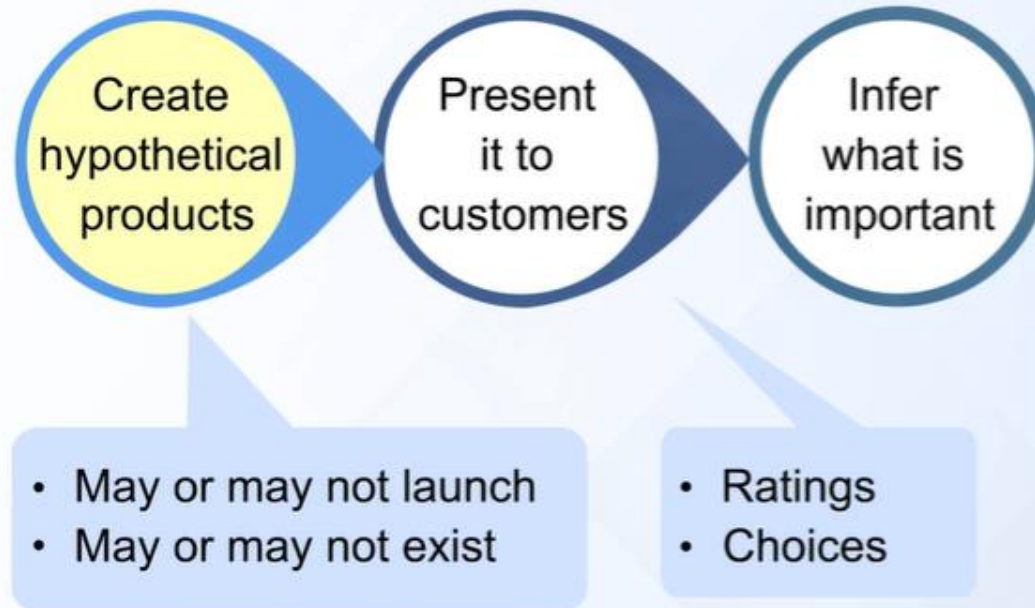
Benefits and Attributes: Different Perspective

Product managers look at the **attributes** of the product differently than how **consumers** look at the **benefits**.



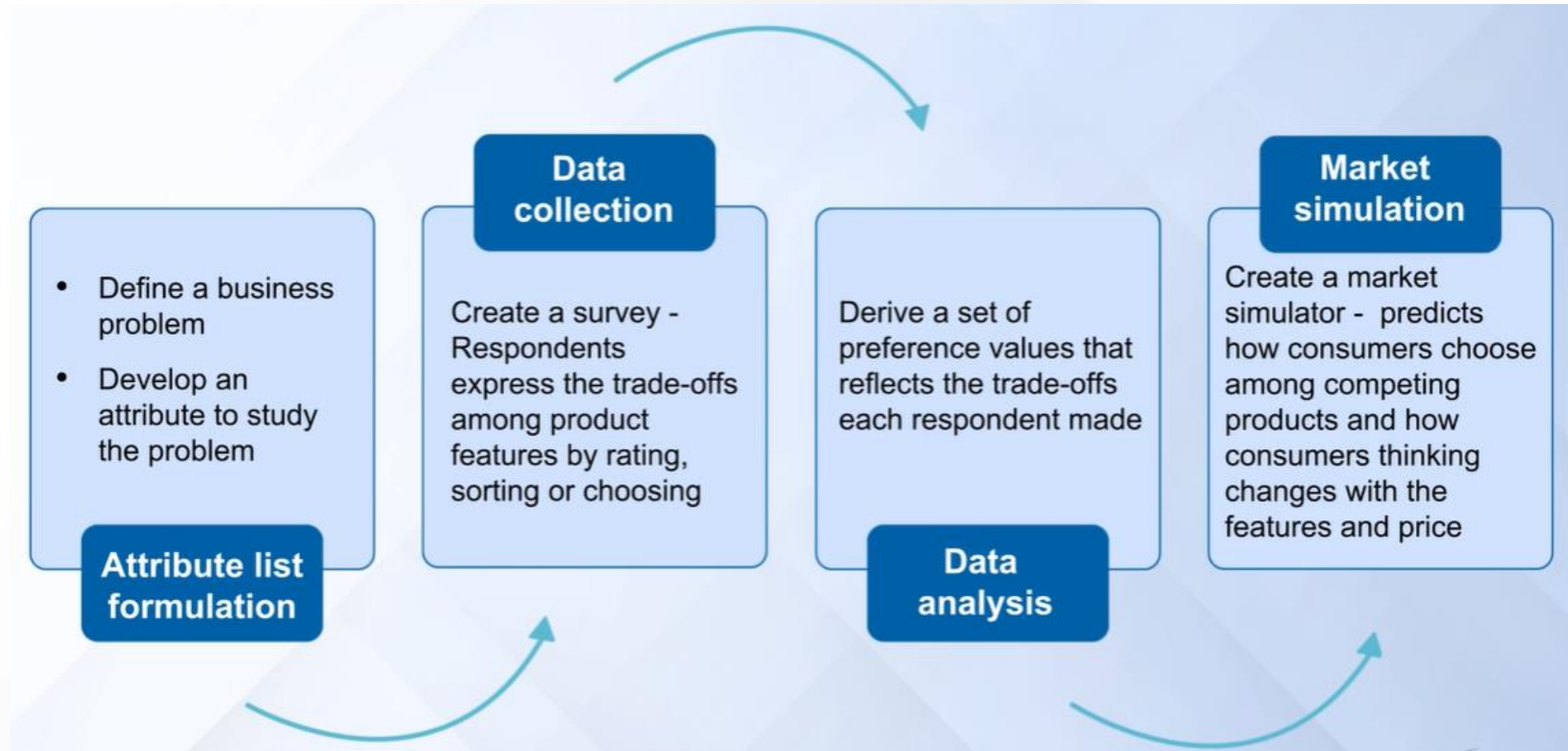
Conjoint Analysis

Conjoint analysis = Survey + Statistical technique



Overview of Conjoint Analysis

4 Steps of Conjoint Analysis



Step 1: Attribute List Formulation



- Use explicit response methods to identify the list of attributes
- Identify the levels of attributes that can be set in the market

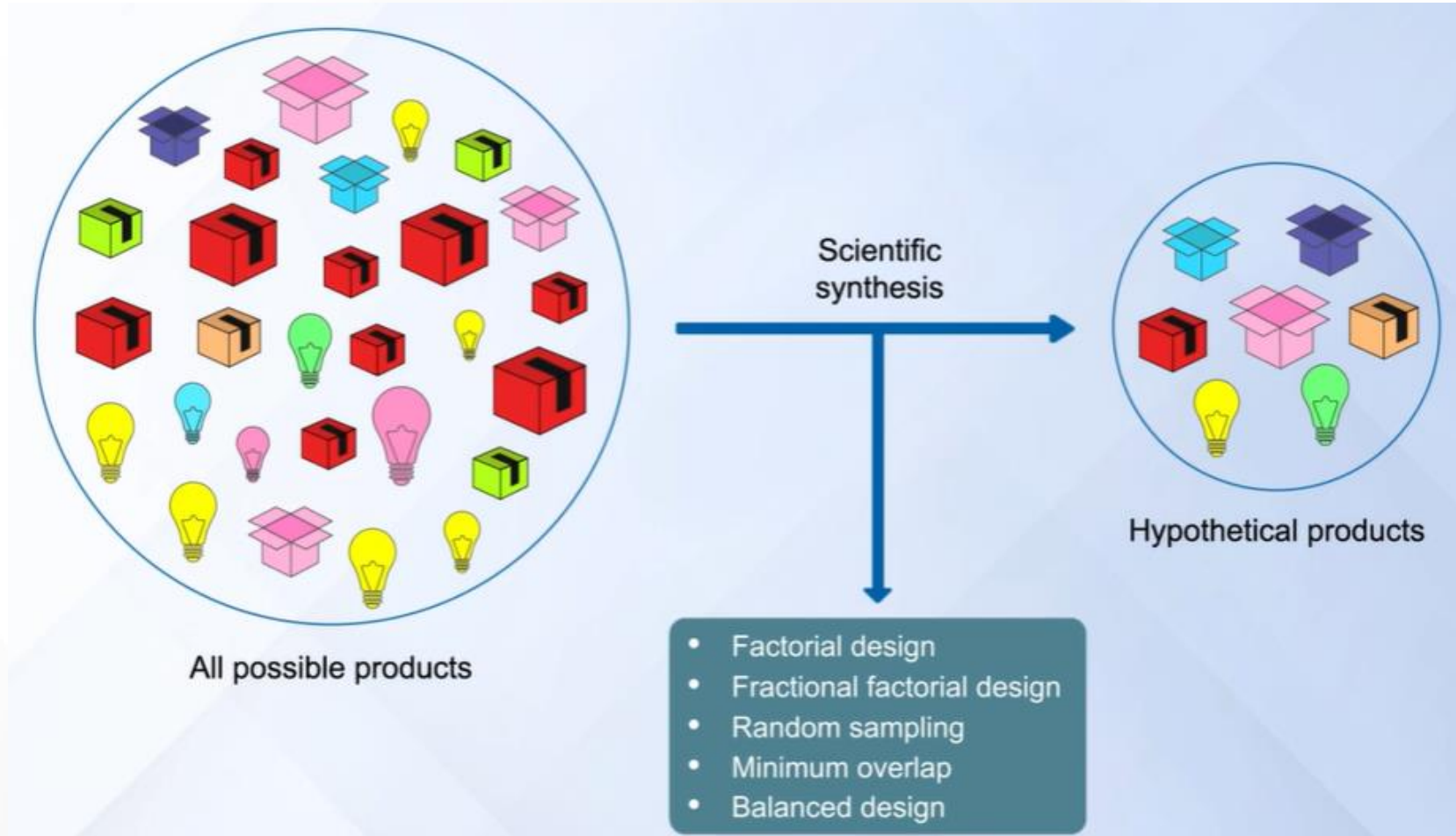
Example: Attribute List Formulation



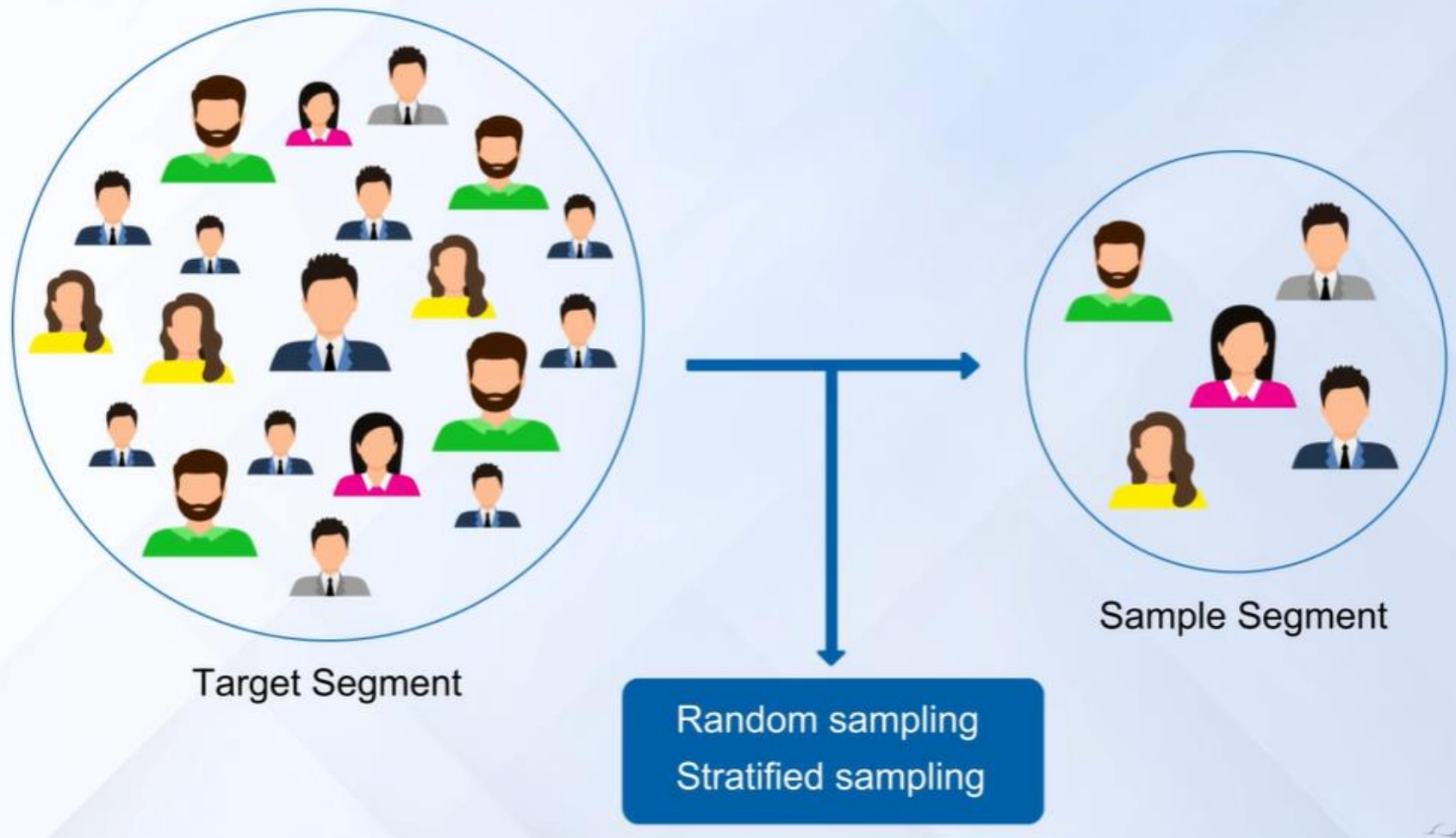
10' _____ Screen size _____ 12'

24 hr _____ Battery life _____ 36 hr

Step 1: Select Product Subset Using Factorial Design



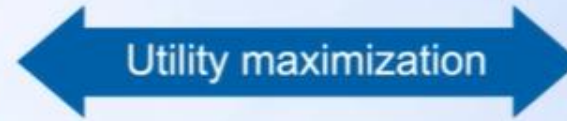
Step 2: Select Sample from Target Segment



Step 2: Select Sample from Target Segment



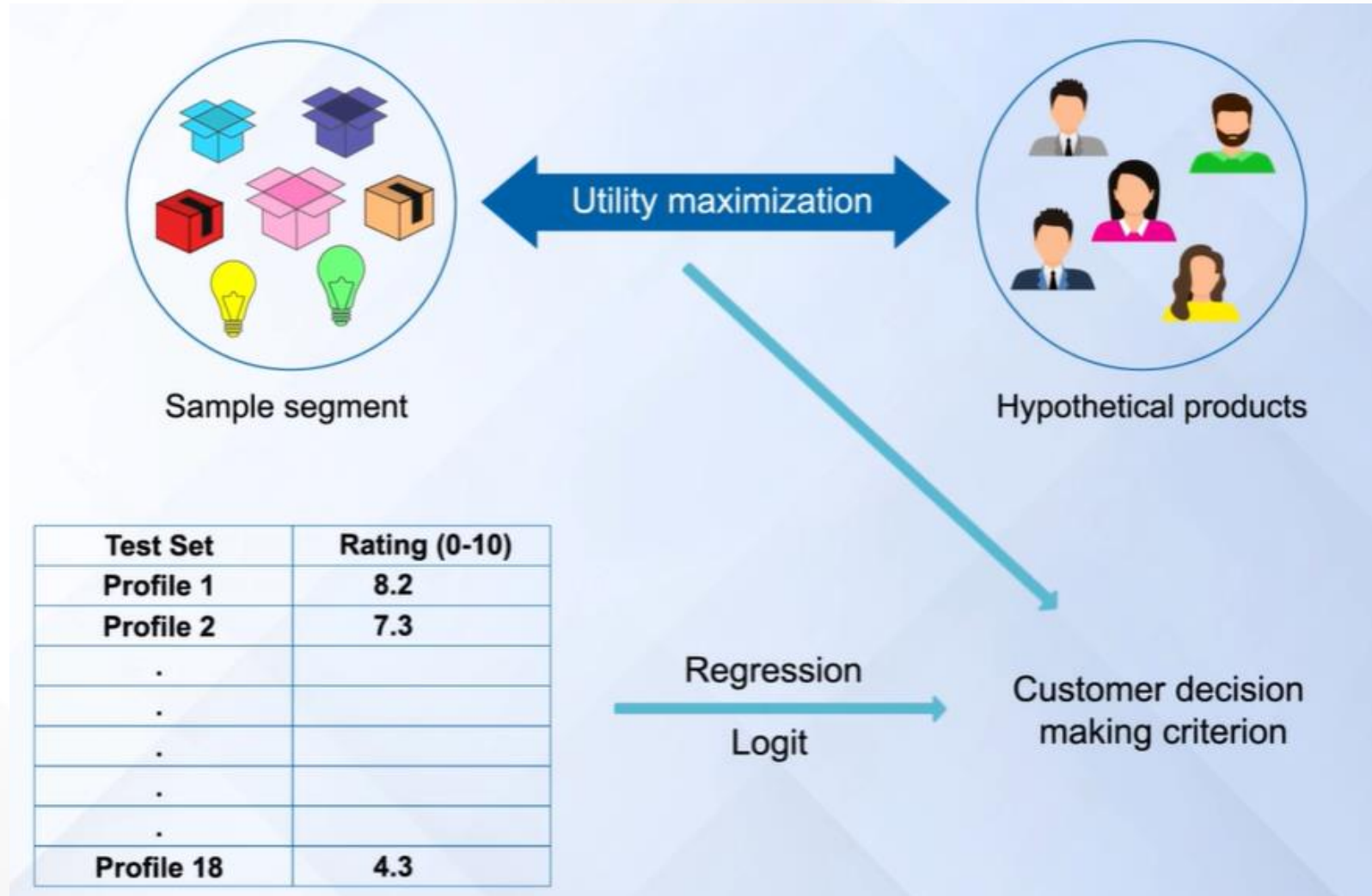
Sample segment



Hypothetical products

Test Set	Rating (0-10)
Profile 1	8.2
Profile 2	7.3
.	
.	
.	
.	
.	
Profile 18	4.3

Step 3: Data Analysis

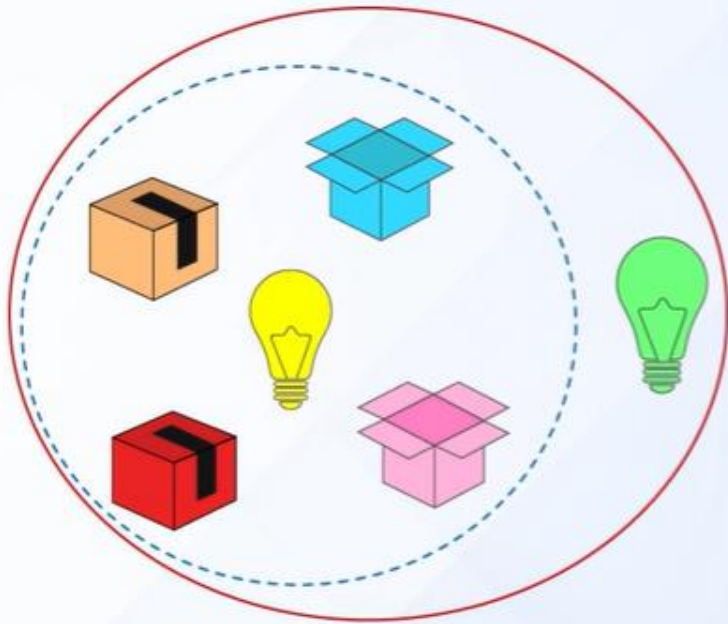


Customer Utility Function

Mathematical approximation of consumer's decision-making criterion

$$\begin{aligned} &2.26 \times \text{Sears} + 2.97 \times \text{Goodyear} \\ &\quad + \\ &2.48 \times \text{Miles}_{40K} + 3.44 \times \text{Miles}_{50k} \\ &\quad + \\ &1.62 \times \text{Price}_{\$50} + 1.37 \times \text{Price}_{\$60} \\ &\quad + \\ &1.25 \times \text{White} + \varepsilon \end{aligned}$$

Step 4: Market Simulation



Managerially relevant questions:

- What will be the market share for new product?
- Will the new product eat the demand from other owned products?
- Will the product steal the demand from competitors?
- What should be the price to maximise profit?

Rating-Based Conjoint Analysis

Brand	Memory	Price	Ranking (Utility)
Apple	20	150	8
Samsung	20	150	7
Apple	10	150	6
Apple	20	200	5
Samsung	10	150	4
Samsung	20	200	3
Apple	10	200	2
Samsung	10	200	1

*8=Most Preferred; 1=Least Preferred

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Choice-Based Conjoint Analysis

Which of these laptops would you choose?

Brand
Processor
RAM
Monitor
Price

HP
4GHz
1GB
21-inch
\$899

Dell
3GHz
3GB
17-inch
\$799

Sony
2GHz
2GB
15-inch
\$699



Which of these laptops would you choose?

Brand
Processor
RAM
Monitor
Price

Samsung
4GHz
1GB
20-inch
\$899

Lenovo
7GHz
3GB
17-inch
\$999

Acer
2GHz
4GB
15-inch
\$699

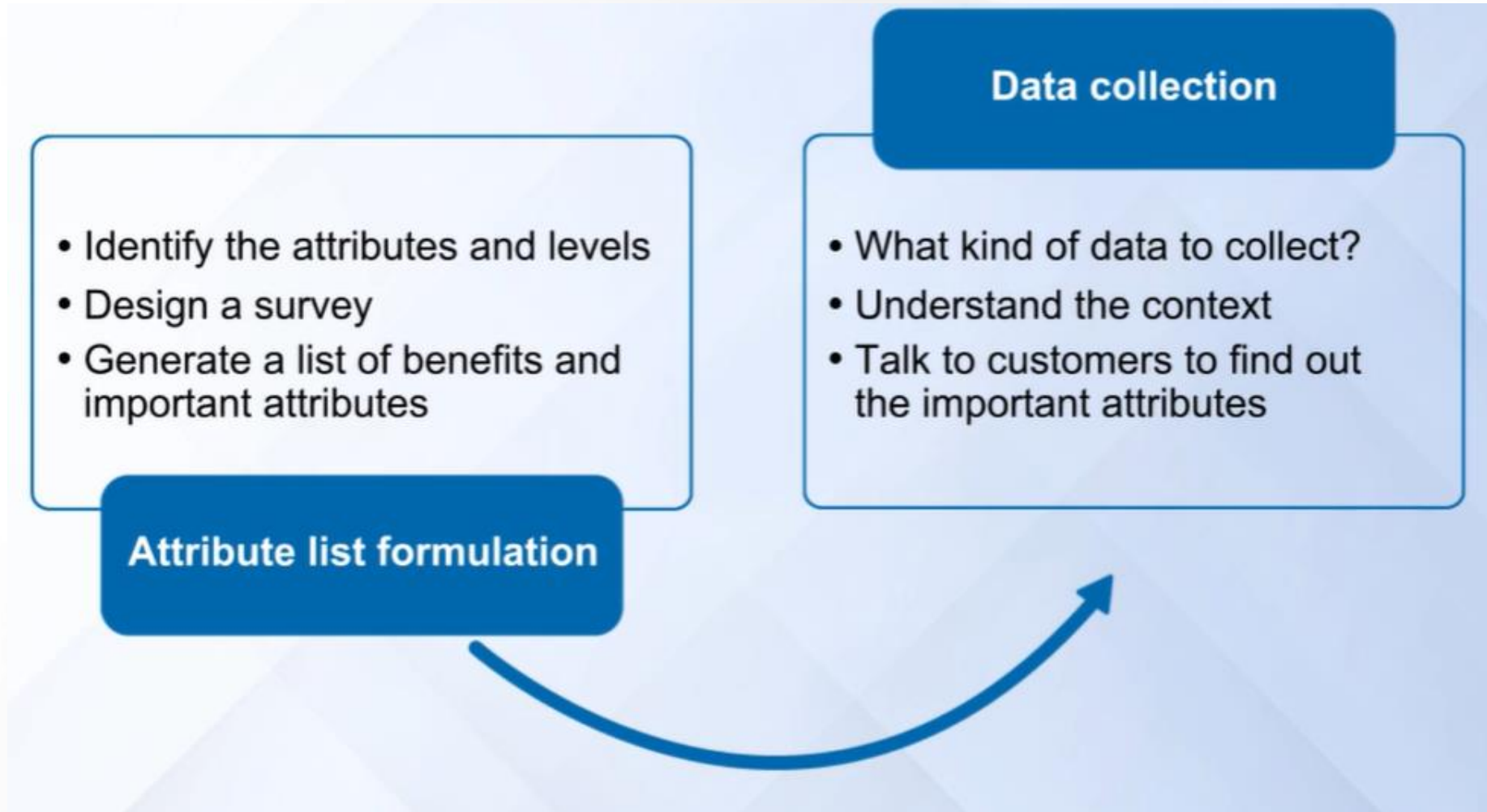


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Selecting Attributes and Levels for Conjoint Analysis

Steps of Conjoint Analysis



Macro Segmentation: Smartphone Example



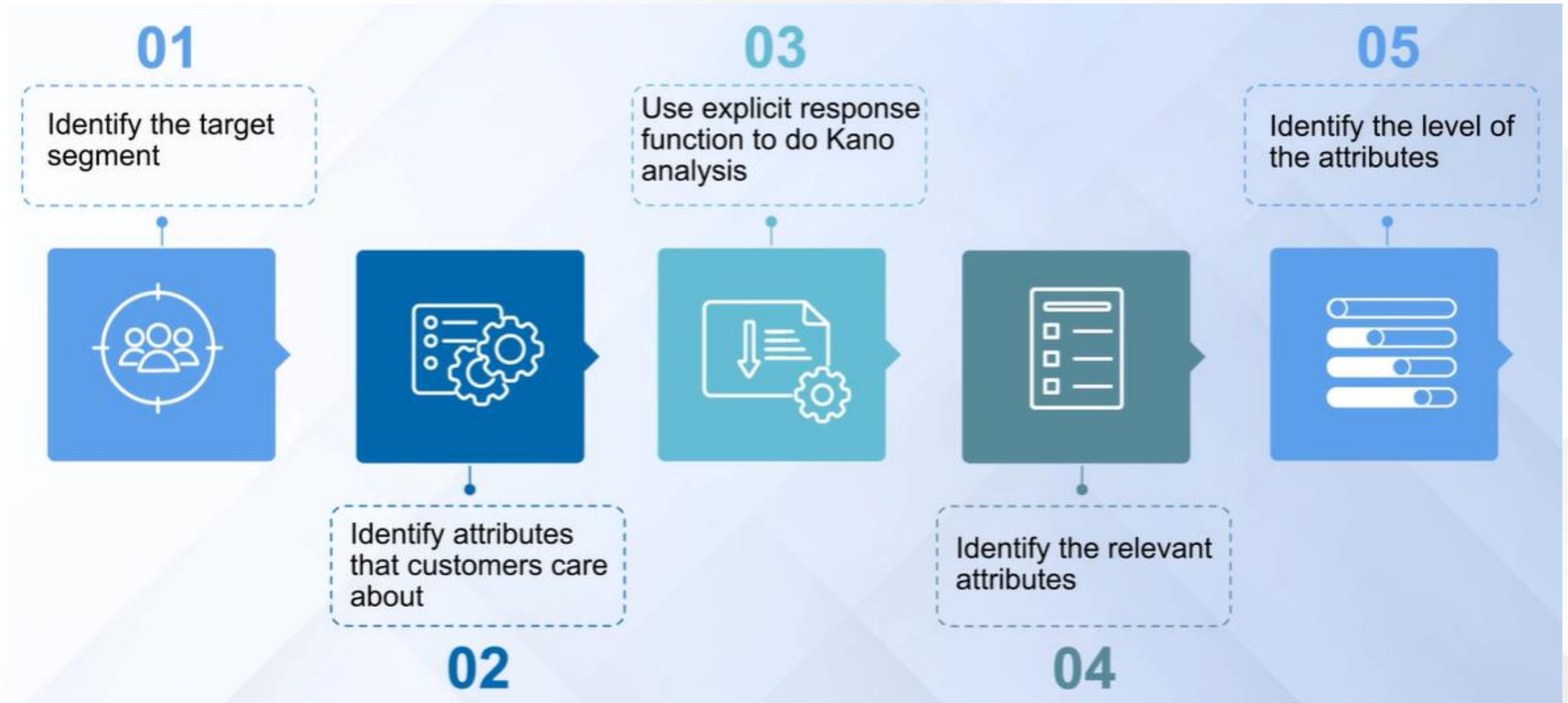
People buying expensive phones will not be interested in the cheaper categories and vice versa.

Target Segment



- Budget constraints help identify the target segment.
- Different people operate under different budget constraints.

Relevant Attributes and Levels



Difference Between Attributes and Levels



35,000 _____ Price _____ 25,000

24 hr _____ Battery life _____ 36 hr

Price – Level
Feature – Attributes

Macro Segmentation: SUV Tyre Example



- Segment: households who go on road and adventure trips
- Identify the macro segment and offer a tyre of their choice.

Understanding Customer Needs



The image shows a hand pointing to a square maze. A red line traces a path from the word 'customer' on the left to the word 'needs' on the right. The maze is drawn in blue lines on a light blue background.

- Identify the customers' problem
- Use explicit response functions to shortlist attributes
- Choose attributes that are critically evaluated by the customer

Attributes That Matter



Customers

- Durability
- Brand
- Price
- Aesthetics

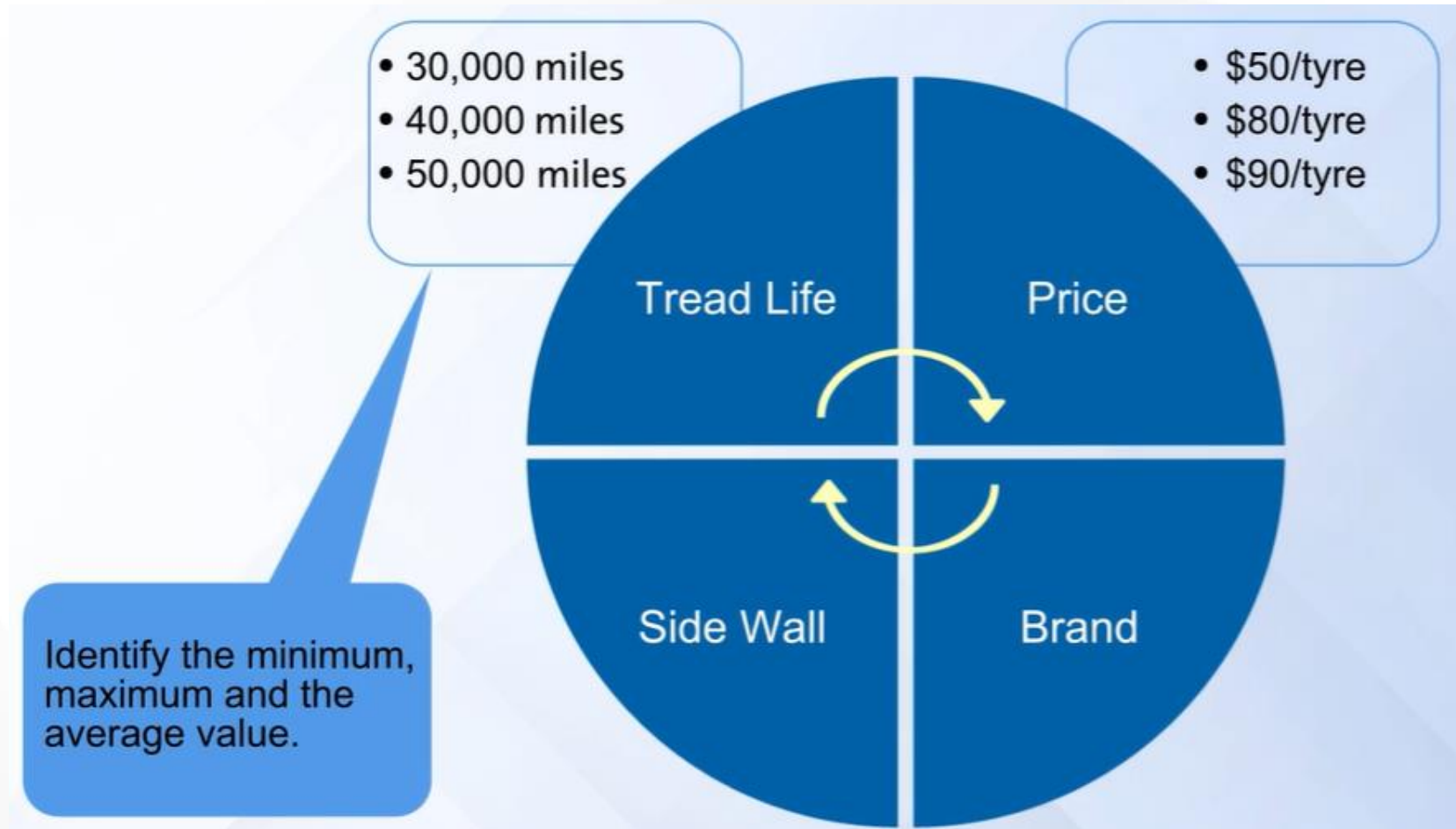


Product Managers

- Tread area
- Tyre ribs
- Shoulders
- Number of steel wires



Attributes That Customers Care About

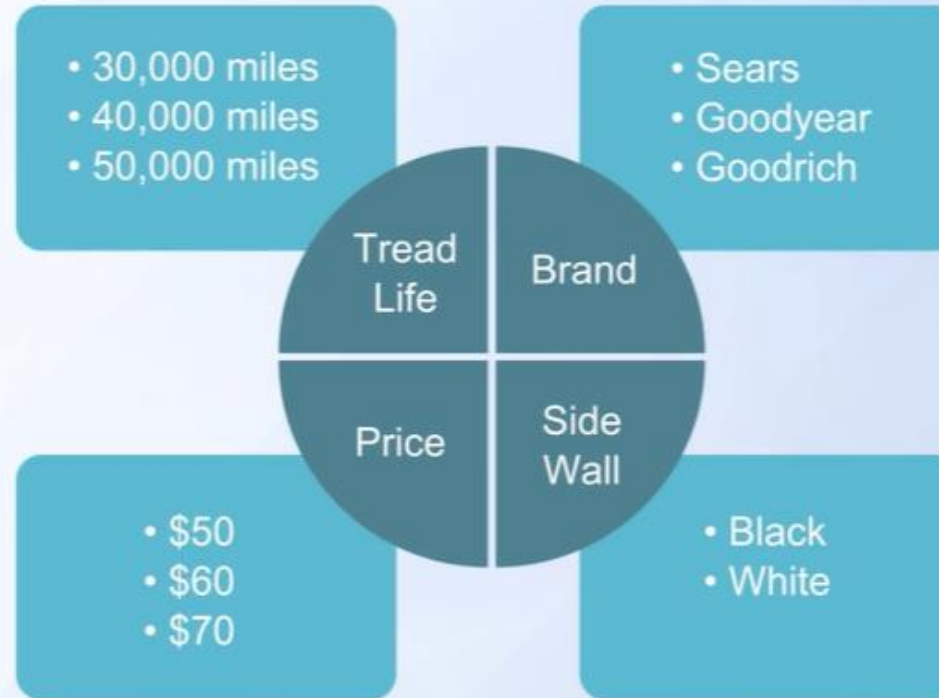


Attributes for Brands



Designing a Conjoint Analysis

Product Attributes and Levels



Levels of attributes: best, lowest, or average

$3 \times 3 \times 3 \times 2 = 54$ different products can be synthesised

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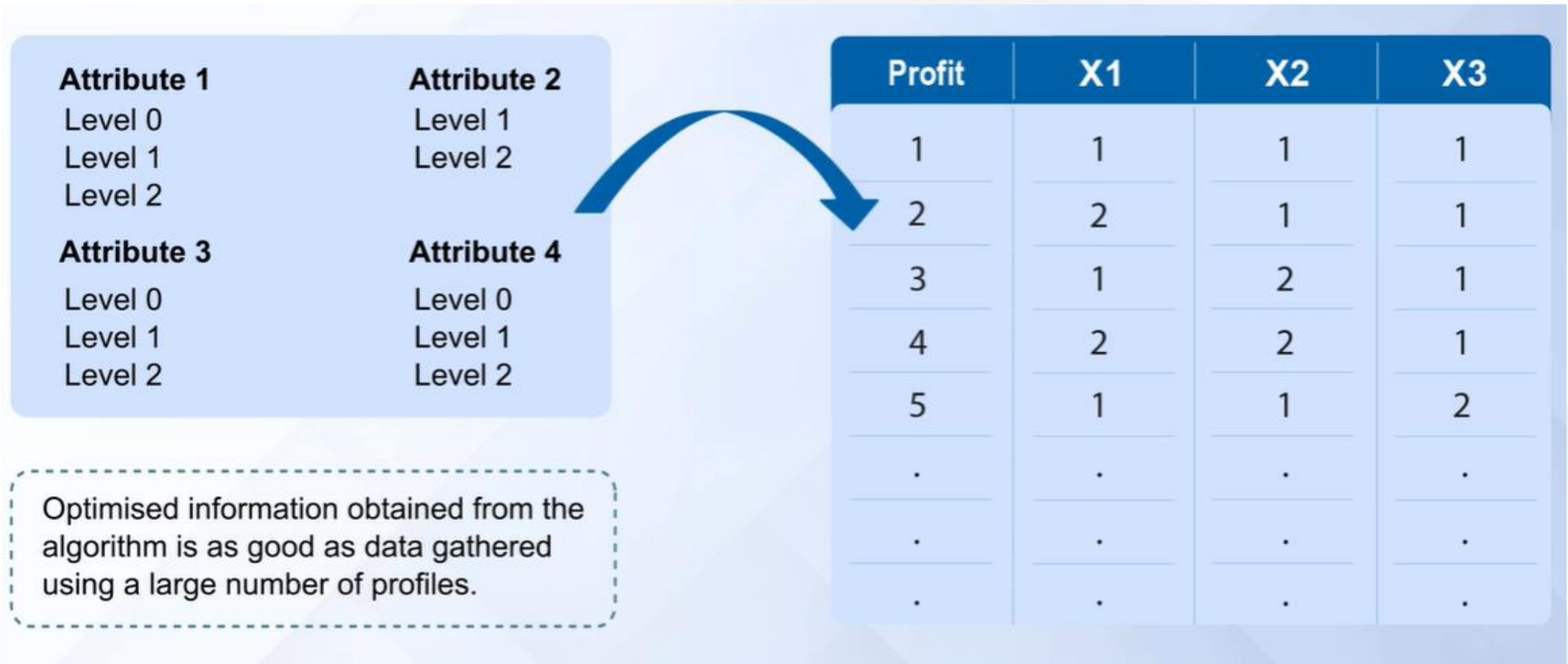
How many Product Profiles?

$3 \times 3 \times 3 \times 2 = 54$ different products can be synthesised

Ratings Based Conjoint

- Full design exercise requires lots of profiles and is difficult for people to rank order or rate the profiles.
- Fractional Factorial design using statistical software helps to reduce the number of profiles and is easier for people to complete the exercise

Coding Attributes and Levels for Factorial Design



Select Profiles Using Factorial Design

A3	B3	C3	D2
Brand	Tread Life	Price	Side Wall
0	0	0	0
0	1	1	0
0	2	2	1
1	0	1	1
1	1	2	0
1	2	0	0
2	0	2	0
2	1	0	1
2	2	1	0
0	0	2	1
0	1	0	0
0	2	1	0
1	0	0	0
1	1	1	1
1	2	2	0
2	0	1	0
2	1	2	0
2	2	0	1
Sears - 0	30k - 0	\$50 - 0	White - 0
Goodyear - 1	40k - 1	\$60 - 1	Black - 1
Goodrich - 2	50k - 2	\$70 - 2	

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Convert Factorial Profiles to Product Profiles

18 out of 54 potential profiles are selected by the fractional factorial design.

Profile	A3	B3	C3	D2
	Brand	Tread Life	Price	Side Wall
1	Sears	30k	\$50	White
2	Sears	40k	\$60	White
3	Sears	50K	\$70	Black
4	Goodyear	30k	\$60	Black
5	Goodyear	40k	\$70	White
6	Goodyear	50K	\$50	White
7	Goodrich	30k	\$70	White
8	Goodrich	40k	\$50	Black
9	Goodrich	50K	\$60	White
10	Sears	30k	\$70	Black
11	Sears	40k	\$50	White
12	Sears	50K	\$60	White
13	Goodyear	30k	\$50	White
14	Goodyear	40k	\$60	Black
15	Goodyear	50K	\$70	White
16	Goodrich	30k	\$60	White
17	Goodrich	40k	\$70	White
18	Goodrich	50K	\$50	Black

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Data Collection

Step 1d: Convert Bundles into Product Profiles

Bundles	A3	B3	C3	D2	Customer Rating
	Brand	Tread Life	Price	Side Wall	
1	Sears	30k	\$50	White	5
2	Sears	40k	\$60	White	7
3	Sears	50k	\$70	Black	6
4	Goodyear	30k	\$60	Black	5
5	Goodyear	40k	\$70	White	7
6	Goodyear	50k	\$50	White	9
7	Goodrich	30k	\$70	White	0
8	Goodrich	40k	\$50	Black	3
9	Goodrich	50k	\$60	White	6
10	Sears	30k	\$70	Black	2
11	Sears	40k	\$50	White	8
12	Sears	50k	\$60	White	8
13	Goodyear	30k	\$50	White	6
14	Goodyear	40k	\$60	Black	7
15	Goodyear	50k	\$70	White	7
16	Goodrich	30k	\$60	White	2
17	Goodrich	40k	\$70	White	4
18	Goodrich	50k	\$50	Black	6

Rather than taking raw profiles directly to people, use creativity.

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Step 2: Data Collection

Goodrich - \$70



Goodyear - \$60



Sears - \$60



To get realistic information,
consumers must understand
the context.

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Step 2: Data Collection

Bundles	A3	B3	C3	D2	Customer Rating
	Brand	Tread Life	Price	Side Wall	
1	Sears	30k	\$50	White	5
2	Sears	40k	\$60	White	7
3	Sears	50k	\$70	Black	6
4	Goodyear	30k	\$60	Black	5
5	Goodyear	40k	\$70	White	7
6	Goodyear	50k	\$80	White	9
7	Goodrich	30k	\$70	White	0
8	Goodrich	40k	\$50	Black	3
9	Goodrich	50k	\$60	White	6
10	Sears	30k	\$70	Black	2
11	Sears	40k	\$50	White	8
12	Sears	50k	\$60	White	8
13	Goodyear	30k	\$50	White	6
14	Goodyear	40k	\$60	Black	7
15	Goodyear	50k	\$70	White	7
16	Goodrich	30k	\$60	White	2
17	Goodrich	40k	\$70	White	4
18	Goodrich	50k	\$50	Black	6



The goal is for customers to understand the products better.

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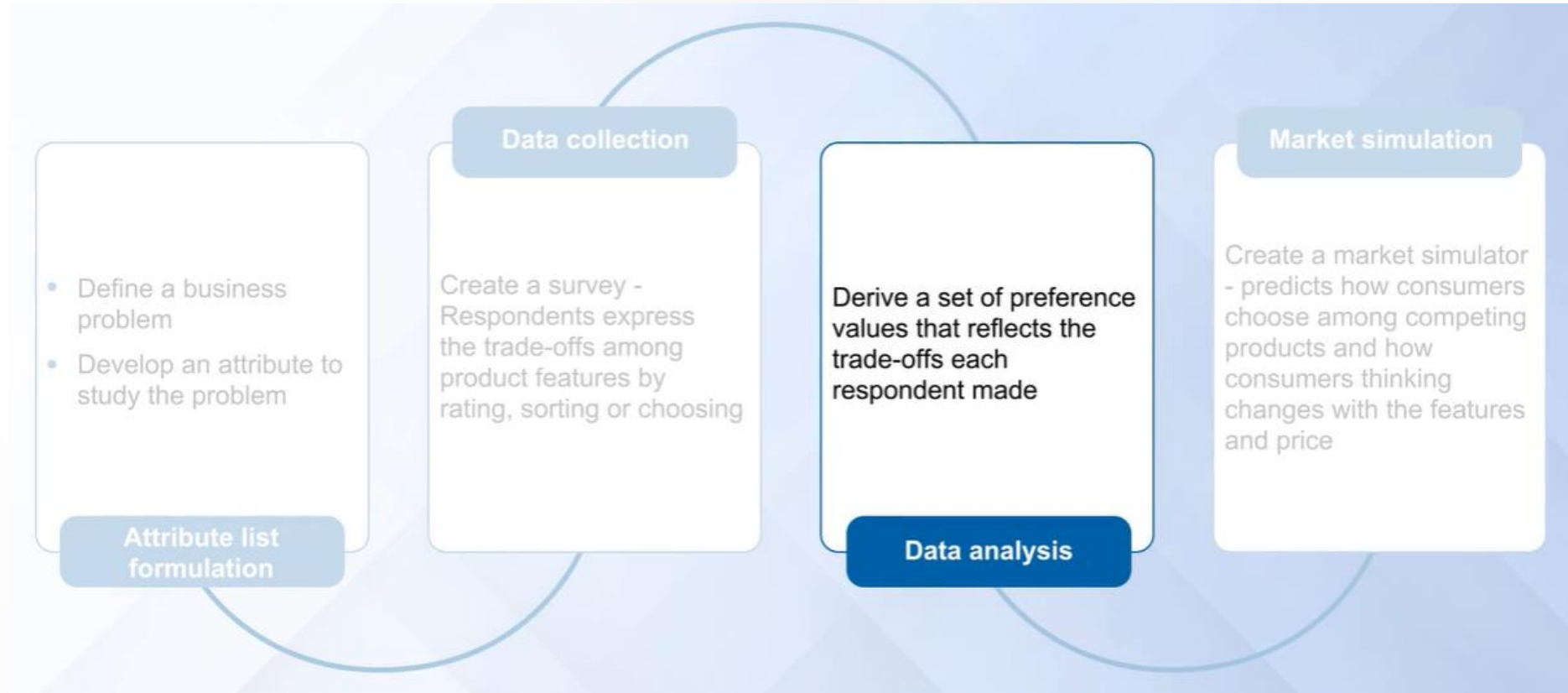
Step 2: Data Collection



Information should only be collected from your target customers.

Analysing the Data

Step 3: Data Analysis



Step 3: Data Analysis



Dummy Variable Regression

Card	A3	B3	C3	D2	Customer Rating
	Brand	Tread Life	Price	Side wall	
1	Sears	30k	\$50	White	5
2	Sears	40k	\$60	White	7
3	Sears	50k	\$70	Black	6
4	Goodyear	30k	\$60	Black	5
5	Goodyear	40k	\$70	White	7
6	Goodyear	50k	\$50	White	9
7	Goodrich	30k	\$70	White	0
8	Goodrich	40k	\$50	Black	3
9	Goodrich	50k	\$60	White	6
10	Sears	30k	\$70	Black	2
11	Sears	40k	\$50	White	8
12	Sears	50k	\$60	White	8
13	Goodyear	30k	\$50	White	6
14	Goodyear	40k	\$60	Black	7
15	Goodyear	50k	\$70	White	7
16	Goodrich	30k	\$60	White	2
17	Goodrich	40k	\$70	White	4
18	Goodrich	50k	\$50	Black	6

- Use regression method to analyse data.
- Run a regression for every respondent.

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Dummy Variable Regression

X variable					Y variable
Card	A3 Brand	B3 Tread Life	C3 Price	D2 Side wall	Customer Rating
1	Sears	30k	\$50	White	5
2	Sears	40k	\$60	White	7
3	Sears	50k	\$70	Black	6
4	Goodyear	30k	\$60	Black	5
5	Goodyear	40k	\$70	White	7
6	Goodyear	50k	\$50	White	9
7	Goodrich	30k	\$70	White	0
8	Goodrich	40k	\$50	Black	3
9	Goodrich	50k	\$60	White	6
10	Sears	30k	\$70	Black	2
11	Sears	40k	\$50	White	8
12	Sears	50k	\$60	White	8
13	Goodyear	30k	\$50	White	6
14	Goodyear	40k	\$60	Black	7
15	Goodyear	50k	\$70	White	7
16	Goodrich	30k	\$60	White	2
17	Goodrich	40k	\$70	White	4
18	Goodrich	50k	\$50	Black	6

- Use regression method to analyse data.
- Run a regression for every respondent.

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Dummy Variable Regression

$$R = \beta_0 + \beta_1 \times \text{Sears} + \beta_2 \times \text{Goodyear} + \beta_3 \times \text{Miles}_{40K} \\ + \beta_4 \times \text{Miles}_{50K} + \beta_5 \times \text{Price}_{\$50} + \beta_6 \times \text{Price}_{\$60} + \beta_7 \times \text{White} + \varepsilon$$

Run regression to estimate the “coefficient” β

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Setting up the Regression

Rating	Sears	Goodyear	Mile40	Mile50	Price50	Price60	White
5	1	0	0	0	1	0	1
7	1	0	1	0	0	1	1
6	1	0	0	1	0	0	0
5	0	1	0	0	0	1	0
7	0	1	1	0	0	0	1
9	0	1	0	1	1	0	1
0	0	0	0	0	0	0	1
3	0	0	1	0	1	0	0
6	0	0	0	1	0	1	1
2	1	0	0	0	0	0	0
8	1	0	1	0	1	0	1
8	1	0	0	1	0	1	1
6	0	1	0	0	1	0	1
7	0	1	1	0	0	1	0
7	0	1	0	1	0	0	1
2	0	0	0	0	0	1	1
4	0	0	1	0	0	0	1
6	0	0	0	1	1	0	0

Compute “coefficient” β for every respondent

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Regression Output

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.9253					
R Square	0.8562					
Adjusted R Square	0.8550					
Standard Error	0.8790					
Observations	900					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	7	4102.638333	586.09119	758.549155	0	
Residual	892	689.2016667	0.77264761			
Total	899	4791.84				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.11	0.0879	1.2514	0.2111	-0.0625	0.2825
Sears	2.26	0.0718	31.4893	0.0000	2.1191	2.4009
Goodyear	2.97	0.0718	41.4893	0.0000	2.8291	3.1109
Mile40	2.48	0.0718	34.5082	0.0000	2.3358	2.6175
Mile50	3.44	0.0718	47.9771	0.0000	3.3025	3.5842
Price50	1.62	0.0718	22.6184	0.0000	1.4825	1.7642
Price60	1.37	0.0718	19.0422	0.0000	1.2258	1.5075
White	1.25	0.0622	20.0306	0.0000	1.1230	1.3670

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Intuitive Interpretation of β Coefficients

The “coefficients” β are called the utility weights or “partworths.”

$$R = \beta_0 + \beta_1 \times \text{Sears} + \beta_2 \times \text{Goodyear} + \beta_3 \times \text{Miles}_{40K} + \beta_4 \times \text{Miles}_{50K} + \beta_5 \times \text{Price}_{\$50} + \beta_6 \times \text{Price}_{\$60} + \beta_7 \times \text{White} + \varepsilon$$

- Helps to decipher the decision-making criteria of a respondent
- Is the mathematical equation of how respondents make purchasing decisions
- Is the intuitive interpretation of β coefficients
- Is transformed into importance ratings

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Interpreting β Coefficients

Card	A3	B3	C3	D2	Customer Rating
	Brand	Tread Life	Price	Side wall	
1	Sears	30k	\$50	White	5
2	Sears	40k	\$60	White	7
3	Sears	50k	\$70	Black	6
4	Goodyear	30k	\$60	Black	5
5	Goodyear	40k	\$70	White	7
6	Goodyear	50k	\$50	White	9
7	Goodrich	30k	\$70	White	0
8	Goodrich	40k	\$50	Black	3
9	Goodrich	50k	\$60	White	6
10	Sears	30k	\$70	Black	2
11	Sears	40k	\$50	White	8
12	Sears	50k	\$60	White	8
13	Goodyear	30k	\$50	White	6
14	Goodyear	40k	\$60	Black	7
15	Goodyear	50k	\$70	White	7
16	Goodrich	30k	\$60	White	2
17	Goodrich	40k	\$70	White	4
18	Goodrich	50k	\$50	Black	6

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Maximum and Minimum Partworth

β Coefficients for the Brand attribute

Consumer utility equation

$$\begin{aligned} & 0 \times \textit{Goodrich} + 2.26 \times \textit{Sears} + 2.97 \times \textit{Goodyear} \\ & + 0 \times \textit{Miles}_{30k} + 2.48 \times \textit{Miles}_{40k} + 3.44 \times \textit{Miles}_{50k} \\ & + 0 \times \textit{Price}_{\$70} + 1.62 \times \textit{Price}_{\$50} + 1.37 \times \textit{Price}_{\$60} \\ & + 0 \times \textit{Black} + 1.25 \times \textit{White} \\ & + \textit{other things (error term)} \end{aligned}$$

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Maximum and Minimum Partworth

For a single attribute, look at its maximum partworth and minimum partworth.

Consumer utility equation

$$\begin{aligned} & 0 \times \textit{Goodrich} + 2.26 \times \textit{Sears} + 2.97 \times \textit{Goodyear} \\ & + 0 \times \textit{Miles}_{30k} + 2.48 \times \textit{Miles}_{40k} + 3.44 \times \textit{Miles}_{50k} \\ & + 0 \times \textit{Price}_{\$70} + 1.62 \times \textit{Price}_{\$50} + 1.37 \times \textit{Price}_{\$60} \\ & + 0 \times \textit{Black} + 1.25 \times \textit{White} \\ & + \textit{other things (error term)} \end{aligned}$$

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Maximum and Minimum Partworth

For a single attribute, look at its maximum partworth and minimum partworth.

Consumer utility equation

$$\begin{aligned} & 0 \times \textit{Goodrich} + 2.26 \times \textit{Sears} + 2.97 \times \textit{Goodyear} \\ & + 0 \times \textit{Miles}_{30k} + 2.48 \times \textit{Miles}_{40k} + 3.44 \times \textit{Miles}_{50k} \\ & + 0 \times \textit{Price}_{\$70} + 1.62 \times \textit{Price}_{\$50} + 1.37 \times \textit{Price}_{\$60} \\ & + 0 \times \textit{Black} + 1.25 \times \textit{White} \\ & + \textit{other things (error term)} \end{aligned}$$

Zero appears for every attribute as it is used as a base variable in dummy variable regression.

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Attribute Normalisation

$$I_k = \frac{\overline{P}_k - \underline{P}_k}{\sum_{k \in K} \overline{P}_k - \underline{P}_k}$$

I_k = Importance of attribute k

\overline{P}_k = The partworth for the most preferred level of attribute k

\underline{P}_k = The partworth for the least preferred level of attribute k

Attribute Importance Ratings

• Brand (max-min)	= 2.97	---- 32%
• Price (max-min)	= 1.62	---- 17%
• Tread Life (max-min)	= 3.44	---- 37%
• Colour (max-min)	= 1.25	---- 13%
Total	= 9.28	100%

2.97/9.28

Maximum possible change in utility by just changing levels of this attribute

Attribute Importance Ratings

Importance ratings can be interpreted directly.

• Brand (max-min)	= 2.97	---- 32%
• Tread Life (max-min)	= 3.44	---- 37%
• Price (max-min)	= 1.62	---- 17%
• Colour (max-min)	= 1.25	---- 13%
Total	= 9.28	100%

Importance ratings are a measure of how much **influence each attribute has** on people's choices.

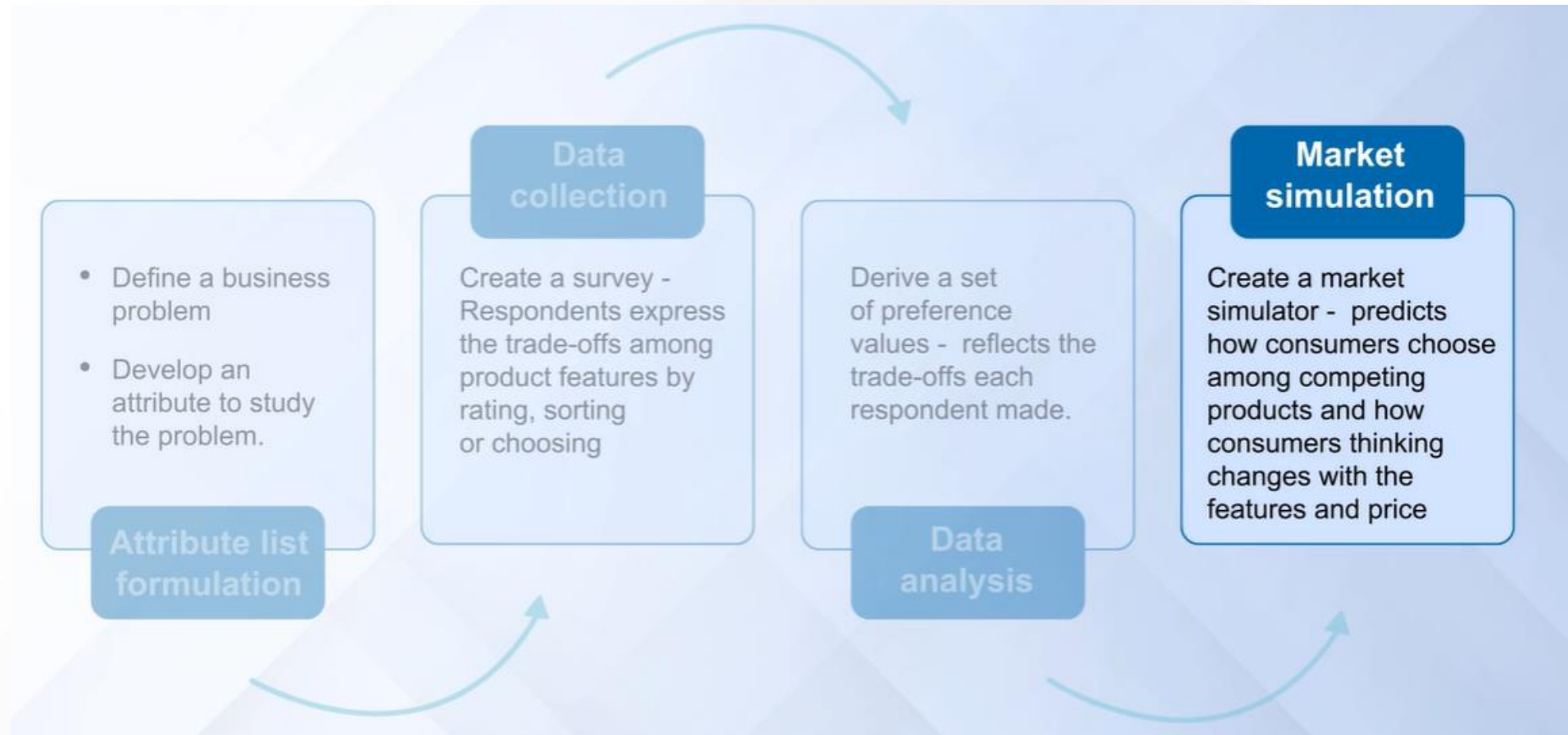
Purpose of the Exercise



- Estimate the market share of the product
- Estimate where the extra demand will come from

Simulation and Market Share Estimation

Step 4: Market Simulation



Managerially Relevant Questions



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Step 1: Calculating the Product Utility

Calculate the utility functions (U's) for each product (alternative in the market) for each respondent.

Partworths

$$\begin{aligned} &0 \times \text{Goodrich} + 2.26 \times \text{Sears} + 2.9 \times \text{Goodyear} \\ &+ 0 \times \text{Miles}_{30K} + 2.48 \times \text{Miles}_{40K} + 3.44 \times \text{Miles}_{50K} \\ &+ 0 \times \text{Price}_{\$70} + 1.62 \times \text{Price}_{\$50} + 1.37 \times \text{Price}_{\$60} \\ &+ 0 \times \text{Black} + 1.25 \times \text{White} \end{aligned}$$

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Step 2: Calculating Choice Probability

Calculate choice probability for each respondent.



What is the probability of picking one product over the other two products?

Step 3: Calculating Market Share

Sum up choice probabilities to get market share.



Calculate Choice Probabilities

Brand	Goodyear	Goodrich	Sears
Miles	40,000	30,000	50,000
Price	\$60	\$50	\$70
Colour	Black Void	White Void	Black Void

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Calculate Choice Probabilities

Goodrich wants to launch a new product with higher utility.

Product	Goodrich (Existing)	Goodrich (New)
Utility	Low	High
Price	\$50	\$50
Colour	White Void	Black Void

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Calculate Product Utility

	Brand	Goodyear	Goodrich	Sears	Goodrich
	Miles	40,000	30,000	50,000	40,000
	Price	\$60	\$50	\$70	\$50
Partworth	Color	Black	White	Black	Black
Sears	2.26	0	0	1	0
Goodyear	2.97	1	0	0	0
Goodrich	0.00	0	1	0	1
Miles=40K	2.48	1	0	0	1
Miles=50K	3.44	0	0	1	0
Miles=60K	0.00	0	1	0	0
Price=\$50	1.62	0	1	0	1
Price=\$60	1.37	1	0	0	0
Price=\$70	0.00	0	0	1	0
Sidewall=White	1.25	0	1	0	0
Sidewall=Black	0.00	1	0	1	1
Utility		6.82	2.87	5.70	4.10

$$\begin{aligned}
 Un = & 0 \times \text{Goodrich} + 2.26 \times \text{Sears} + 2.97 \times \text{Goodyear} \\
 & + 0 \times \text{Miles}_{30K} + 2.48 \times \text{Miles}_{40K} + 3.44 \times \text{Miles}_{50K} \\
 & + 0 \times \text{Price}_{\$70} + 1.62 \times \text{Price}_{\$50} + 1.37 \times \text{Price}_{\$60} \\
 & + 0 \times \text{Black} + 1.25 \times \text{White}
 \end{aligned}$$

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Calculate Product Utility

	Brand	Goodyear	Goodrich	Sears	Goodrich
	Miles	40,000	30,000	50,000	40,000
	Price	\$60	\$50	\$70	\$50
Partworth	Color	Black	White	Black	Black
Sears	2.26	0	0	1	0
Goodyear	2.97	1	0	0	0
Goodrich	0.00	0	1	0	1
Miles=40K	2.48	1	0	0	1
Miles=50K	3.44	0	0	1	0
Miles=60K	0.00	0	1	0	0
Price=\$50	1.62	0	1	0	1
Price=\$60	1.37	1	0	0	0
Price=\$70	0.00	0	0	1	0
Sidewall=White	1.25	0	1	0	0
Sidewall=Black	0.00	1	0	1	1
Utility		6.82	2.87	5.70	4.10

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Computing Product Utility

$$\begin{aligned} U_n = & 0 \times \text{Goodrich} + 2.26 \times \text{Sears} + 2.97 \times \text{Goodyear} \\ & + 0 \times \text{Miles}_{30K} + 2.48 \times \text{Miles}_{40K} + 3.44 \times \text{Miles}_{50K} \\ & + 0 \times \text{Price}_{\$70} + 1.62 \times \text{Price}_{\$50} + 1.37 \times \text{Price}_{\$60} \\ & + 0 \times \text{Black} + 1.25 \times \text{White} \end{aligned}$$

Compute the utility for every product and then compute the probability shares.

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Calculate Choice Probabilities

$$U_{nj} = V_{nj} + \varepsilon_{nj},$$

$$P_{ni} = \text{Prob}(\varepsilon_{nj} - \varepsilon_{ni} < V_{ni} - V_{nj} \forall j \neq i)$$

$$P_{ni} = \int_{\varepsilon} I(\varepsilon_{nj} - \varepsilon_{ni} < V_{ni} - V_{nj} \forall j \neq i) f(\varepsilon_n) d\varepsilon_n$$

$$\text{Choice Probability : } P_{ni} = \frac{\exp(U_{ni})}{\sum_{j \in I} \exp(U_{nj})}$$

Calculate Choice Probabilities

Old Market

- Product A: $\exp(6.82)/\exp(6.82)+\exp(2.87)+\exp(5.70) = 0.74$
- Product B: $\exp(2.87)/\exp(6.82)+\exp(2.87)+\exp(5.70) = 0.01$
- Product C: $\exp(5.70)/\exp(6.82)+\exp(2.87)+\exp(5.70) = 0.24$

New Market

- Product A: $\exp(6.82)/\exp(6.82)+\exp(2.87)+\exp(5.70) + \exp(4.10) = 0.71$
- Product B: $\exp(2.87)/\exp(6.82)+\exp(2.87)+\exp(5.70) + \exp(4.10) = 0.01$
- Product C: $\exp(5.70)/\exp(6.82)+\exp(2.87)+\exp(5.70) + \exp(4.10) = 0.23$
- New Product: $\exp(4.10)/\exp(6.82)+\exp(2.87)+\exp(5.70)+\exp(4.10) = 0.05$

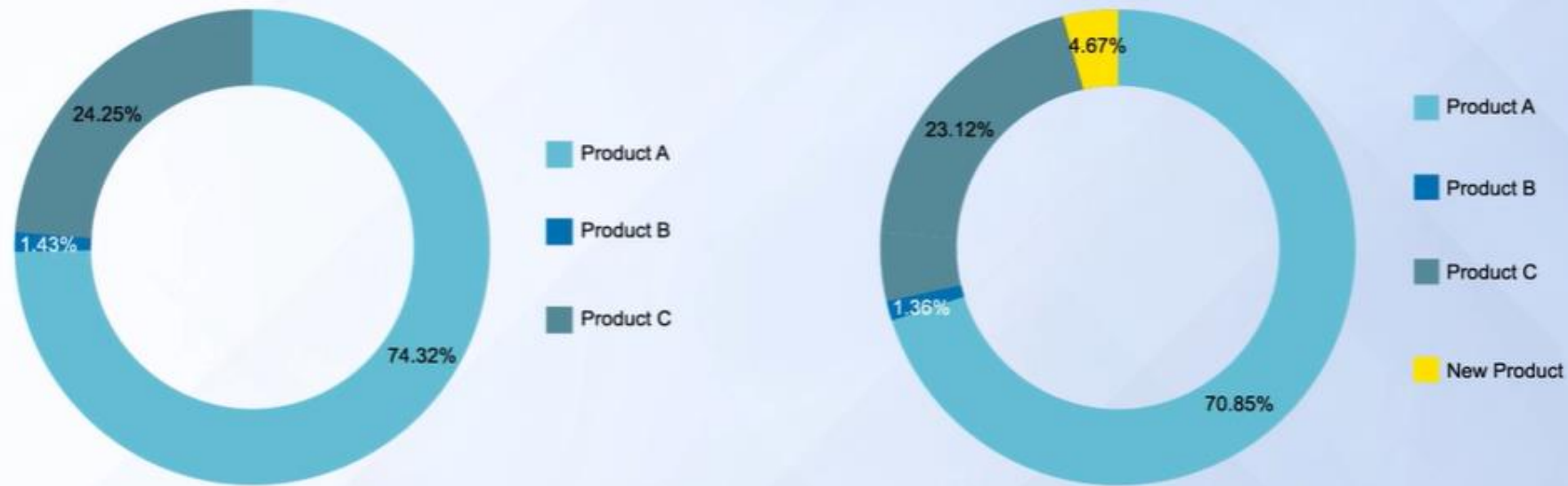
Multiple Respondents



Average probability across multiple respondents gives an idea of the market share.

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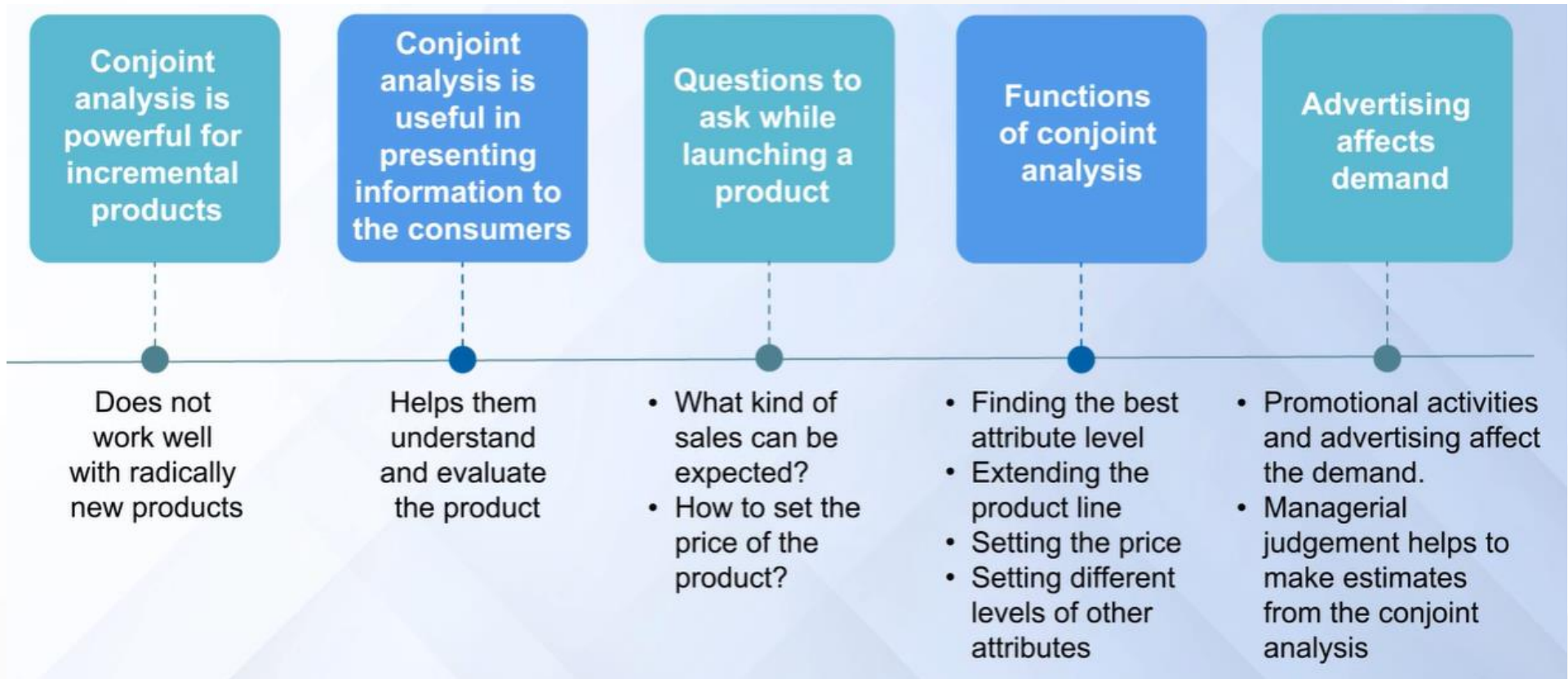
Calculate New Market Share



Market share = average choice probabilities across all respondents

Module Summary

Summary



Understanding Choice Context



What are the customers' motives?

What alternatives are available?

How do customers decide the product?

How do customers make choices?

