

Brief Introduction to Conjoint Analysis

What is Conjoint Analysis?

A number of techniques, such as conjoint analysis, analytic hierarchy process (Saaty, 1980), and multidimensional scaling (Shepard, 1964) have been developed for measuring human perceptions and preferences. Data collection for these techniques is based on obtaining *subjective* information regarding the respondents' preferences. Our decision to use conjoint analysis here is based on a variety of criteria including ease of use and the quality and nature of the information that can be obtained from eliciting stakeholder preferences.

How does Conjoint Analysis Work?

Conjoint analysis involves the measurement of psychological judgments (such as stakeholder preferences, or acceptable thresholds) or perceived similarities or differences between choice alternatives. Conjoint analysis is a technique in which respondents are given various choices (stimuli) for which they express their preferences. These choices are selected, in advance, to incorporate all the outcome dimensions that result from the selection of a particular alternative. The responses thus obtained result in a preference structure for the stakeholders. By analyzing these responses, it is possible to create a profile for each group of stakeholders that will provide insights into not only the subjective judgments regarding the choices they were offered but also regarding various other combinations of outcome dimensions and different levels of these dimensions.

How are data collected?

Data may be collected in a variety of ways. Marketers, who are among the main users of this technique, have used mail surveys, telephone surveys, internet based surveys as well as individual or group interview or focus group settings to obtain data.

Type of Data

There is no single set of procedures for obtaining data on individual preferences. Suppose, for illustrative purposes, that the following three outcome dimensions and their corresponding levels are being compared:

- Wildfire acres burned 0.5 million 1.5 million 3 million
- Loss of owl nesting habitat Low Medium High
- Loss of recreational facilities Temporary Short term Forever

Some of the earliest conjoint analysis projects asked the respondents for pairwise comparisons which entailed filling out matrices like those shown below for each pair of comparisons:

Pair-wise Approach to Data Collection

		Habitat		
		L	M	H
Acres	.5			
	1.5			

		Facilities		
		T	S	F
Habitat	L			
	M			

		Facilities		
		T	S	F
Acres	.5			
	1.5			



The data from these pairwise comparisons can be combined to create preference profiles of different stakeholders for the different alternatives.

A more common approach is to use paired comparisons in which two alternative outcomes are considered at a time. For instance, the question would be put forth as:

Which alternatives would you prefer given the following outcomes:

	0.5 Million acres burned Medium loss of owl habitat Recreational facilities lost forever		1.5 million acres burned Medium loss of owl habitat Short-term loss of recreational facilities	
Strongly Prefer Left		1 2 3 4 5 6 7 8 9		Strongly Prefer Right

The paired comparison technique is easier for most respondents to conceptualize. However, the number of comparisons can very quickly become large, but statistical techniques exist that can help reduce the actual number of choices that have to be evaluated. Statistical analyses of these paired comparisons would yield the required preference profiles of the stakeholders.

Methods of Presenting Stimuli

In our context, the most effective approach to seeking stakeholder responses would be to create written descriptions of possible outcome scenarios to which the stakeholders would respond in terms of their preferences.

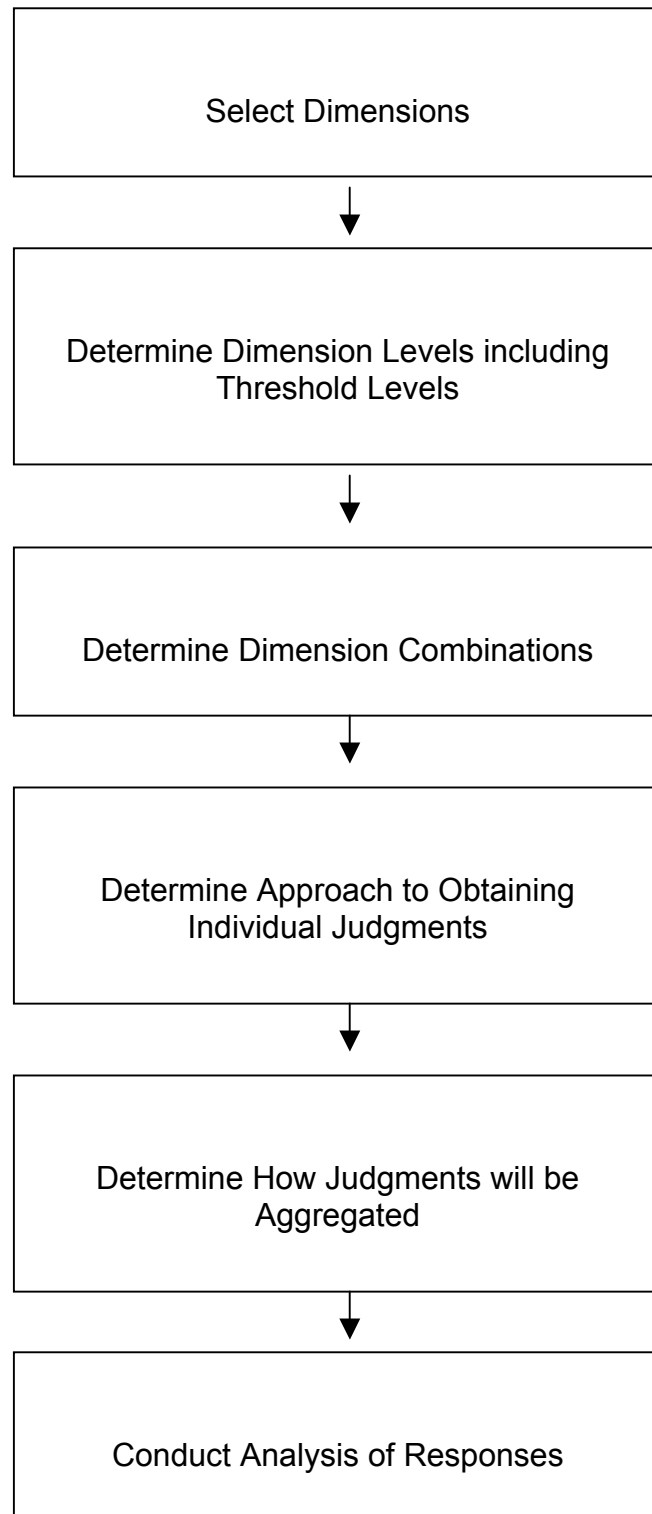
Nature of judgments

Responses can be solicited in a number of ways. As shown in the illustration above, one could ask for the respondent's preferences. Judgments in terms of liking, similarity or "can live with this outcome" can also be solicited.

Nature of Task

Depending upon the nature of the information solicited, the task would entail asking for a rank ordering, pairwise comparisons or a number on a rating scale.

Figure A-1: Schematic of Conjoint Analysis Process



Source: Adapted from Churchill and Iacobucci, (2002)