

# Conjoint analysis

## 8.1 Conjoint Analysis- what is it and what can it offer?

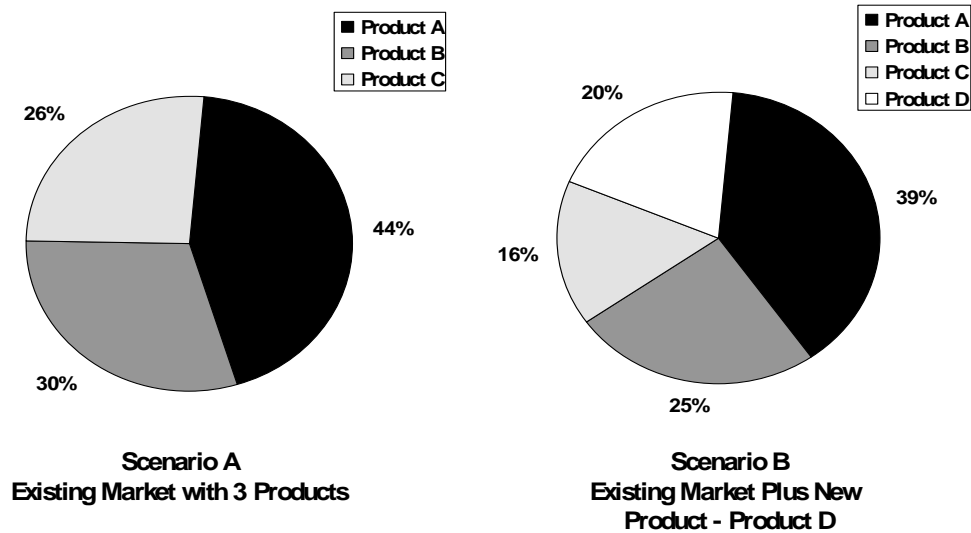
Conjoint analysis is a group of approaches which ask the respondent to consider jointly two or more choices and asks them to state a preference between these - for example, would they be more likely to prescribe a product with 95% efficacy and 20% side effects or one with only 75% efficacy but 2% side effects?

By exploring these trade-offs for a number of parameters it is possible to determine the relative importance of all the rational factors that drive prescribing behaviour. These are illustrated as utility scores as below, where the greater the value, the more important the attribute is in influencing prescribing:

Utility Score	Attribute
100	90% effective at 4 weeks
90	Patch
85	85% effective at 4 weeks
75	5% side effects
60	£10 per month
55	Once daily
50	Twice daily
35	Tablet/capsule
30	80% effective at 4 weeks
25	Rectal
20	10% side effects
15	£20 per month

By assessing perceptions of existing brands in the context of the importance of different factors such as illustrated above, it is possible to determine the reasons for the relative attractiveness of different brands. In addition, the importance of factors **not** associated with existing products allows the importance of unmet needs to be identified.

Moreover, most Conjoint approaches allow for the development of a simulation model, which permits the share of preference for any product (either current or theoretical) to be determined, for example:



## 8.2 Conjoint Analysis benefits, limitations and applications

### Benefits of conjoint analysis

- Identifies importance of different levels of each parameter assessed - avoids simplistic responses
- Relates importance to behaviour - models scenarios
- Forces discrimination between factors - avoids lazy responses / identifies marginal benefits on which decisions may be made
- Links drivers to existing perceptions - avoids isolated responses

### Limitations of conjoint analysis

- Assumes inclusion of all relevant attributes
- Assumes consumers evaluate and trade-off advantages and disadvantages rationally
- Assumes discrete nature of attributes measured
- May not fully replicate importance of branding / image / non-rational attributes / inertia (but allows the collective effect of these to be identified)
- Assumes static market size (new products may grow the overall market)

## **Applications of conjoint analysis**

- Identifies what product features are most important / what drives prescribing?
- Determines unmet market needs
- Establishes how R + D can be directed to maximise market potential?
- Identifies what aspects of a product should be emphasised
- Estimates what market share can be expected for a new product

## **8.3 SIMALTO - Identifying unmet needs**

Simalto (Simultaneous Multi Attribute Level Trade-Off) is a well-established conjoint technique first described in 1972 for use in the automotive market.

Simalto presents respondents with a grid on which all current and potential future attributes and levels are recorded. Respondents then profile their perceptions of an existing product (for example, their most widely used product in a market) by circling the level of each attribute they perceive to be offered by this choice.

They are then asked to identify which factor they would most wish to improve by a marginal extent by circling a level to the right of that which their preferred choice offers. This process is repeated 3-5 times and, if appropriate, respondents are also invited to identify which 3-5 parameters they would be willing to accept a compromise in the benefits offered by their preferred product.

### **Advantages**

- Relatively simple to administer and analyse
- Identifies priorities for improvement (unmet needs) in context of current perceptions
- Focus on **marginal** (realistic) improvements
- Large number of attributes can be included
- Individual analysis allowing flexibility and qualitative applications

### **Disadvantages/Limitations**

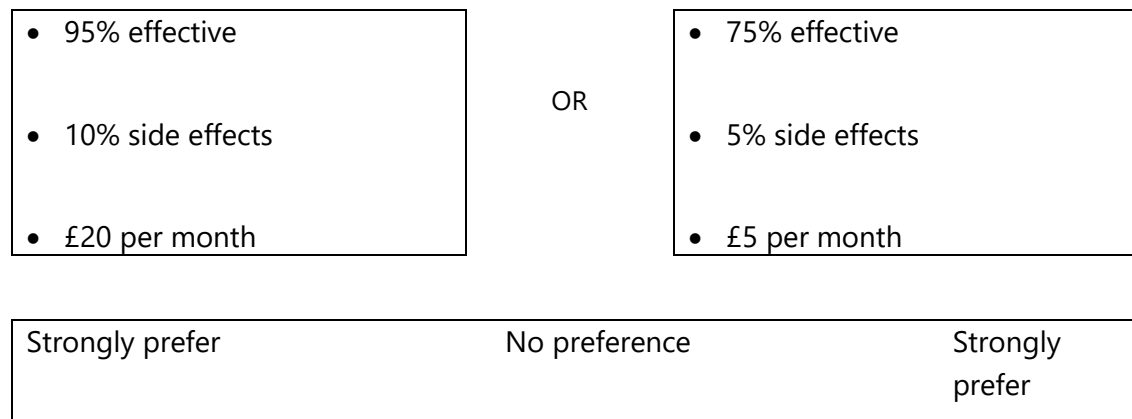
- Exercise needs to be conducted for each individual product - time consuming (although can focus solely on most widely Rx products)
- Not linked to behaviour, does **not** provide utilities for all attributes
- No modelling / scenario analysis package
- Unsuitable for breakthrough products that are unrelated to existing products?

## Applications

- Brand perceptual analysis
- Identify unmet needs
- Poorly differentiated markets
- Quality of service / customer satisfaction
- Qualitative research

## 8.4 Adaptive Conjoint Analysis (ACA)

ACA is a computer-administered conjoint exercise, which presents the respondent with a series of pairs of 2 or 3 alternative features to elicit preferences between various options. The computer 'adapts' from previous responses to force choices between parameters that have similar importance.



## Benefits

- Evaluates large number of attributes (up to 30), although there is a need to avoid multi-collinearity (double counting)
- Provides individual level utilities - opportunities for market segmentation
- Multi-media applications - conjoint attributes can include images or sounds
- Allows 'correction for product similarity' analysis

## Limitations

- Potentially artificial process - does not evaluate 'realistic' products / brands

- Cannot model compensatory decision making process - limited ability to measure attribute interactions
- Importance of price may be underestimated
- Laptop computers required - potentially expensive, potentially impractical
- Some criticisms of initial explicit evaluation of importance: this may exclude less important attributes which may be differentiators

### **Applications**

- Early stage (phase II) concept development / evaluation
- Strategic evaluation of competitor impact
- Identifying motivating clinical benefits / unmet needs
- Modelling rational / well-differentiated markets
- Segmentation / heterogeneous markets

## **8.5 Choice Based Conjoint (CBC)**

CBC is a computer or paper based conjoint exercise wherein respondents are simultaneously exposed to all attributes (at some level) in the form of 4-6 theoretical products as shown in the example below. A single preference is recorded from the options provided and then the process repeated 6 - 8 times per respondent for a different combination of theoretical products.

For example:

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
H <sub>2</sub> antagonist	Antacid	PPI	Product x	None of these
Speed of onset of action - 3 weeks	Speed of onset of action - 4 weeks	Speed of onset of action - 1 week	Speed of onset of action - 3 days	
10% side effects	5% side effects	15% side effects	15% side effects	
£6/month	£2/month	£13/month	£18/month	

## Advantages

- More 'realistic' task than ACA or ranking task - allows use of brand names; inclusion of 'none' option prevents forced choices
- Easy for respondent, quick to administer
- Exposure to all factors allows for evaluation of interaction between attributes (e.g. brand and price interaction)
- Paper-based option allows CBC to be administered more cost effectively than a computer-based approach

## Disadvantages/Limitations

- Less data per respondent means CBC provides aggregated utilities for the overall sample only, therefore larger samples are often needed
- The inclusion of data from the 'None' option is **not** predictive of market growth
- Limited number of attributes / levels (6/9) compared to ACA or SIMALTO
- Aggregate utilities in heterogeneous markets may poorly predict behaviour (in a study comparing CBC data with actual purchases in FMCG market), although add-on modules do allow identification of sub-groups who differ in responses (latent class segmentation / ICE / Hierarchical Bayes modules)

## Applications

- Minor changes to established / simple markets (e.g. price change, effect of new trial data, line extensions, communication strategy)
- Modelling brand equity / generic defence / patent expiry
- Pricing research (in conjunction with explicit measures - validation / corroboration of outputs)

## 8.6 Full Profile Conjoint

Full profile conjoint is a paper based conjoint method whereby respondents are exposed to 15-25 theoretical products derived from various combinations of the product attributes to be assessed in the research. A respondent is asked to rank these and from this multivariate analysis is able to derive the relative importance of each parameter on preference.

### Product A

- 85% effective
- Oral

### Product B

- 90% effective
- Patch

- £57/month
- Od
- 20% side effects

- £7/month
- Weekly
- 15% side effects

### **Product C**

- 75% effective
- Rectal
- £10/month
- Bd
- 10% side effects

### **Product D**

- 80% effective
- Injection
- £20/month
- Tds
- 5% side effects

### **Benefits**

- Realistic presentation of concepts, allows inclusion of brands
- Large amount of information from individual respondents - individual utilities calculated
- Evaluation of interaction between attributes
- Paper based - cost effective
- Flexible - e.g. Introduce concepts in specific order to avoid bias
- Allows insertion of actual products / inferential data

### **Disadvantages/Limitations**

- Complex / time-consuming task for respondent - respondent fatigue
- Potentially artificial task (conscious ranking of alternatives)
- Places less 'emphasis' on brand / price than CBC suggestive of fuller consideration of all attributes / higher involvement decision making
- Limited number of attributes / levels

### **Applications**

- Immediately pre-launch (few variables / levels)
- Pricing research (in conjunction with explicit measures)
- Market growth / single product markets
- Where both Inter- and Intra-class attribute evaluation is important (e.g. ACE-Is vs. AIAs)

## 8.7 Which Conjoint method where?

The choice of conjoint method depends primarily on the number of attributes which need to be assessed and the extent to which decision making within a market is characterised by decisions being made by the customer on the basis of a rational and considered approach, weighing up of the benefits and disadvantages of a number of products, or by the 'holistic' appreciation of the benefits of each brand as a whole. Each conjoint approach has certain advantages and disadvantages as summarised below:

	<b>SIMALTO</b>	<b>ACA</b>	<b>CBC</b>	<b>FPC</b>
Unmet needs	✓✓✓	✓✓	✓	✓
Modelling	x	✓✓	✓✓	✓✓
Pricing	(✓)	(✓)	✓✓	✓✓
Market growth	x	x	?	✓✓
Phase II / early stage	✓✓✓	✓✓✓	✓	✓✓
Complex / segmented markets	✓✓✓	✓✓✓	(✓)	✓✓✓

## 8.8 Conjoint Analysis in Pricing Research

Conjoint analysis allows the relative importance of all attributes (including price) to be determined, by using one of a range of techniques that asks respondents to state preferences between various combinations of product alternatives.

By analysing the extent to which price is a factor influencing preferences it is possible to determine the importance of price compared to other factors in influencing purchasing or prescribing.

Most conjoint analysis approaches provide a simulation model, which allows the effect of various possible future market scenarios to be evaluated - for example, launching a product at various prices.

### **Potential advantages include:**

- Conjoint methods explore price sensitivity in the context of other attributes.



- Conjoint analysis therefore allows flexible and dynamic evaluation of price in a range of potential scenarios.
- Conjoint can be used in conjunction with other techniques in order to corroborate or contrast with other research outputs.

**Potential disadvantages include:**

- Conjoint techniques typically assume a rational consideration of product attributes and thus may not replicate the true decision making process
- Conjoint assume that price operates in the decision making process as one of a range of attributes whereas in some markets it may operate as a barrier to consideration of other benefits
- Conjoint techniques may not take account of external influences (e.g. quality/weight of promotion, sampling etc)

**Applications**

Although conjoint can be an extremely valuable tool in helping reach pricing decisions it should normally be used with other approaches and outputs and interpreted with caution, dependent on the market being explored. Conjoint tends to be most useful in the following situations:

- More 'rational' markets
- Where a number of changes to the market may occur between the research and the product launch/pricing decision

Full Profile Conjoint or Choice Based Conjoint is generally regarded as the most appropriate conjoint methods for exploring price sensitivity.