Introduction to conjoint analysis marketing assignment

Art & Culture

A controlled set of potential products or services is shown to respondents and by analyzing how they make preferences between these products, the implicit valuation of the individual elements making up the product or service can be determined. These implicit valuations (utilities or part-worthy) can be used to create market models that estimate market share, revenue and even profitably of new designs. Conjoint originated In mathematical psychology and was developed by marketing professor Paul Green at the university of Pennsylvania and Data Chain. Other prominent conjoint analysis pioneers include professor V. Seen” Cravings of Stanford university who developed a linear programming (LINEMAN) procedure for ann. ordered data as well as a self-explicated approach, Richard Johnson (founder of Shoot Software) who developed the Adaptive Conjoint Analysis technique in the 1 sass and Jordan Louvre (University of Iowa) who Invented and developed Choice- based approaches to con]Olin analysis and related techniques such as Mastiff_ Today it is used in many of the social sciences and applied sciences including marketing, product management, and operations research.

It is used frequently in testing customer acceptance of new product designs, in assessing the appeal of advertisements and in service design. It has been used in product positioning, but there are some who raise problems with this application of conjoint analysis (see disadvantages). Conjoint analysis techniques may also be referred to as multilaterally compositional modeling, discrete choice modeling, or stated preference research, and is part of a broader set of trade-off analysis tools used for systematic analysis of decisions.

These tools include Brand-Price Trade-off, Similar, and mathematical approaches such as evolutionary algorithms or Rule Developing Experimentation. [edit] Conjoint Design A product or service area Is described In terms of a number of attributes. For example, a television may have attributes of screen size, screen format, brand, price and so on. Each attribute can then be broken down into a number of levels. For instance, levels for screen format may be LED, LCD, or Plasma.

Respondents would be shown a set of products, prototypes, mock-ups, or pictures created from a combination of levels from all or some of the constituent attributes and asked to choose from, rank or rate the products they are shown. Each example Is similar enough that consumers will see them as close substitutes, but dollars enough that unique combination of product features. The data may consist of individual ratings, rank orders, or preferences among alternative combinations. As the number of combinations of attributes and levels increases the number of potential profiles increases exponentially.

Consequently, fractional factorial design is commonly used to reduce the number of profiles that have to be evaluated, while ensuring enough data are available for statistical analysis, resulting in a carefully controlled set of " profiles" for the respondent to consider [edit] Types of conjoint analysis The earliest forms of conjoint analysis were what are known as Full Profile studies, in which a small set of attributes (typically 4 to 5) are used to create profiles that are shown to respondents, often on individual cards.

Respondents then rank or rate these profiles. Using relatively simple dummy variable regression analysis the implicit utilities for the levels can be calculated. Two drawbacks were seen in these early designs. Firstly, the number of attributes in use was heavily restricted. With large numbers of attributes, the consideration task for respondents becomes too large and even with fractional factorial designs the number of profiles for evaluation can increase rapidly. In order to use more attributes (up to 30), hybrid conjoint techniques were developed.

The main alternative was to do some form of self- explication before the conjoint tasks and some form of adaptive computer-aided choice over the profiles to be shown. The second drawback was that the task itself was unrealistic and did not link directly to behavioral theory. In real-life situations, the task would be some form of actual choice between alternatives rather than the more artificial ranking and rating originally used. Jordan Louvre pioneered an approach that used only a choice task which became the basic of choice-based enjoin and discrete choice analysis.

This stated preference research is linked to econometric modeling and can be linked revealed preference where choice models are calibrated on the basis of real rather than survey data. Originally choice-based conjoint analysis was unable to provide individual level utilities as it aggregated choices across a market. This made it unsuitable for market segmentation studies. With newer hierarchical Bayesian analysis techniques, individual level utilities can be imputed back to provide individual level data. Edit] Information collection Data for conjoint analysis is most commonly gathered

through a market research survey, although conjoint analysis can also be applied to a carefully designed configuration or data from an appropriately design test market experiment. Market research rules of thumb apply with regard to statistical sample size and accuracy when designing conjoint analysis interviews. The length of the research questionnaire depends on the number of attributes to be assessed and the method of conjoint analysis in use.

A typical Adaptive Conjoint questionnaire with 20-25 attributes may take more than 30 minutes to complete. Choice based conjoint, by using a smaller profile set distributed across the sample as a whole may be completed in less than 15 minutes. Choice exercises may be displayed as a store front type layout or in some other simulated shopping environment. [edit] Analysis Any number of algorithms may be used to estimate utility functions. These utility functions indicate the perceived value of the feature and how sensitive consumer perceptions and preferences are to changes in product features.

The actual mode of profile tasks, linear regression may be appropriate, for choice based tasks, maximum childhood estimation, usually with logistic regression are typically used. The original methods were monotonic analysis of variance or linear programming techniques, but these are largely obsolete in contemporary marketing research practice. In addition, hierarchical Bayesian procedures that operate on choice data may be used to estimate individual level utilities from more limited choice-based designs. Edit] Advantages * estimates psychological tradeoffs that consumers make when evaluating several attributes together * measures preferences at the

individual level uncovers real or hidden drivers which may not be apparent to the respondent themselves * realistic choice or shopping task * able to use physical objects * if appropriately designed, the ability to model interactions between attributes can be used to develop needs based segmentation [edit] Disadvantages * designing conjoint studies can be complex * with too many options, respondents resort to simplification strategies * difficult to use for product positioning research because there is no procedure for converting perceptions about actual features to perceptions about a reduced set of underlying eaters * respondents are unable to articulate attitudes toward new categories, or may feel forced to think about issues they would otherwise not give much thought to * poorly designed studies may over-value emotional/preference variables and undervalue concrete variables * does not take into account the number items per purchase so it can give a poor reading of market share [edit] See also * Advertising * Marketing * Marketing research * New product development * product positioning * Quantitative marketing research * TURF Analysts [edit] External links * Green, P. And Cravings, V. 1978) Conjoint analysis in consumer research: Issues and outlook, Journal of Consumer Research, Volvo 5, September 1978, up 103-123. * Green, P. Carroll, J. And Goldberg, S. 1981) A general approach to product design optimization via conjoint analysis, Journal of Marketing, Volvo 43, summer 1981 , up 17-35. * Cravings, V. (1988), A Conjunctive-compensatory Approach to the Self-Explication of Multivariate Preferences, Decision Sciences, Volvo. 19, Spring 1998, 295-305. * Green, P. E. And Cravings V. (1990) Conjoint Analysis in Marketing: New Developments with Implications for Research and Practice,

Journal of Marketing, Volvo. 4, October 1990, 3-19. * Marker, E. (1999) The Assumptions of Choice Modeling * Rome, B. (2005) Getting Started with Conjoint Analysis Madison, WI: Research Publishers LLC. ISBN 0-9727297-4-7 * Interactive demonstration of how conjoint works from dobbin. Mom * Wharton: A century of Innovation Conjoint Methodists, select what attributes of the product you would like to test, example of an ice cream shop, which might want to know consumer attitudes about: * preferred flavor (vanilla, chocolate, strawberry, or black raspberry) * price ($1. 50, $2. 00, $2. 50, $3. 00) * container (cone, cup) freshness (homemade & fresh, factory-produced) * healthiness (reduced fat, regular)l’s there a preferred flavor, or do customers like a variety? How much “ extra” would someone be willing to pay more for a reduced-fat option? Do kids really prefer cones? How much do consumers value a neighborhood shop using fresh local ingredients? The scientific way to answer these questions is to test each of the 5 attributes in the context of the others. To do that, we take each of these descriptors and create a series of “ hypothetical” products, each with 5 attributes.

The software creates templates for 16 (or 18 – depending upon the number of variables) of these, and we portray the description of the proposed product visually, on a “ card”, as shown to the right. “ Cards” can describe the product using words only – but can also use logos, pictures, or even smells or sounds. In any case, respondents will be asked to read each of the 16 “ cards”, and then assign a ranking of some kind (using numbers I-x, or using adjectives like favorable, unfavorable, ideal, etc.)Perhaps Card #1 is a factory-produced low-fat cheap vanilla cone. Maybe #2 is a homemade non-low-fat chocolate cup at a medium price point. The process goes on with 16

mathematically designed cards hat offer all the relevant combinations of choices.

I Click for an online example of this actual conjoint analysis survey I I Conjoint Resulting the consumers' ratings of all 16 diverse combinations, the software package computes a mathematical regression to tell us how important each of the five factors is to the individual responding consumer, and to the group of responding consumers as a whole. According to the results shown to the left (actual output from the online survey), we'd know that consumer X bases 47% of his decision on price, 23% on the flavor, 19% on the freshness, and is less concerned about the container or litheness. We also learn get a relative ranking of the different flavors, as shown in the lower graph. Len addition, each consumer will be asked a number of informational questions to create a demographic profile, so that we can compare the results and analyze them based upon income, age, location, and other variables that may affect consumer behavior towards a particular product.

Maybe older customers who eat ice cream regularly are more concerned about healthiness. Maybe younger consumers don't really care about the cone after all. Perhaps those who work in a nearby office alluding and pass by for a snack really appreciate the homemade fresh ingredients. All of these facts will be mathematically predicted using conjoint analysis. The end result is a quantitative, robust analysis of what consumers really want, with each attribute evaluated in the context of the others, incorporating the trade-offs that ultimately project the greatest influence on consumer behavior. I The

word algorithm comes from the name of the 9th century Persian Muslim mathematician ABA Abdullah Muhammad bin MUSM AAA-Charming.

The word algorithms originally referred only to the rules of performing arithmetic using Hindu-Arabic numerals but evolved via European Latin translation of AAA-Charisma's name into algorithm by the 18th century. The use of the word evolved to include all definite procedures for solving problems or performing tasks. Conjoint Analysis is a powerful and often under-utilized marketing research tool that can provide powerful insight into how your customers actually think. The resulting information can be used to prioritize features, develop pricing strategies, and estimate market share. All before you develop your product or spend valuable marketing dollars.

Participants posted the following questions and both presenters, Dorian Simpson of Planning Innovations and Esther Levies of Survey Analytics, responded to each one. 1) What are new innovative ways to gather data and analyze it using Conjoint Analysis? What kinds of tools are available in market to perform conjoint analysis? AS . At Survey Analytics we offer a robust yet easy to use Discrete Choice Conjoint Analysis tool. Guidelines are provided to ensure data is concise and accurate. We also provide a market segmentation tool, which offers you an opportunity to . Test. New product ideas against your current data to help predict possible market share. Http://www. Representatively. Mom/conjoint/index. HTML) Many times consumers don. T take surveys etc seriously and Just complete surveys for the sake of it. How can we take that into account when applying CA? ADS . Let. s important in the lead in that you let the respondent know that YOU are

taking the survey seriously and that you would appreciate if they do also. This is less of a problem if you. Re using your own databases. You should also try to screen out responses that are obviously completed Just to finish, such as never varying their response. AS . I agree with Dorian. Respondents always appreciate an introduction that is upfront with your intentions.

Be honest with how long it would possibly take and provide an incentive that appeals to your targeted sample. In my experience of working with internal databases, you will become . Familiar. With those who are not truthful or do not take your surveys seriously and can remove them from future surveys. 3) What should be the minimum sample size to conduct conjoint. Any lower and upper limits and implications of sample sizes. For calculating utility values. (help me on the sample size limitations)? AS . This depends on your target market. The larger your target market, the larger your sample should be for statistically significant data. The general rule of thumb for Conjoint Analysis is usually a minimum of 200-300 completed surveys.

This, however you can go down to 100 completed surveys if your target market is relatively small. 4) Most use cases of conjoint focus on consumer electronics/durable goods. Is there a case for using conjoint in the FMC/CAP industry? AS . There is an example of a packaged goods study- Trail Mix: http://cryptanalysis. Com/t/ Advantages Crescendos I As you can see in the results Dry Fruit had the highest relative importance compared to other ingredients whereas Nuts Type 1 (sesame seed and sunflower seeds) did not sake an impact on choice. 5) As attributes and levels are important in

conjoint what should be appropriate . No. On attribute levels? AS . It would depend if the feature is something you may want to add or not.

For example, if you wanted Trail Mix with/ without Crackers you would set up the following: Features: Crackers ;; Level: Yes, No 6) Did you ask the " why" questions such as frequency and power questions in a study after the conjoint study? ADS/AS . It has been investigated in other research and will be tested again further. 7) How is conjoint used in the launch of a service may be price/MO. , etc. You must identify attributes and levels similar to a product. AS . A fun example is a hair salon. What kinds of services will you offer to your clients and at what price do you think they would pay for it? As Dorian said you must identify attributes and levels similar to a product. 8) With 6 attributes and multiple levels, how long was the [example] survey? I assume that you used experimental design to shorten the length of the survey? AS .

The case study survey that was used during the presentation took respondents on average 15 minutes to complete. 9) Do we see conjoint analysis used often in the food industry. Pacifically for product development? AS . Yes. Conjoint Analysis can be used in any industry that is interested in doing a trade-off analysis of some type. Whether it is on a medication a pharmaceutical company is trying to develop or a new kayak model that would appeal to families with young children, Conjoint Analysis can be used to provide guidance in those industries. 10) Is there Max levels else of options to ask in choice task? AS . The minimum is 2 levels per

feature/attribute. The standard is to stick to no more than 3-4 levels per feature/attribute.

Every once in a while going up to 5 may be deed depending on the feature needed to be test. 1 1) Can I use conjoint in BIB surveys where sample size will be usually low almost 100 customers. In what cases can I use? ADS . You. Al want to keep the number of attributes and levels reasonably low. AS . The fewer the respondents being surveyed the fewer attributes and levels should be used. At this point in your research you should have highly defined features and levels that would fit your targeted sample size. 12) Is there any relation between the number of attributes and minimum number of respondents required to get the results from Conjoint Analysis? AS . From a technical standpoint, the system does NOT impose any limitations.

You can have unlimited attributes and unlimited levels within each attribute. However, from a practical standpoint, it is unreasonable to have more than 4-6 attributes, and about 3-4 levels per attribute. Our suggestion would be to keep the number of attributes to under 5 and try and seek about 3 levels for each attribute. 13) What is the ideal task count? AS . Our experience has shown that there is a precipitous dropout rate after about 15 tasks. Unless there is a strong personal incentive for the end-users to complete the survey, we would suggest peeping the number of tasks to fewer than 1 5 especially in cases where users are volunteering to take surveys.

Please keep in mind that conjoint product selection is a little more involved than simply . Answering a survey question.. Users have to comprehend each of the attributes/concepts and then make a choice. On the lower side, we

would suggest that 5-8 tasks be the minimum for a conjoint model with 3 attributes. The more attributes you have, the more number of tasks users has to fill out. 14) In the cases study in the webbing price was one of the key features. I din. T get how the results are interpreted. Can you explain it again? AS . See screen shot below: Crescendos I 15) When you say “ market share”, you mean “ share of preference”, right? AS .

Yes, that is correct. 16) Don. T we need any intelligence in the tool when designing the conjoint study? The tool may generate a profile which has worst features but its price is highest. ADS . This is true, but this is part of a conjoint analysis to understand what your customers deem which attributes and levels are the worst. I don. T think you intelligence into our conjoint tool such as the prohibited pairs tool to ensure certain combinations that are not possible will ever show up. We must be careful in using this tool because the idea is not to limit the profiles based on what the client will not do, but to find out what resonates higher with your audience.