

15.814 Marketing Innovation, Fall 2018

Action Learning Exercise, Part 3

Please see the “Action Learning Project” assignment and the “Action Learning Project Overview” slide deck; both posted on Canvas. for more detail on the entire project. This guidelines focus on Part 3 of the Action Learning Project assignment.

Quantitative Path

There are at least three options through the quantitative path to Step 3. They are:

- Option 1: Design a Conjoint Analysis Questionnaire.
- Option 2: Create a Positioning Map From a Customer Survey.
- Option 3: Apply Marketing Analytics as Covered in 15.814.

Option 1: Design, Implement, and Analyze a Conjoint Analysis Questionnaire

This option helps you gain experience with a conjoint analysis questionnaire. With Discover, it is deceptively easy to create, implement, and analyze the data. However, doing it well separates a good manager from a bad manager. A poorly designed conjoint analysis is counterproductive because it gives misleading information that leads to bad managerial decisions. A well-designed conjoint analysis is extremely valuable and leads to profitable managerial decisions.

We evaluate your project on how well you choose the attributes and levels. See Appendix 2 for a discussion of attributes and levels. The attributes and levels should be based on your voice-of-the-customer interviews or UGC analyses. The attributes and levels must be described realistically to consumers and be relevant to the decisions you hope to make. The questionnaire should be understandable to consumers.

You ensure understandability by “pretesting” your questionnaire. This means recruiting a small number of respondents (3-4 pretest respondents for this assignment), who will take the questionnaire while you watch (or listen on the telephone). Respondents think aloud while they take the questionnaire. When they are finished, you ask them about realism, about relevance, and about whether they feel the questionnaire captures how they will behave in the market place. Rarely is the questionnaire ready the first time. Very often, you need to revise it after the pretest. (Professionally, we would continue pretesting until we were satisfied with the questionnaire—sometimes up to 20 respondents, but you can stop with 3-4.) We’ve provided example pretest questions at the end of this document.

We also evaluate your project on how you use the data. Do the data give you insights to change your product or your marketing? How? Be sure to look for segments, targeting, and positioning (STP) for your product. Look at the importances to understand customer priorities, but also compute willingness-to-pay (WTP) by comparing differences in attribute-level partworths, say the partworth of high-quality i-Zone images vs. adequate-quality i-Zone images (example in class) compared to partworth differences in price. To get WTP in dollars, recognize that the price levels in the survey may be more, say \$10 versus \$20. We also encourage you to use the built-in simulator to forecast market shares as a function of features and price.

The following hints should help you implement the study.

1. Load Discover as per instructions posted on Canvas.
2. Start a new survey and give it a name.
3. Then add questions. There are a variety of options and most are self-explanatory. You'll want to know about your respondents (demographics, etc.) and may want to know what products/services they now use. You may wish to have them rate the importances of primary customer needs and/or evaluate their existing solutions on those customer needs. (See examples in Option 2, "Create a Positioning Map," below.)
4. To create a conjoint analysis set of questions, choose "Choice-based Conjoint."
 - a. Choose your attributes. This is a key part of the exercise. They should be tied closely to the primary customer needs that you identified in your customer interviews or UGC analyses.
 - b. Choose reasonable levels for the attributes. These levels should span the set of options available to you and the customer.
 - c. Pictures are extremely important. Add pictures by pasting them into the attribute levels. It is okay to use stock images from the web. (Fair use usually applies to in-class questionnaires.)
 - d. Sometimes attributes are ordered, e.g., size of the room. Sometimes they are not ordered, e.g., color. Make sure to choose ordered or not ordered as an option in Discover.
 - e. Price needs to be one of the attributes. The levels should span the set of possible prices.
5. Design Settings
 - a. Click "minimize level repeating" for each attribute. This gives more realistic questionnaires
 - b. You have a choice to have rating questions for unordered attributes. These are useful, but add length to the survey. It's a tradeoff you need to make.
6. None option

- a. You need the none option. This allows you to simulate primary demand. By primary demand, we mean actual sales, not just market shares. Without a none option, you can only simulate market shares. The none option is important when simulating markets. Be sure that “none” is checked in the simulations.
7. Format
 - a. Your choice.
 8. Prohibitions
 - a. This is an advanced feature you can ignore.
 9. After you design and test your survey, you can “publish” it. Discover will give you a URL that you can send to respondents. There are some tricks to give unique IDs to each respondent. If you are interested in doing this, ask a member of the teaching team.
 10. After sufficient respondents have completed your survey, click “Data & Analysis.”
 - a. The data analysis is self-explanatory.
 - b. You can get graphical summaries, summaries of partworth estimates (by segment), and you can simulate different markets (by segment).
 - c. We are interested in how you use these data, how you tie them to the voice of the customer, how the data give you insights for new marketing strategies, and how the data give you ideas for selecting the 4 Ps.
 11. If you have any questions a member of the teaching team. Discover has reasonable defaults that should be sufficient for your project, but there is also flexibility. Just ask.

Option 2: Create a Positioning Map From a Customer Survey

In class, we discuss the concepts of a positioning map, but we do not provide sufficient details on how to create a positioning map. (There is only so much time in class.) Positioning maps are not simply based on a marketing manager’s or an entrepreneur’s intuition. They are based on data.

There are at least two ways to create a positioning map—direct rating and multidimensional scaling. The former is easier to implement and, often, more accurate and relevant. We recommend that you use this method.

Step 1. Identify a series of scales that describe your product. These should come directly from the customer needs that you identified in your voice of the customer interviews or UGC analyses. For example, customer needs for the MIT Management School are:

Brand

1. The business school has wide-name recognition (e.g., known worldwide).
2. The business school is highly rated by independent publications (e.g., US News & World

Report).

School Experience

3. Students at the business school have a strong sense of community.
4. The business school has a collaborative atmosphere.
5. Students are satisfied with their overall experience.

Academics

6. The business school has a reputation for strong academics.
7. The business school is known for innovative research.

Teaching

8. The business school faculty are excellent teachers who are good at communicating complex material.
9. The business school professors have practical business experience.
10. Classes have a balance between theory and real-world application.

Career

11. The business school graduates have a high employment rate.
12. The business school has Career Services that will help me in many aspects of my career search.
13. The MBA degree from this business school continues to pay back on investment long after graduation (e.g., salary increases).
14. A wide selection of companies and industries that recruit at the business school meet my interests.
15. The business school has an active, organized network of successful alumni.

In this example, there are 15 secondary customer needs that were grouped into 5 primary customer needs. We'll talk about how to do that grouping in Step 3.

Step 2. Have Customers Rate Each Product That They Would Consider On These Scales.

(Consideration is covered in the session on "Communicate Wisely." The slides are posted on Canvas. Never have customers guess—guessing leads to bad data. Customers should never rate any product they would not seriously consider or that they do not have good reasons to reject.) In addition to existing products or generic options, it's useful to have customers rate "concepts." A concept can be a paragraph describing your new product or service. Consider the following concept that was developed for NOAA in an attempt to refocus fishermen from depleting Cod to keeping the squid they catch in their nets.

SCLAM CHOWDER

SCLAM Chowder is a delicious new seafood chowder made from choice New England clams and tasty, young, boneless North Atlantic squid. Small pieces of clam are combined with bite-sized strips of squid and boiled in salted water until they are soft and tender. Sautéed onions, carrots, and celery are then added together with thick wholesome cream, a dash of white pepper, and a sprinkling of fresh parsley. The entire mixture is then cooked to perfection, bringing out a fine, natural taste that makes this chowder a favorite.

Both clams and squid are high in protein, so high in fact that SCALM Chowder makes a healthy meal in itself, perfect for lunches as well as dinner. However, you serve it, Scale Chowder is tasty, nutritious, and economical.

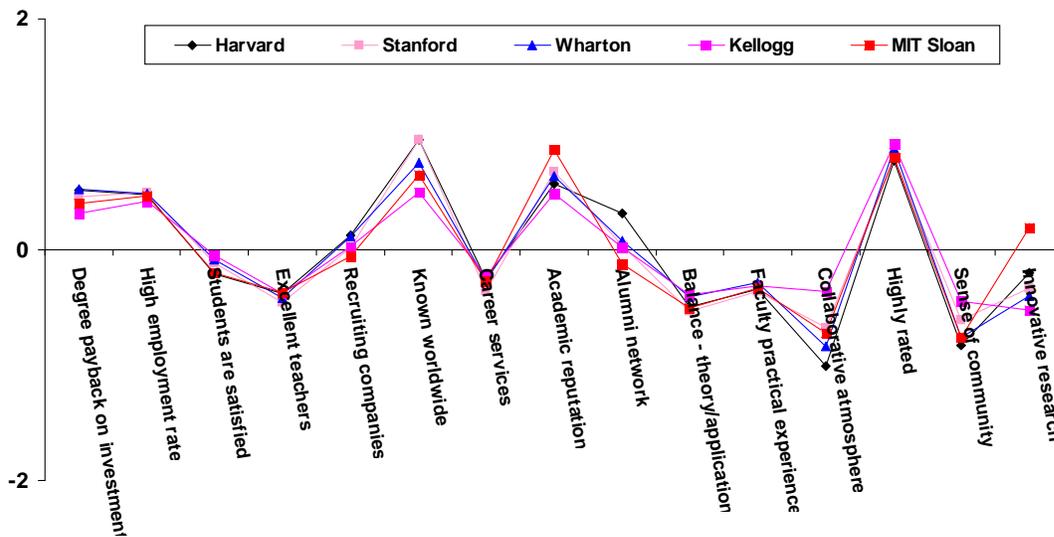
The best way to have consumers rate a product or service is with a “Likert” scale. The following example was created in Discover in less than five minutes. It is surprisingly easy using this software. This example is called a “grid” question. (To load Discover see instructions on Canvas.)

Q1 / EDIT

Please indicate whether you agree or disagree with the following statements.

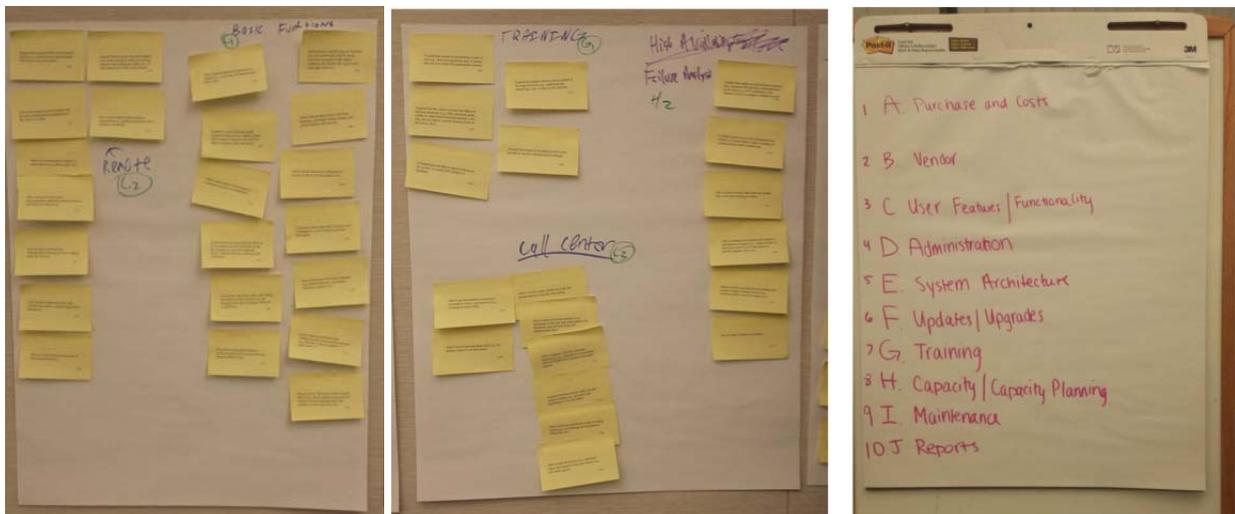
| | Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |
|---|-----------------------|-----------------------|----------------------------|-----------------------|-----------------------|
| The business school has wide-name recognition (e.g., known worldwide). | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The business school is highly rated by independent publications (e.g., US News & World Report). | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

After customers rate the products (they consider) and concepts, if any, on all customer needs, you can plot a “snake plot” to understand relative perceptions. Discover will provide average values for each scale. You may have to assign numbers to each scale point, e.g., -2, -1, 0, 1 and 2 for the five scale points. Data from real potential students are given below.



Step 3. For marketing strategy, it is often best to draw a perceptual map in fewer dimensions. (Step 3 can be done before or after Step 2.)

To reduce the data to fewer dimensions, you need to determine which customer needs go together. The easiest method is to use a customer consensus process, aka an “Affinity Diagram.” Put the customer needs on Post-it notes and have customers group the customer needs. Do not rely only on your judgment. Customers often perceive the world quite differently from managers. This difference is often critical to generating ideas for innovative products, innovative positioning, and innovative marketing actions. The following diagram illustrates an “Affinity Diagram” for enterprise software. It was based on real customers.



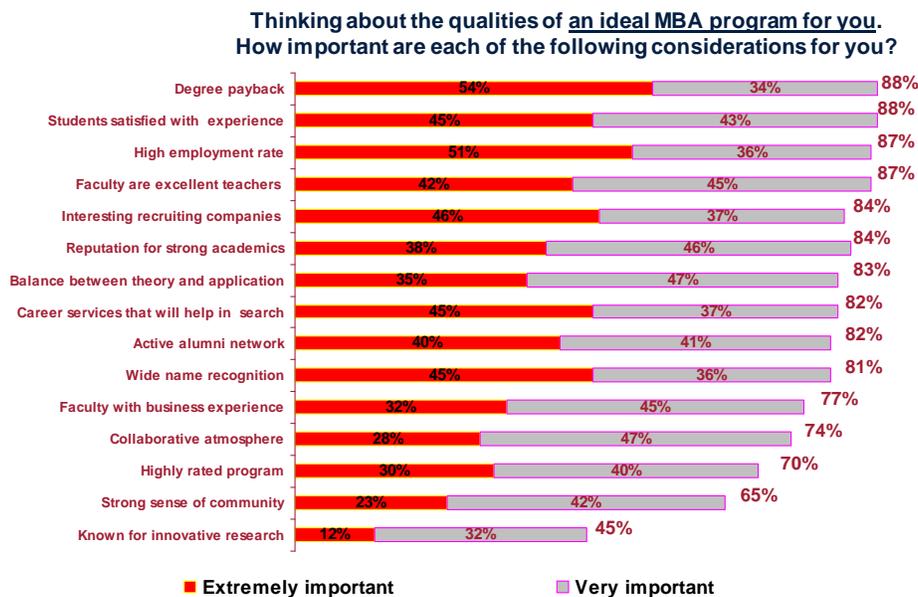
After you identify the primary customer needs, you'll need measures of how each product, generic option, or new product concept is perceived by customers on those primary customer needs. There are a variety of statistical methods to obtain measures, but one of the most

robust is “sum scores.” Simply take the average over the average values for each scale in a group of customer needs. (Groups from the Affinity Diagram. Now all you need to do is to plot these.) You can use traditional axes if there are two or three dimensions. For four or more primary needs, plot them with a simplified snake plot. (Upon request, we can provide more examples of data-based perceptual maps.)

If you want to use statistics to group the customer needs, there is a method called “factor analysis.” This requires a statistical package such as SPSS, SAS, or Stata. A member of the teaching team can give you guidance on how to use factor analysis to create a perception map. Factor analysis uncovers which customer needs correlate together, that is, are perceived as the same latent concept.

Some analysts prefer multidimensional scaling (MDS). With MDS, customers rate products on how similar they are to one another and the software uncovers the underlying dimensions. MDS is an advanced method and used for exploratory perceptual maps. Experience suggests that MDS is useful, but not as accurate as direct ratings.

Step 3’ (Optional). You may wish to know which customer needs are most important. You can ask customers to rate the reduced set of customer needs or ask customers to rate all customer needs. If you do the latter, you can use “sum scores” to get ratings for the reduced set. (Using “sum scores” is often preferred because it can be done in the same questionnaire that is used to measure perceptions.) The following is an example of preferences for the 15 management-school customer needs. Use Discover to gather these data. Like perceptions, preferences are measured with grid questions, but for preferences, the radio buttons are labeled: not important, somewhat important, important, very important, and extremely important.



Step 4. Use the perceptual map to identify “gaps.” A gap is an area of the perceptual map that

gives you a unique position and enables you to avoid destructive price, promotion, or advertising competition. There should be no (strong) competitors in the gap and customers must value the customer needs fulfilled by products that position in the gap. (This is where the information from Step 3' is used.)

Option 3: Apply Methods from the Analytics Lecture

If you have access to data that enable you to compute customer lifetime value (CLV), expected value in use (EVIU, aka expected value to the customer, EVC), expected value to the channel (EVCh), and breakeven analysis (B/E). If you choose Option 3, apply at least CLV and B/E. Apply EVIU and/or EVCh if they are appropriate to your category.

You may also wish to work on allocating expenditures to different media. Do this only if you have access to data, or can reasonably estimate both the ability of the medium to achieve a funnel goal and the cost of that medium. They should follow relatively closely to the analytics that we did in the analytics problem set and in BBVA. Review the analytics lecture notes.

Finally, you may wish to try your hand with A/B testing as covered in “Communicate Wisely.” If you do so, you may need to create example communications as described in the qualitative path through Step 3 of the Action Learning Assignment. A/B testing requires that you create two or more alternative communications and test them. We hope the methods are self-explanatory, but feel free to ask for help if you chose this path.

Qualitative Path

There are at least two options for the qualitative path. We will also accept a third option of your choosing if it is preapproved by the teaching team.

- Option 1. Marketing (Communications) Plan
- Option 2. Create and Test Example Marketing Communications

Option 1: Marketing (Communications) Plan

15.814 provides you with the tools to create a marketing plan. Please review the “Action Learning Project” assignment and the “Action Learning Project Overview” slide deck, both are posted on Canvas. These documents provide additional detail for the marketing plan. For simplicity, in this document, we focus on the communications component of the marketing plan. (A marketing plan also includes other tactics such as price, promotions, channels of distribution, and various products or product variants.)

Step 1. Establish your overall budget. Ideally, you would choose those marketing communications that maximize profit. However, it is unlikely that you have access to data that enable you to compute “response functions,” that is, functions that tell you what awareness levels, etc. you can achieve for a given expenditure. Instead, the following procedure enables you to estimate a communications budget—especially if you iterate.

Step 2. Compute a rough estimate of the discounted revenue stream you hope to achieve. It is perfectly fine to invest early (negative revenue) to build your market and achieve later revenue. This step requires you to think carefully about your revenue model. The revenue stream will assume a certain level of penetration (number of customers trying the product or service) and a certain retention rate. Revenue is then total dollar sales in each period.

Next, estimate your non-marketing costs. These costs can be software development, labor, or capital investment. You should target a certain level of (long-term) surplus, that is revenue stream minus costs. Some of that surplus, but not all, will be used for marketing communications. (Remember, you want some profit.) That gives you a budget.

Be sure to consider competition. Do you have a positioning strategy that enables you to reach a target segment? Are you stressing different customer needs than competitors so that you avoid price and promotion competition. Illustrate your positioning strategy with a perceptual map. (Unlike the quantitative options, the perceptual map used in the qualitative path does not require new data. But the perceptual map must be justified based on your customer interviews.)

Step 3. Communications funnel. In the session on “Communicate Wisely,” we introduce a communications funnel. The communications funnel is more qualitative than the funnel analysis that is used to diagnose a customer’s journey through the purchase process. An example funnel and example measures are shown below.



Funnels are not necessary unique, but they should represent how the communications lead ultimately to the customers’ purchase. For example, a simplified funnel might be exposure → awareness → consideration → trial → purchase.

Relying on your customer interviews, decide which of the levels of the funnel you need to stress. For example, do you need to get your brand name and positioning exposed to a large number of customers, or is consideration the key goal? Given a level of consideration, how many customers do you need to try your product or service? How many customers will repeat purchase your product or service (be retained)? For simplicity, you can assume that a really

good product will encourage about 25% of the consumers, who seriously consider your product or service, to try the product or service. Retention rates should be 70-80% or more or you will have a hard time succeeding. (Provide evidence from your customer interviews that you can achieve these levels.) Exposure of customers to awareness of your positioning is tricky. Deep exposure, as in personal selling, gives a high awareness rate because personal selling can be targeted and because sufficient information can be transferred. On the other hand, banner advertising tends to get about 0.35% click through. Search advertising gets about 2% click-through. Awareness, let alone knowledge, trial, or retention can be a small fraction of click through rates. Other media, such as television, radio, billboards, magazines, newspapers, blogs vary tremendously depending upon how well they are targeted. Media are more effective if the appeal is persuasive. Some media are more engaging than others; the number of exposures that are necessary to get attention and awareness varies depending upon the media, the product category, and the effectiveness of the communications. We evaluate your project on whether you choose media that are consistent with your customer interviews and with your communications goals.

You are also welcome to use a funnel of the customer journey if your product or service is best represented as a customer journey (aka purchase funnel).

Step 4. Estimate the costs of exposure and see if you can achieve your goals within your budget. You buy exposure. Good communications make it likely that the customer will move through the funnel to try the product or service. If the product or service is well-targeted, then retention will be high.

If you cannot achieve your goals, iterate. If you do achieve your goals easily, maybe you are spending too much. You can spend less and increase profits. Or perhaps, you may decide that your business proposition needs to pivot.

We trust your detailed estimates, but we will rely on our experience to judge whether the ballpark estimates are reasonable. We evaluate the project on whether you use your customer interviews to plan communications, use your customer interviews to pick the appropriate media, and use spreadsheets to develop a consistent plan that is profitable. It is important that you use the communications funnel to gain insight into your communications plan.

Option 2: Develop and Test Example Marketing Communications

You may wish to use your creativity to create marketing communications such as a magazine advertisement, a salesforce pitch, banner advertising, television advertising, or a viral YouTube video. We recognize that you are not copywriters, so you will not be judged on presentations, colors, etc. We evaluate your project on how well you use the methods from 15.814 when you develop these communications. At minimum, we need that you identify target customer needs, provide a target schema map, and discuss a target goal dictated by the communications funnel.

Step 1. Decide on your appeals. From the voice of the customer interviews, ethnographic

observations and/or UGC analyses, you know the primary customer needs. You also know (roughly) how competition performs on these customer needs. These data identify a gap—a set of unfulfilled customer needs that (a) no competitor is fulfilling and (b) customers want fulfilled. The gap gives you your positioning strategy—it should be based on the customer interviews, experiential interviews, or UGC analyses. Keep in mind that there may be many customer needs, but you are only be able to communicate your positioning with respect to a limited number of customer needs. You need to communicate those customer needs that give you a competitive edge.

Step 2. Communications funnel. See the description above in Option 1. You need to use the communications funnel to decide on your goals and, combined with data from your customer interviews, experiential interviews, or UGC analyses, select the media that you will use to communicate to the customer. Costs should be feasible, but you do not need to have a detailed budget as in Option 1.

Step 3. Identify the schema that you want to communication in your example communications (an advertisement, etc.) Your goal is to communicate your unique positioning (as identified in Step 1). The communication should stress the customer needs that give you your unique positioning and should be appropriate to your communications funnel strategy. Next, identify the schema that you wish to communicate. Schema are covered in the session on “Communicate Wisely.” The following slides illustrate schema.

Schema

- mental structure encapsulates experience and ideas

Implications

- notice features that fit schema
- organize information in schema



Step 4. Create an example communication (an advertisement, etc.). Recall that we do not evaluate your copy-writing skills, but we do evaluate whether the communications are tied to schema and customer needs. Previous students have found it useful to create a video using Powtoon (<https://www.powtoon.com/home/?>), which is a free website (or was at the time we wrote this note). The following is an example Powtoon advertisement created in the Spring of 2018. <We'll need permission.> <https://www.youtube.com/watch?v=Ky4x2U52lws&rel=0>.

Step 5. Test your communications. Show your example communication to a 3-4 potential customers. Ask them what the communications say to them. (Do not tell them anything else. You are testing your communications.) You are looking for qualitative evidence that the communications communicate the appropriate customer needs and your target positioning. You are also looking for evidence that customers attend to the communications, that is, if customers see the communications *in vivo*, the customers will be sufficiently interested to read, watch, or listen. Keep in mind that the average person sees hundreds of marketing communications every day. You need to break through the clutter. You are welcome to develop two or more examples and subject them to an A/B test, but A/B testing is not required for the qualitative path. You are welcome to use Discover to create a questionnaire to test your communications, but it is okay to get feedback from customers by personal or telephone interview.¹

Appendix 1. Example Pretest Questions (for Developing a Questionnaire)

The following questions are often asked during a pretest in addition to asking the respondents to think aloud as they complete the questionnaire. Surveys are more difficult than they seem, but pretesting helps you avoid surveys that lead to managerial decisions that are counterproductive.

Q1. Did or did you not you have any problems while taking the survey?

Q2. Did you or did you not think any questions were unclear? If so, which ones and why?

Q3. Did you or did you not think any answer options were unclear? If so, which ones and why?

Q4. Did you or did you not have any difficulty viewing any part of the survey?

Q4a. If so, which parts and why?

Q5. What do you think might be the purpose for conducting this survey?

Q5a. What makes you think so?

Q6. Did you or did you not feel that the survey wanted you to respond in any particular way?

Q7. Did or did not anything stand out to you about the survey? That is, do you feel that the

¹ To load Discover, see the instructions posted on Canvas.

survey did or did not put any undue emphasis on anything?

Other hints.

- Avoid words that are company-ese or technical, words that the respondent may not understand or that have specialized meaning.
 - “In purchasing a dishwashing detergent, how important are surfactants?”
 - “In purchasing a dishwashing detergent, how important is it that your dishes are clean and shiny?”
- Always state both sides of an issue, e.g., “do you or do you not.” One-sided questions can be extremely biased leading to biases that are as large as 40%.
 - “Should the Highway Gasoline Tax be used to maintain roads and highways?”
 - “Should the Highway Gasoline Tax be used to maintain roads and highways, or should it also be used to maintain public transportation, pedestrian access, and bikeways?”
- Have the respondent read the question aloud. For example, the following question can have five different interpretations depending upon the word that the respondent emphasizes: “Why did you say that?”
- Pay particular attention to question order. Order effects can be large. When possible we usually randomize response options or, if the response options are ordered, randomly reverse the order. You do not need to do this in your questionnaire. (Requires advanced programming.)

Appendix 2. Conjoint Analysis: Attributes, Levels, Number of Questions, and Sample Size

Students often ask about the target sample size if conjoint analysis is used for Part 3 of the Action Learning Exercise. The simple answer is that 10-20 should suffice for the project, although in professional studies sample sizes we often require many hundreds of respondents for statistical reliability, segmentation, and accurate market simulations. The appropriate sample size depends upon the numbers of attributes, levels, and questions per respondent. If you have too many of the former relative to the latter, then you need a bigger sample size.

First some definitions. An attribute is something like price, or travel time, or the number of square feet in a room. It can also be discrete and unordered such as color. Levels are different values of an attribute. For example, price might have levels of \$100, \$200, \$300, and \$400. Color might have levels of red, green, and yellow. In these examples, price has four levels and color has three levels. See the dormitory screenshots, posted on Canvas, for other examples.

Conjoint analysis measures relative preferences, that is the relative value to the respondent of \$100 rather than \$200 or the relative value to the respondent of red rather than green. The output of conjoint analysis is the relative partworths for each level of an attribute, thus, for

price (4 levels), we need three partworts. For color (3 levels), we need two partworts. As described in the note on conjoint analysis (available on Canvas), we set one of the partworts for each attribute to zero, or force the partworts for levels within an attribute to add to zero. In either case, if we have L levels, we have $L - 1$ independent parameters. A simple way to calculate the number of parameters is to count the number of levels (over all attributes) and subtract the number of attributes. For example, if price and color were the only attributes (as above), we would have 7 levels and 2 attributes, hence 5 parameters. Call this number N .

Each question asks the respondent to choose among C profiles. C is something you can set in Discover. We recommend that you set $C = 4$, but other values of C , such as 3 or 5 are okay. Each question then tells you that one profile is preferred to the other $C - 1$ profiles. Thus, each question provides you with $C - 1$ pieces of information. If you ask Q questions, you get $Q(C - 1)$ pieces of information. Q is also something you can set in Discover (or you can use the default.)

Modern methods “borrow” information from the population to improve the estimates of each respondent’s partworts. If we could not borrow information we would want $Q(C - 1) \gg N$. If we borrow information, this requirement is not as stringent. We still like $Q(C - 1) > N$. For your project, it’s a good idea to have $Q(C - 1)$ about $2N$. This assumes you have only a small number of respondents and need more data per respondent. If you can not satisfy this minimum goal, then you will need many more respondents.

These interrelations among Q , C , and N may seem “academic,” but they have real managerial implications. If your partworts are not accurate, then you will make incorrect decisions leading to a greater chance of failure. With poor data, you can over- or under-judge the best price, choose the wrong features, or over- or under-estimate demand. Conjoint analysis is an extremely powerful tool for marketing innovation decisions, but only if the survey is developed carefully and the analysis is appropriate.

When you submit your report, we will look to see whether you made good tradeoffs among Q , C , and N . There are no magic values; if you need to test more features, choose your levels carefully and match the number of questions to the requirements. Try to do so within a feasible (for your project) sample size. We would much rather that you do a high-quality conjoint analysis than that you test a large number of attributes and levels. Your goal should be to learn the method. When you apply conjoint analysis professionally, you will likely want to spend more money to get better data. Recall that it is your career on the line. Bad data lead to bad decisions. Good data help you make the right decisions and advance your career..