New Options and Techniques for Conjoint Analysis

Marketers and product developers continuously confront the need to find the best product option that will meet the needs of the market. There are various ways to find this ideal option: Guessing, asking customers what they like in focus groups, doing a simple survey asking customers which option they prefer, and choice-based analysis. Business reality may dictate any of these approaches (among others). If you want the most reliable way to find the product option that customers will most prefer, however, choice-based conjoint analysis has been the method of choice.

Choice-Based Conjoint (CBC) is one of the most popular conjoint techniques in marketing research. The popularity of this approach lies in the simplicity of its assumptions, namely that choice tasks mimic what actual buyers do more closely than ranking or rating product concepts using a scale. Choice tasks generate little fatigue among respondents, and everyone can make choices. From an analysis standpoint, the statistical engine behind CBC is both well established and robust.

Here is a classic example of a standard CBC task set:

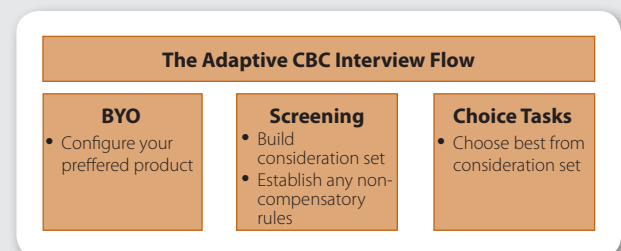| Attribute:	Product 1	Product 2	Product 3	Product 4
Brand	A	B	A	D
Color	Red	Blue	Green	Silver
Delivery time	1 week (express)	3 weeks (standard)	2 weeks (accelerated)	1 week (express)
Price	$50	$75	$100	$75

A typical CBC exercise shows respondents 3-4 product concepts per screen, of which brand and price are usually in play. Most CBC tasks also include a 'none of these' option, in case the concepts shown are deemed unacceptable. The task above is repeated a dozen or more times through a sufficiently randomized design. The data generated from such an exercise gives researchers deep insight into respondents' decision making criteria. Yet CBC tasks have traditionally been limited to 4-5 attributes per exercise, which is admittedly less than ideal. Many products or services have more than 4 or 5 attributes, and when brand and price are included, that leaves a scant 2-3 attributes from which respondents are asked to choose among.

Furthermore, researchers have become aware of potential problems with CBC questionnaires and the way respondents answer CBC questions. These include:

- Randomized concepts may fall well outside the bounds of acceptability relative to a respondent's ideal. This can create the perception that the interview is not very focused or relevant to individual preferences.

- Respondents do choice tasks very quickly. According to Sawtooth Software (a leading conjoint software provider), once respondents warm up to the CBC tasks, they typically spend about 12 to 15 seconds per choice task. It's hard to imagine how respondents could evaluate four alternatives in such a short time frame. It seems likely that they accomplish this by simplifying their procedures for making choices, possibly in a way that is not typical of how they would behave if buying a real product.

- Choice exercises typically require a dozen or more tasks to be shown to respondents, which may be perceived as repetitive and boring.

These concerns have led to much handwringing on the part of practitioners and researchers alike. After years of in-depth study, the research community now has a new conjoint approach that specifically addresses CBC's well-known weaknesses.

This new approach is called Adaptive Choice-Based Conjoint, or ACBC for short. ACBC has many advantages, and was designed to provide a more stimulating and engaging experience relative to conventional CBC questionnaires. Further, ACBC mimics actual shopping experiences, including realistic pricing scenarios for feature upgrades, and a greater focus on a subset of optimized features that are of greatest interest to the respondent. The interview itself has several sections, which are quite different from each other and thereby increase respondent interest. Let's examine each of the sections of an ACBC questionnaire.

The Adaptive CBC Interview Flow

BYO	Screening	Choice Tasks
• Configure your preffered product	• Build consideration set • Establish any non-compensatory rules	• Choose best from consideration set

BYO Section:

In the first section of the interview the respondent answers a "Build Your Own" (BYO) exercise to introduce the attributes and levels. Yet this first exercise serves a much greater purpose than a simple warm-up task. The respondent is asked to select his or her preferred level for each attribute, taking into account any corresponding feature-dependent prices (more bells and whistles are attached to higher price points). Unlike traditional CBC where top-of-the-line products

can theoretically be shown with low price points (barring prohibitions), ACBC begins to fine tune the pricing dynamics of the model through the BYO exercise. Based on answers to the BYO questionnaire, the software creates a pool of product concepts that includes every attribute level, but it concentrates on respondents' preferred levels.

Here's an example of a BYO question using a hypothetical example from Sawtooth Software:

Grand Pianos (ACBC)

Please select the grand piano you'd be most likely to purchase. For each feature, select your preferred level.
(The base price for a 6-foot instrument is $7,000.)

Select Feature	Cost for Feature
○ Kawai (+ $8,000)	
○ Yamaha (+ $8,000)	
○ Baldwin (+ $6,000)	$ 4,000
◉ Kimball (+ $4,000)	
○ Young-Chang	
○ 6-foot Length	
◉ 6.5-foot Length (+ $5,000)	$ 5,000
○ 7.0-foot Length (+ $11,000)	
○ 7.5-foot Length (+ $18,000)	
○ High Gloss Black Finish	
◉ Flat Black Finish	$ 0
○ Wood Grain Finish	
○ White Finish	
○ Standard Bench	
◉ Concert Bench	$ 0
○ Standard + Concert Bench (+ $250)	
○ Square Legs	$ 0
◉ Rounded Legs	
Total	$ 16,000

Screening Section:

In the second section of the interview the respondent answers "screening" questions, where product concepts are shown a few at a time. Prices are kept at realistic levels by summing the costs of the features involved in the concept (per the BYO exercise), plus or minus 10% or 20% and rounded to the nearest dollar. In the Screening Section, the respondent is not asked to make final choices, but rather just to indicate whether he or she would consider each set "a possibility." The purpose of the screening section is to identify attribute levels that are either considered "must haves" or "deal breakers" if they appear in any product configuration down the road.

After the system detects a pattern in respondents' selections, they are asked point blank if in fact they have established a choice-set heuristic starting with 'must have' options.

> *We don't want to jump to conclusions, but we've noticed that you've selected pianos with certain characteristics shown below. If any of these is an absolute requirement, it would be helpful to know.*
>
> *If so, please check the one most important feature, so we can just focus on pianos that meet your needs.*
>
> - Concert bench
> - At most: 6.5-foot length
> - None of these is an absolute requirement

On the other hand, if a respondent has systematically avoided an attribute level, the system will identify it and ask whether that level would be completely unacceptable.

Grand Pianos (ACBC)

Here are a few pianos you might like. For each one, indicate whether it is a possibility or not.

Kawai	Kimball	Baldwin
6.5-foot Length	6-foot Length	6.5-foot Length
White Finish	Flat Black Finish	Flat Black Finish
Concert Bench	Standard + Concert Bench	Concert Bench
Rounded Legs	Rounded Legs	Square Legs
$20,500	$8,250	$17,000
A possibility	A possibility	A possibility
Not an option	Not an option	Not an option

> *We've noticed that you've avoided pianos with certain characteristics shown below. Would any of these features be totally unacceptable? If so, mark the one feature that is most unacceptable, so we can just focus on pianos that meet your needs.*
>
> - Yamaha
> - Standard bench
> - High gloss black finish
> - Wood grain finish
> - None of these is totally unacceptable

If the respondent identifies any "must have" or "deal breaker" levels, then all future concepts shown will satisfy those requirements. Through this, the survey experience feels much more personalized, increasing respondent interest and the quality of our results.

Tournament Exercise:

Once the BYO and screening sections of the interview are complete, the respondent is shown a series of choice tasks presenting the surviving product concepts- those marked as "possibilities"- in groups of three, as in the following screen. (We have the option to ask for best and worst in each task, but it would also be possible to ask just for first choices.)

At this point, respondents are evaluating concepts that are close to their BYO-specified product, those they consider "possibilities" and that strictly conform to any cutoff (must have/deal breaker) rules. To facilitate information processing, the

system grays out any attributes that are "tied" across the concepts, leaving respondents to focus on the remaining differences. The winning concepts from each screen compete in subsequent rounds of the tournament until the preferred concept is identified.

> Among these three, which is the best option? (I've grayed out any features that are the same, so you can just focus on the differences.)
>
> | Kimball | Kawai | Yamaha |
> |---|---|---|
> | 6-foot Length | 6-foot Length | 6-foot Length |
> | High Gloss Black Finish | Flat Black Finish | Flat Black Finish |
> | Concert Bench | Concert Bench | Concert Bench |
> | Rounded Legs | Rounded Legs | Rounded Legs |
> | $9,000 | $12,750 | $12,250 |
> | ○ | ○ | ○ |

Conclusions

There have never been so many powerful tools at the ready to execute extremely sophisticated analyses that address critical aspects of marketing. The Adaptive CBC (ACBC) method for collecting data provides many improvements over CBC. Although the interview takes longer and uses up a significant amount of survey real estate, it is more interesting and engaging than traditional CBC, and provides a more faithful simulation of the buying experience. ACBC allows for many more product/service attributes to be tested in the course of one

exercise, versus limits of 4-5 attributes in CBC. ACBC also produces better predictions for a choice set that was custom-designed for each respondent from concepts preferred in previous choice sets. One additional perk to ACBC is its strength when used with small samples of respondents. The precision gained by the various exercises produces more robust findings even at sample sizes deemed unreliable through standard CBC.

Once the data have been collected, the amount of information to be gleaned from an ACBC is astounding. Not only do we learn which attributes and levels are most and least appealing (both for the total sample and key subgroups), but also the degree of price elasticity for our product/ service. Through a user-friendly online simulator, practitioners now have the ability to build product bundles to determine demand for various competing products. Simulators have become advanced enough to factor in the material and labor inputs required to build an offering in order to optimize overall utility. With these data,

practitioners can now build realistic market-viable simulations, test those configurations against other branded competitors, and arm managers with insights around those products that are most cost-effective to build given material/labor considerations.

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