A Review Of Conjoint Analysis

**What is Conjoint?**

Conjoint analysis is one of the terms used to describe a broad range of techniques for estimating the value people place on the attributes or features that define products and services. Discrete Choice, Choice Modeling, Hierarchical Choice, Card Sorts, Tradeoff Matrices, Preference Based Conjoint and Pairwise Comparisons are some of the names used for various forms of conjoint analysis.

The goal of any conjoint survey is to assign specific values to the range of options buyers consider when making a purchase decision. Armed with this knowledge, marketers can focus on the most important features of products or services and design messages most likely to strike a cord with target buyers.

**Why Use Conjoint?**

Ok, so why should you pay for a conjoint analysis survey. For starters, conjoint analysis evaluates product/service attributes in a way that no other method can. Traditional survey approaches ask respondents to estimate how much value they place on each attribute. This is a very difficult task for any person to complete, much less someone who doesn't spend every waking moment thinking about the most important features of products such as toothpaste or wood deck treatments. Conjoint analysis, on the other hand, attempts to break the task into a series of choices or ratings. These choices or ratings, when taken together, allow us to compute the relative importance of each of the attributes studied. Instead of "stated importance", conjoint analysis uses "derived importance" values for each attribute or feature.

Another of the advantages of conjoint analysis is the ability to use the results to develop market simulation models that can be used well into the future. Markets continue to change as new competitors enter, new products are introduced, price wars erupt and marketers develop new advertising programs. With traditional research approaches, every time a major change takes place in the market, a new survey needs to be conducted to find out how people feel about the changes and how it will affect their purchases. With conjoint analysis, the new product or changes to existing products can be incorporated into the simulation model to obtain predictions of how buyers will respond to the changes. In most markets, these models can maintain their accuracy for two or three years before you need to conduct a mini-version of the original study to determine if any adjustments must be made to the model.
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**How Does It Work?**

Depending upon the type of conjoint survey conducted, statistical methods like ordinary least squares regression, weighted least squares regression, and logit analysis are used to translate respondents' answers into importance values or utilities. Regardless of the statistical methodologies used, conjoint analysis results have withstood intense scrutiny from both academics and professional researchers during the past 25 years.

The actual values obtained by these statistical methods are not important, only the relative values or relationships between each of the attributes are needed. The goal of these calculations is to evaluate respondents' answers in a manner that reveals the underlying value they consciously or sub-consciously place on each attribute. Any rational person will prefer a $100 price over a $200 price, if all other things are equal (quality, features, etc.). What we do not know about each person is his or her level of sensitivity to the $100 price difference. Some might never consider paying $200 for the product, while others are nearly indifferent to the price difference. A person who always chooses Brand X over Brand Y, regardless of price, obviously places more value on Brand name than price level. Conjoint analysis allows us to compute the relative value between these options and all other options considered in the research design.

**What are the Basic Steps to Conducting Conjoint Analysis?**

There are several basic steps to be taken by a marketer interested in applying conjoint analysis:

- Determine which product/service attributes or features are most important to the market.
- Determine which data collection methodology will be used to recruit respondents and how the data will be captured (mail, telephone-mail, disk-by-mail, Internet, etc.).
- Determine which conjoint methodology will best fit the research problem. Choice-based conjoint and preference-based conjoint are the most common methodologies used today.
- Create an experimental design which will allow the calculation of main effects and key interactions between the attributes being studied. Many conjoint studies only focus on the main effects or direct utilities for each attribute, however, when attributes such as price or brand name are used, potential interactions between attributes should also be considered.
- Collect the data. After pre-testing your attribute list and survey instrument, begin collecting data from the target market.
- Calculate the utilities for each respondent or for groups of respondents.
- Create a market simulation model. This allows you to predict the impact of changes in existing products and the introduction of new products on the market.
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**How Do You Define the Attributes to be Used?**

Experience, management intuition and qualitative research are needed to develop the list of key attributes for any product or service. It is critical to have a carefully thought out list of attributes. Too many attributes can greatly increase the burden on respondents or force you to reduce the predictive accuracy of the conjoint model. Too few attributes can severely reduce the predictive capabilities of a model because key pieces of information are missing from the model.

In addition to developing the attributes, you must also consider the individual levels within each attribute. For an attribute like price, the attribute levels would be specific price points like $100, $200 and $300. For discontinuous attributes like color, the attribute levels might be blue, red, green and black. Once again, the researcher must find a balance between too many and too few options. It would be ridiculous to show new car prices at $5 intervals between $10,000 and $60,000. It would be just as bad to show only 2 price levels ($10,000 and $60,000) for those same car purchases because the price differential would be unrealistic for a typical respondent.

Attribute levels must encompass all of the products that exist in your market or you expect to exist within the near future. For continuous variables like price, 3 or 4 price levels can cover the market from low price leader to premium product. For discontinuous attributes, 3 to 5 levels are typically specified so some sacrifices may have to be made to eliminate the least desirable or least important options.

The critical factor in specifying attributes and attribute levels is that a product cannot be accurately simulated if you can not define it reasonably well using the attribute levels chosen for the conjoint survey. If an option is not included in the conjoint survey and it does not fall within the boundaries of any two-attribute levels that are specified, you will not have any information on how respondents react to that attribute level. Without this missing piece of information, the importance of that attribute or attribute level relative to all of the other items in the survey is unknown and cannot be accounted for in the simulation model.

**How Do I Determine the Overall Value Of A Product?**

Once you have the utilities for each attribute level, you calculate a product's value by summing the utilities across all the attributes that define that product. For each attribute, you select the attribute level most closely associated with the product and note it's utility. If a particular product falls between two levels of an attribute (e.g. your product's price is $150 and the price levels are $100 and $200), you interpolate the specific utility for your product. You repeat this process for every attribute included in the study. Then you add the utilities noted for each attribute to compute a "total utility" for that product. Do this for all products you want to compare to create a market simulation.

Market share or share of preference for a product is usually calculated as the proportion of that product's utility to the utility of the total market. Market simulation programs can quickly and easily make all of these calculations for you and present results in graphical or tabular form. Simulation programs also allow you to make changes to any product to see the effects on buyer preferences.
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What Kind of Track Record Do Conjoint Forecasts Have?

Over the 25-year history of conjoint analysis techniques, the methodology has shown over and over to accurately reflect the cognitive thinking of buyers as they evaluate purchases. Who would believe your customers actually think! The techniques have been applied in a broad range of products and services, from telecommunications and industrial products to healthcare and banking services.

Conjoint models are very effective at representing the preferences of respondents between various products and services and at representing which choices respondents would make among a set of products or services. However, conjoint models assume (unrealistically) that there will be "perfect knowledge and awareness" in the market. This means that all products and services are considered to have the exact same level of advertising, marketing and distribution. Since this is never the case in the real world, some adjustments must be made to account for variations in advertising levels and other marketing factors that keep a product from achieving its maximum potential. Despite this limitation, conjoint analysis provides detailed information that allows you to design the best products or services for your market or market segments. You can also use it to maximize your entire product portfolio and uncover untapped market niches and unmet customer needs. As marketers, your goal then becomes one of getting out the message about your new or existing products to convert customer preferences into customer purchases.

How Do You Conduct a Conjoint Survey?

Conjoint studies require much greater information processing from respondents than do traditional surveys. Except for the most simplistic studies, you must put the conjoint exercise directly in front of the respondent so they can examine it closely and proceed at their own pace. Conjoint studies are generally conducted as mail surveys, disk-by-mail surveys or recruited to a central location to complete a survey via paper or computer. The Internet has now opened an addition means of conducting conjoint studies among businesses, high-tech markets and high-income consumers.

Most conjoint studies are proceeded by a telephone recruitment process in which you screen respondents and receive commitments from qualified respondents to complete the conjoint portion of the survey. This adds to the time and costs of the project, but the results have proven to justify the additional costs.

What Should I Expect to Receive from a Conjoint Study?

At a minimum, you should gain a thorough understanding of your market and what they truly value in your products/services. This information is usually summarized in a listing that shows each attribute level and the corresponding utilities calculated for those attribute levels. You should also receive utilities for various sub-groups like demographic or “firmagraphic” characteristics.

Market simulations should also be run to predict how the market will react to various scenarios. In some cases, you might receive your own simulator program. This would allow you and your managers to create their own market scenarios, at any time, to see how the market might react to a new product, price cut or any other changes.

Market segmentation can be conducted using the conjoint utilities. Whether utilities are calculated for individuals or groups of individuals, you can analyze these results using typical market segmentation
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techniques like cluster analysis. Respondents who place similar value of the various attribute levels will be grouped together into a segment. Segmentation of conjoint utilities produces true "benefit segments", something which is sometimes difficult to do using other survey instruments because respondents have difficulty stated what benefits they value most.

**Which Conjoint Methodology is Best?**

As with most things related to market research, the answer depends upon the circumstances. Choice-based Conjoint or Discrete Choice Modeling has become the most popular methodology over the last 4 or 5 years, however, each method has advantages and disadvantages.

Advantages of Choice-Based Conjoint/Discrete Choice Modeling/Choice Modeling

More closely resembles the decision process customers make in the market place where they look at all the alternatives available and pick the one they most prefer. It is believed, though difficult to prove, that the more closely a research task mimics real behavior the more valid and reliable the results.

Allows respondent to choose "none of these." In most purchase decisions, one of the alternatives is to walk away without buying anything. Choice-based conjoint allows you to include this response in the model and account for it in the calculation of utilities.

More product/service profiles are seen by each survey respondent because choice-based conjoint typically presents 3 or more alternatives in each choice set.

Easier to calculate attribute interactions like price and brand. Based on aggregate level analyses, attribute interactions can be included without dramatically increasing the complexity of the research design for choice-based conjoint exercises.
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Advantages of Traditional Conjoint/Preference-based Conjoint/Ratings-based Conjoint
(This is the form used by WMB & Associates, Statistical Services)

Can break large sets of attributes into smaller bundles for analysis. Pairwise comparisons are one example where respondents are only asked to indicate their preferences between sets of 2 to 4 attributes. One set of attribute levels appears on the left and another set of levels for those same attributes appears on the right. This is much easier than evaluating 15 or 20 attributes simultaneously.

Calculates utilities at the individual respondent level. Although new techniques have recently been developed for calculating individual level utilities for choice-based conjoint, this has always been done for traditional conjoint. Individual level utilities have a long history of success under traditional conjoint approaches.

Straightforward experimental designs. Traditional conjoint studies need only to generate an orthogonal set of product profiles to complete the research project. Choice-based conjoint surveys must create the orthogonal product profiles and then create additional profiles for all of the alternatives in each choice set in a manner that balances the relative desirability of each alternative in a choice set and uses each attribute level uniformly throughout the survey.

Individual level utilities make it easier to conduct market segmentation.

Easily used in hybrid methodologies. Traditional conjoint can be used to focus strictly on product features, irrespective of price or brand name. This allows you to calculate utilities for each respondent based on specific features. Choice based conjoint can then be used to focus on brand, price and key bundles of features.

What About Brand Equity and Brand Image?

Conjoint analysis is very good at measuring the value of brand names in relation to competing brands. Unlike most other techniques for measuring brand equity, with conjoint analysis, you also obtain information on how strong a brand is in comparison to specific product features and prices. Having a dominate brand name may not be enough if most of your market is so price sensitive or they desire a particular set of features enough to easily offset your investment in brand equity. With conjoint analysis, you can estimate how your market makes these tradeoffs between brands, price and specific features.
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**What About Measuring Price Sensitivity?**

As mentioned above, conjoint analysis can be used to measure individuals' sensitivity to brand names, prices, and all other attributes in the research design. The utilities for each price level offer one measure of a market's or market segment's sensitivity to variations in price. When interactions between price and other attributes are calculated, you can also measure how price sensitivity may vary with respect to brand name (a strong brand image usually has much less price sensitivity than an unknown brand) and other attributes. Simulations can be run at various price points to estimate changes in yours or your competitor's prices on the marketplace.

**Can Conjoint Be Used for Market Segmentation?**

Yes. Conjoint is one of the best methods of measuring benefits sought by buyers. Measuring actual or perceived benefits lies at the heart of most market segmentation approaches. Understanding what people most value in your products or services allows you to tailor marketing programs to communicate those benefits and redesign existing products or create new products with those benefits in mind.

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