

“Quali-Quant' Research at the Development Stage: Using Iterative, Small-Scale Conjoint Analysis to Explore/Refine Communications for a 'New Age' Car Dealer”

AUTHORS	Philip Moore Howard Moskowitz Samuel Rabino Jeff Ewald
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'Quali-Quant' Research at the Development Stage: Using Iterative, Small-Scale Conjoint Analysis to Explore/Refine Communications for a 'New Age' Car Dealer

Philip Moore, Howard Moskowitz, Samuel Rabino, Jeff Ewald

Abstract

This paper illustrates an approach for using on-line enabled conjoint analysis to explore the power of different marketing messages for the on-line consumer of the type cultivated by Car Max Inc. Car Max Inc. represents a new, technology-enhanced and consumer-focused business for car buyers. Through a set of short, self-authored conjoint analyses research assessed the utilities of different concept elements in four different general categories: price, selection, vehicle quality, and sales process, using the conjoint analysis to narrow the alternatives. The respondents were clustered into groups, based upon the proximity of their next vehicle purchase and whether they were shopping for a new or used car. These groups showed radically different elements to which they would respond. Concept-response segmentation, in which respondents were clustered based upon the pattern of their individual utilities, was used to identify new areas of opportunities for Car Max Inc., suggesting that segmentation focused on the stimuli rather than on the respondents could be used to understand promising topic areas for communication.

Introduction

The need for more actionable knowledge in a faster, more competitive world

Knowledge of consumer preferences constitutes a significant competitive advantage in a business environment that continues to accelerate in both pace and competitiveness. Manufacturers have exploited customer information to design the features of products. Service providers have also exploited customer information in order to select the features of service offerings. From both product and service perspectives, more concrete and actionable data are vital to consistently produce desired offerings. Furthermore, to the degree that it is possible to accelerate the acquisition of such information, the more valuable the information will be for the business (Pawle & Cooper, 2001).

A viable business model requires both robustness and agility in the information that it obtains for consumer preferences. Robustness is provided by the ability to examine a large number of alternative options in order to identify the best options. This examination can be done entirely in one comprehensive study, or else executed in a series of iterative studies. Agility refers to the ability of the information provider to adapt the approach to current conditions, e.g., by modifying a given approach to accord with the user needs, or by rapidly answering one problem and then moving on seamlessly to the next.

Until recently much of the early stage iterative work was done in focus groups (Axelrod, 1975). Focus groups and associated qualitative methods are popular for development because they are easy to set up, inexpensive to run, and open the door to insights that may not have been expected. In practice, the researcher runs a number of focus groups, either to learn about the needs and wants to customers, or to 'float' different ideas by these customers and obtain some early stage feedback. Although the focus group is a structured interview, the hope is that new insights will arise during the course of the iterations. Certainly the low cost of the interview and the ease of conducting many of these in a sequence lead to its popularity. It has been estimated by the editor of Inside Research® that there are 100,000 or more focus groups conducted world-wide. This is may be an understatement.

A key issue that continues to emerge is the need for early stage research that combines the insights of qualitative with the statistical rigor and power of quantitative methods. Sometimes this

combination is known by the name 'quali-quant' (Cleveland, 2001). Although the development of these combined methods is still a 'work in progress', successful implementation of research with the power of both approaches holds promise for improved business insights, and perhaps greater business success. Quite often businesses that have not enjoyed long term experience with quantitative methods shy away from those methods, preferring the information about from the less technically rigorous qualitative methods. In contrast, businesses that have enjoyed the benefits of rigorous quantitative methods hold these in greater esteem than the more iterative, insight-building quantitative method. We deal here with a development of a 'quali-quant' approach, specifically for the case of retailers, but with potential for a large number of applications.

Evolving information needs of retailers

Retailers occupy an unusual position in the array of those seeking consumer insights. Resellers or distributors of products recognize the implicit value in the vast amount of data available through the purchase transaction, and often sell or trade this data to other companies directly or through intermediaries. Recently, retailers have begun to recognize that they as well need more and better information delivered faster, geared not so much to the design and development of the products they sell, but rather to the actual selling environment. As such, a recent research in marketing has evaluated the opportunities provided by the Internet to improve the availability of product information enabling direct multi-attribute comparisons, and reducing buyer search costs (Alba et al., 1997). Traditionally, local retailers relied upon their intuitive or tacit understanding of what works and what does not. Until the proliferation of larger regional and national retail chains, relatively few retailers had the resources or perceived the need to approach the process of customer understanding with the same degree of discipline as do marketers of consumer package goods, pharmaceuticals, and services. Recent work in marketing research has also evaluated in the online context the usefulness of navigation when exploring the interactive environment, alternative ways to seek out product related information (Childers et al., 2001). For example, Kotler (2003) points out that one of the main developments retailers and manufacturers need to take into account in planning competitive strategies is the need to invest in technology. Technology is used to glean information out of customers in real time, produces better forecasts, and improves communications between retailers and suppliers

A great deal of service research aimed at understanding the customer mind is subsumed under the category of customer satisfaction. Customer satisfaction is a passive measurement of the experience with the goal to establish a metric of how well the customer is being satisfied. The satisfaction research literature typically focuses on satisfaction as a primary tool by managers to retain customers (e.g., Bolton & Lemon, 1991). It is understood, however, that a focus on customer retention has its limitation. Essentially, the customer satisfaction is a measure of the reaction to an aggregate experience. It is also recognized that service convenience is an important sub-set of satisfaction studies which is acknowledged to be increasingly important to consumers (Berry et al., 2002). The customer satisfaction measure is after-the-fact, providing a rough idea of how well the service was rendered. In some cases, the general set of measures may be augmented by specific write-ins. It is very difficult to work with customer satisfaction data in order to create new services, insofar as the measurement is principally about the goodness of execution of what has already been offered (see Desarbo, et al., 1994).

Ethnographic research is one approach that seeks to disentangle the aggregation problem with traditional customer satisfaction surveys. Ethnographic research has high currency in the retail industry because following people around with cameras and doing in-depth interviews allows the expert ethnographer to decipher the positive or negative contributions of the various, qualitatively different elements of the shopping experience. This scope constitutes an advance over customer satisfaction research that only tells us the overall reaction to the aggregate experience. Unfortunately, the few highly skilled ethnographers in the world, and even the less talented emulators are in short supply. The logistics of this research approach also contribute to making it one of the most expensive propositions facing a retailer. Further, ethnographic results can only reveal what about the current offer (floor plan/product mix/etc) fails and what succeeds. Recommendations for fixing any problems come from the tacit knowledge of the ethnographer rather than from quantita-

tive research data. Thus the ethnographic approach, while a valuable emerging research trend, is not the needed 'quali-quant' breakthrough that can be scaled up to provide the necessary guidance.

Contributions of conjoint analysis to the understanding of the shopping experience

The goal of *proactive* conjoint analysis is to identify ahead of time the specific features that customers desire, and then incorporate those features into an offering. For diagnostic purposes it can be helpful to collect more specific and actionable information on the types of issues consumers may be having with the product offerings of a firm. The vignettes are developed by experimental design, in order to identify the specific features that drive customer interest (Box, Hunter & Hunter, 1978). Conjoint analysis thus differs from customer satisfaction in that it is proactive rather than retrospective, as well as *experimental* rather than observational because it systematically varies the vignettes, gets reactions and looks for patterns within the experimental design.

The retail environment for used cars can be dimensionalized along a variety of different features. These include activities of the salesperson, layout, service, offers, and even graphics of both a direct nature (*viz.*, the actual selling environment) or of a tonal nature (*viz.*, pictures that evoke an emotion, and support the general concept without conveying specific information). Conjoint measurement reveals the importance of each of these factors for an individual who is put into a specific scenario of shopping for a used car. Since conjoint analysis deals with more richly stated options, the scenarios presented by conjoint analysis can present a richer description of the shopping scenario (see Danaher, 1997; Renaghan & Kay, 1987).

The underlying rationale for conjoint analysis is that the typical consumer can easily comprehend a description or vignette about a specific shopping scenario. The combination is more realistic than having the consumer respond to single elements, such as service, price, etc. Furthermore, the richness of the description in conjoint analysis is a benefit to the researcher because it makes the description more realistic. By having the customer response to a combination of elements that are systematically varied, the researcher rapidly learns how these individual elements drive customer reactions. Each element can be assigned a utility based upon the respondent's rating. The utility shows either the strength of the individual element in the concept as a driver of interest, or the conditional probability that a customer will change the vote about the concept from not particularly interesting to interesting.

Conjoint measurement has been used previously to understand the relevant features of a shopping or other type of service environment (Alpert et al., 1997; Armitage, 1997). In these studies the elements for the conjoint analysis were simple statements that dealt either with the 'unromanced' features of a product, or of a service offering. Indeed, much of conjoint analysis has been dominated by relatively plain language, with the goal of the research to uncover the basic underlying ideas of the product, or the basic aspects of the service. Conjoint measurement provided this necessary information, which was then subsequently massaged and turned into the particular product or service offering and advertisement.

For service offerings conjoint analysis need not be limited to "bare-bones" statements. Instead, the elements of conjoint analysis can be the more richly brocaded language that is used with consumers to communicate and to persuade. In a variety of papers and presentations on credit card and insurance offerings, Moskowitz and colleagues used rich language in conjoint analysis to provide a more realistic stimulus. The language provides a sense of both what the customer wants to hear, and how the customer wants to hear it (Moskowitz & Greene, 2000; Marcus & Moskowitz, 2000). For automobile sales in a retail environment, this capability of conjoint to provide information about substance and type of communication becomes quite important in practice, because customers may be responsive to both the substantive and the stylistic aspects of a communication (see Lautman & Percy, 1983).

In a more recent set of 30 linked studies, Ashman & Moskowitz (2003) used conjoint analysis to understand the driving forces in each of 30 different shopping scenarios (e.g., shopping for a washing machine). Each of the 30 studies was set up to comprise 36 elements, with each of the elements having a specific *raison d'être*. The same element was reproduced across all 30 studies, modified if necessary to be appropriate for the particular shopping scenario. The mega-study,

done on the Internet, revealed that respondents were easily able to understand the task, and that the same type of concept element, and often the same exact element, had different utility values depending upon the specific shopping scenario.

Bringing conjoint analysis into the 'quali-quant' research world

For conjoint analysis to have greater impact in the retail environment, it must be modified to be more rapid, less expensive, and iterative. That is, the conjoint analysis approach must migrate to a 'quali-quant' method, affordable at both the early and late stages, rather than being reserved for the larger studies with high budgets. Unlike the large-scale product development efforts that allow for multiple and costly iterations, the retail environment is fluid, rapidly changing, and often quite local, requiring short, inexpensive iterations. Retailers in multiple locations must think globally, yet act locally. Despite the location conditions, however, the retailer must also ensure that the offers are consistent with the global brand and operations.

Self-authoring research tools have been proposed over the past several years as a means to facilitate the research process (e.g., Insight Express Inc). Although many researchers pride themselves on well done studies, in a number of situations it may be more profitable to be 80% correct and on time rather than being 100% correct yet late (Ewald, 2001). Retailing could well be one of these situations. Self-authoring tools in the hands of the retailer could thus promote better knowledge-based decisions, obtained in a timely fashion. Of course, in the absence of a seasoned research professional, the self-authoring tools might go awry. However, the worry about loss of control with a self-authoring tool should be far less consequential than the risk incurred by making decisions without access to the necessary data made available by this powerful research tool.

The use of a self-authoring system at the early stages of product development among engineers has already been presented (Ewald & Moskowitz, 2001; Moskowitz et al., 2001). The approach enables the user to rapidly set up a conjoint analysis by following a template. The user must think in terms of the features to incorporate into the conjoint task, and should have the appropriate pictures available. The user must do the thinking up-front, and the interpretation after the study. However, the system is designed so that the computer does the difficult, onerous and often error-prone set-up work. Self-authoring conjoint analysis works in such a way that the statistical design is simple (i.e., a standard factorial design), the analysis straightforward (i.e., dummy variable regression analysis using ordinary least-squares methods), and the interpretation easy (i.e., the utility value = conditional probability that a concept is rated as being interesting if the element is present in the concept).

Applying the approach within the world of car sales provides a good test case for the 'quali-quant' system. Within the realm of car sales there are many different things that customers want. The varying appeal of these aspects of the retail experience should be measured. However, customers respond to specific language. An aspect found important using a generic description may, in fact, become a detriment if poorly described in advertising or marketing materials. Small changes in wording may make the difference between attracting an individual to become a customer and creating a message that is at best not interesting, and at worst quite negative.

One of the key benefits of a self-authoring research system, and a prominent feature of this paper, is the use of the self-authoring system to promote rapid learning for the retailer. If it is easy to create and to execute the study, then there is every reason to use self-authoring systems for iterative knowledge development. Whereas, many quantitative research projects are executed as either one-off studies or as continuous tracking studies, a self-authoring system allows the research to be run as iterative tests, quickly changed on the basis of previous information. This rapid, low risk, low cost and iterative approach characterizes qualitative research, not quantitative research. Self-authoring systems allow for and indeed promote such iterative modes of action. An iterative system is appropriate in the retail environment, where the information must be actionable, where there are rapidly changing conditions, and local variations. The retail environment can thus benefit from such an iterative, cost-effective, rapid methodology providing powerful quantitative information that leads to immediate action.

Application to CarMax Inc.

In 1993, the consumer electronics retailer Circuit City took its business model and applied it to used cars to create CarMax; the pioneer of fixed-price, multi-brand, used-car mega-stores. Over the last eight years CarMax has grown into a multi-billion dollar retailer of both used and new vehicles. The CarMax brand has faced several marketing challenges. AutoNation copied the concept and spent billions over three years attempting to monopolize the niche. In focusing the marketing strategy on the broad themes that differentiated CarMax from traditional auto retailers, CarMax eroded its brand identity relative to AutoNation. Further, marketing messages were propagated across numerous media with different control centers making consistency impossible. There was a clear need for marketing research at CarMax to develop the consistent brand equity messages that would resonate with consumers on TV, in radio ads, on billboards, in the newspaper, or in a brochure.

CarMax took the first step by centralizing all marketing production. All the TV, radio, print, direct mail, billboard, and Internet advertising are now created and administered from the corporate offices. The earliest research attempts to determine the optimal content of the marketing messages took the form of focus groups. Consumers around the United States participated in discussions of their used-car shopping experiences. This provided some useful insights into “hot button” issues that gave rise to yet more heated discussion. However, the outbursts of a few participants about the lying, cheating, “low-life scum” car salesman that surreptitiously raised their interest rate or hid non-agreed upon fees in the contract clouded the reactions of the other participants. This typical “group think” phenomenon raised doubts among decision makers about the efficacy of the research results.

The second paradigm of CarMax’s message testing incorporated electronic audience-response meters. Groups of respondents were brought into central locations and given hand-held dials to record their emotional reactions to actual messages presented across different media. This proved quite useful in generating quantitative results. However, the groups were extremely expensive to field and occasionally suffered the same corruption as a focus group might when participants verbalized their reactions to test material in addition to “dialing it in.” Though the equipment, facility, and participant recruiting generated most of the cost, the expense and time devoted to creating the different test materials were also significant for this research method.

The ‘quali-quant’ approach using online conjoint testing for marketing messages provides several advantages over the earlier stages of CarMax marketing research. All of the conventional advantages of other forms of Internet surveying are also present in the online conjoint. Participants use their own capital to communicate and record their responses, they do not have to travel away from their own routine environments, and they participate when they wish, and respond at their own pace. The convenience to the respondent means incentives for participation can be low or even eliminated. The installed base of capital, e.g., respondents, own their PCs and have paid for their own online access, reduce the facility cost for conducting the research, which becomes simply a computer server somewhere in cyberspace. A significant and increasing portion of American consumers are on the Internet. This allows results of our research project to be projected to the CarMax customer who tends to be already connected to the Internet.

The ‘quali-quant’ approach allows us to deal with three objectives:

Objective 1: Using the Internet, create a database through conjoint analysis of different types of communications, along with the utility value of each.

Objective 2: Using Internet, demonstrate the feasibility of cost-effective iterative studies, with the goal to improve marketing of services through development of knowledge in a stepwise manner paralleling focus groups. Use state of the art self-authoring technology to do these studies, without the help of an expert programmer.

Objective 3: Use segmentation to identify new topic areas for exploration, demonstrating a novel use of segmentation, i.e., at the development stage.

Methodology

The ongoing objectives of this developmental project were *to create and then understand a new set of features* for cars, and for the purchase situation. The project followed these eight steps implemented for each iteration. The sequence of steps was developed to parallel how one might use conjoint analysis.

Step 1: Raw Material Development (Elements): Identify concept elements from chat rooms, much as one might identify key messages from focus group discussions, or in-depth interviews. This “listening” strategy meant watching the materials generated by a number of chat rooms dealing with cars. These elements would comprise single-minded ideas for CarMax Inc., based on the chat room results, on the researcher’s evaluating what would interest customers, and also upon the results of previous iterations with customers, respectively

Step 2: Fill In A Template: Incorporate these elements into a conjoint study, following the self-authoring template. By following a ‘wizard’, the researcher completes the study set-up, hopefully independent of any programming help if the self-authoring system has been properly developed. Thus the user himself becomes the researcher, empowered by an easy to use study set up program (Moskowitz, et al., 2001).

Figure 1 shows the navigation bar for the conjoint analysis. Through this bar the user can go through the different steps to set up a study.



Fig. 1. Navigation bar for the conjoint analysis study

Figure 2 shows the user oriented selection of an experimental design. At this stage the researcher needs to familiarize herself with the number of *categories* (variables), and the number of *elements* (levels).

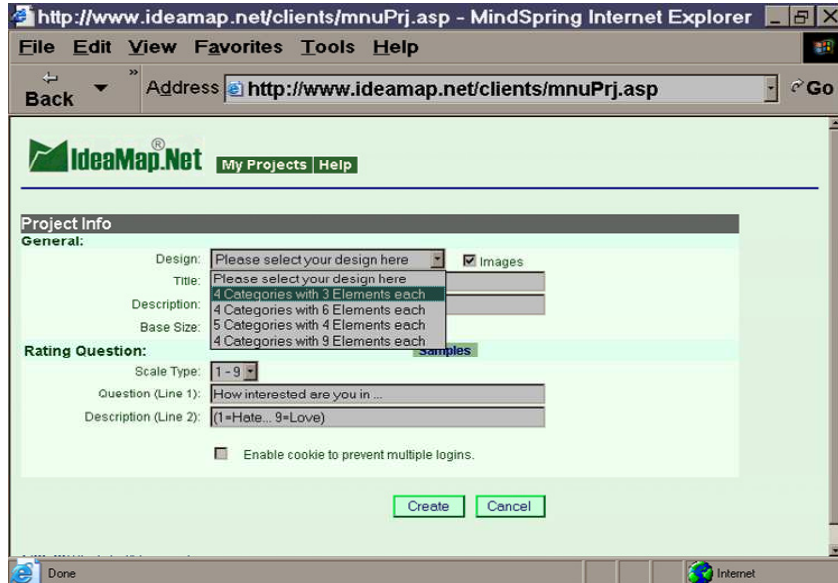


Fig. 2. User page to select the specific experimental design

Figure 3 shows the spreadsheet format used to type in the concept elements. Graphics elements can also be inserted, if the researcher has specified an experimental design comprising graphics. The spreadsheet format is particularly effective in this regard because it is user-friendly and not intimidating. Most users have already experienced spreadsheets in one or another situation.

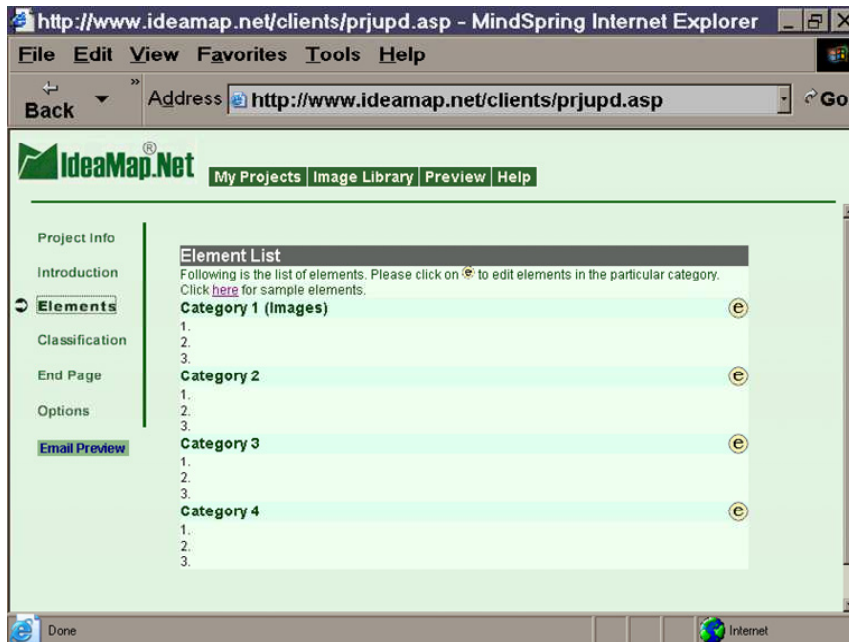


Fig. 3. Spreadsheet format for entering concept elements

Figure 4 shows the user page for classification. At the end of the interview the respondents can be asked a variety of questions to profile themselves. These include questions with one answer, multiple answers, rating scales, and open ends.

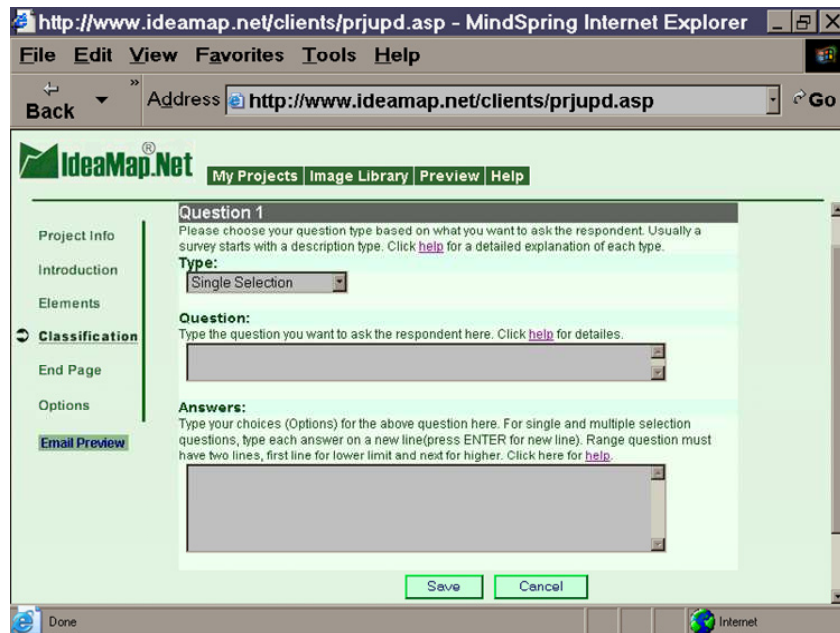


Fig. 4. User screen for classification questionnaire

Figure 5 shows the user screen for feedback and security. With these types of studies it is crucial to ensure that the respondent participates only once, and that the participation is limited to the respondents that actually invited. Besides the chance to win a sweepstakes, another way to motivate respondents provides them with information on their ratings versus everyone else's ratings. This type of information can be an even stronger motivator when dealing with professionals on the one hand, and with the topics that are the focus of everyone's attention (i.e., 'hot') on the other.

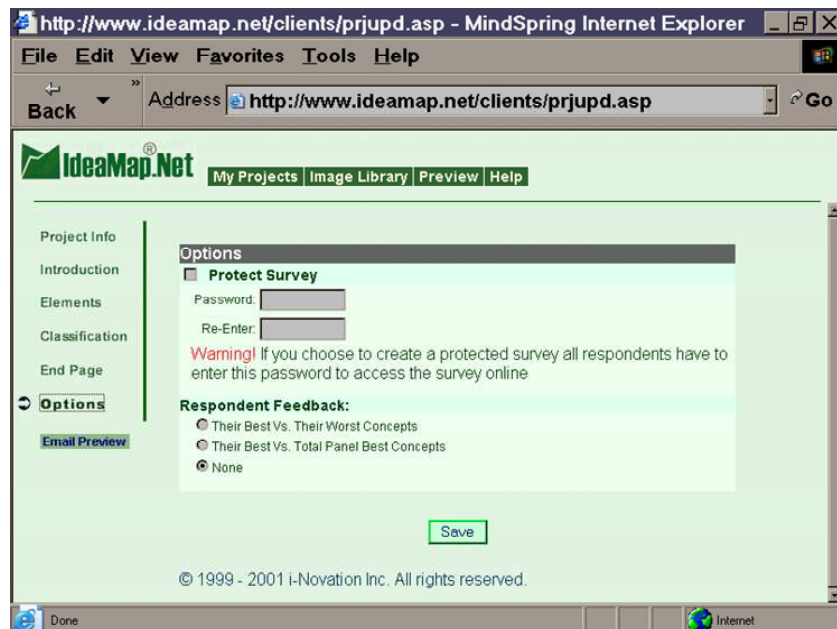


Fig. 5. Security and feedback specifics, decided by the user

Step 3: Editing and Pre-Testing: Look at the flow of the conjoint study, to ensure that the concept elements make sense. If they do not, then change the elements. Continue to pre-test the combinations, and modify the language until the elements work into the concepts. Specifically, elements appear to fit together, and flow well when read. Working does not mean performing well in the customer's opinion, as will be seen below. The self-authoring system is set up to allow for ongoing editing by individuals in different sites. This capability facilitates collaboration over distance.

Step 4: Launch The Study On The Internet: Create the study on the server, and then launch it, with a unique URL that can be given to a respondent. The set-up program returns with the URL, once the study has been put on the computer.

Step 5: Recruit Respondents: Advertise for respondents in chat rooms and newsgroups devoted to automobiles. This is a cost-effective, albeit not necessarily rapid way to obtain respondents. Respondents thus obtained constitute prime prospects, because they are interested in automobiles by virtue of participating in the chat rooms. Other strategies include using double opt-in lists, where respondents have agreed to participate in Internet-based studies, putting invitations into 'pop-ups' on the website (a very effective method), or using respondents from panels. The actual interview screen looks like Figure 6, although each respondent evaluated a totally different set of combinations of even the same elements.

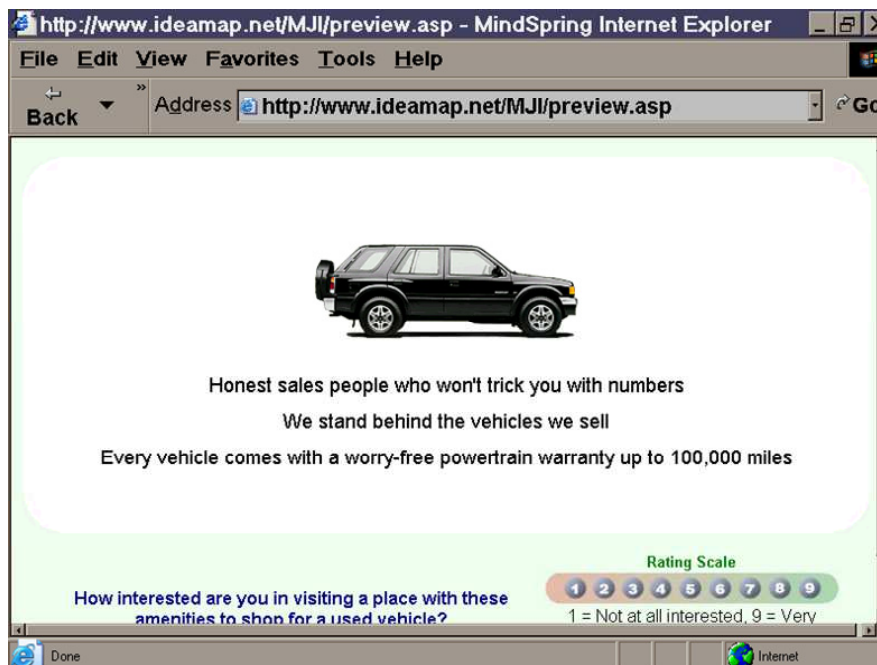


Fig. 6. Example of a concept screen, showing the elements and a graphics

Step 6: Monitor Data Daily: Look at the topline on a twice daily basis, by visiting the study, and computing the average utility values across all the respondents who have participated. Daily monitoring identifies the production of information. Often when studies reach a base size of 30-50 or so the utility values stop changing.

Step 7: Download The Data: When a sufficient number of respondents have participated, or when the data appears reasonably stable, take down the study to look at the results in depth. Taking down the study is a *qualitative* decision. For the present study we took down the different iterations at various times, to move forward with the results, and when appropriate move to the next iteration.

Step 8: Detailed Analysis Of The Results: The results permit analysis of open-end responses and statistical analysis of the classification data. The results permit higher order analyses

of the conjoint analysis utilities (e.g., cross-tabulation by key subgroups; internal segmentation to discover new directions for the concept elements that may be masked by working with the total panel or with key subgroups who all share the same 'mind-set').

These eight steps were repeated three times, each time with an amplification and clarification of the winning ideas. With the iterations, we were able to home in relatively efficiently on new ideas that appeared to work, and to work in ongoing studies. We will present these eight steps in depth for the first iteration, and then examine at how the iterations more have been further narrowed in on the winning themes.

Analytics: Modeling to generate individual utility values from the conjoint analysis

During the iteration, a respondent evaluates a set of combinations of concept elements. The concepts comprised 2-4 elements. The experimental design created 20 combinations with 12 elements. The design was created in such a way as to permit ordinary least squares analysis, using dummy variable regression. The approach has been described in other papers (Ewald & Moskowitz, 2001; Moskowitz et al., 2002). The design structure was permuted to create 40 different basic experimental designs, all related to each other, but all comprising different combinations of elements. In each design structure the concept elements were statistically independent of each other. By permuting the design structure it was possible to ensure that the results observed for any element were independent of the other elements in the study. Since every respondent saw effectively a different set of combinations we avoided a source of bias that could result from having a single combination that scores unusually better or worse than its components.

For purposes of analysis, the ratings for interest on the 9-point anchored scale were transformed into a binary scale, comprising the values 0 (corresponding to ratings of 1-6 on interest), and 100 (corresponding to ratings of 7-9). The transformation was done for each assigned by each respondent. This approach follows the conventions used by market researchers, who deal with a binary system (interested versus disinterested), rather than dealing with the intensity of interest. After the transformation the ratings for each respondent and the associated experimental design for that respondent were used together in an ordinary least-squares regression analysis to relate the presence/absence of the concept elements to the respondents ratings. This is expressed by the following equation:

$$\text{Binary Rating} = k_0 + k_1(\text{Element 1}) + k_2(\text{Element 2}) \dots k_n(\text{Element } n).$$

In previous analyses of this type of data the modeling using the standard ordinary least-squares has resulted in the same significances for terms as models using the Logit or Probit methods (REF). Ordinary least squares is more intuitively obvious. The additive constant, k_0 , can be interpreted as the conditional probability that the respondent would be interested in the concept if no elements were to be present in the concept. Clearly this is a hypothetical situation. The constant is an estimated parameter. The coefficient k_n shows the conditional probability that concept would change from a rating of from not interesting (rating of 1-6) to a rating of interesting (rating of 7-9) if the n^{th} element is present in the concept.

Iteration #1

The first iteration began with 12 elements covering different aspects. Table 1 shows these elements and the utility value for each. The utility values are the part-worths of the individual elements, or the coefficients in the dummy-variable regression equation. Note that three of the 12 elements comprise visuals, which were chosen to explore some of the non-verbal communication. The initial results suggest two different promising topics; specific promises and an easy, no-hassle purchase environment. However, only a few elements performed well. Most the elements do not perform well at all, suggesting that in the next iteration it would be best to expand on the direction of specific promises (e.g., *Every vehicle comes with a 100,000 mile powertrain warranty*). The fact that only two elements performed well means that it is important to continue iterating. It might be the case that no elements work well after several iterations, suggesting that a new direction needs to be taken.

Table 1

Results of the first iteration – total panel and two emergent segments

Element	Total	Seg1	Seg2
		Deliver-ables	Sales Exper-ience
	Base=72	Base=35	Base=37
	Constant=33	Constant=27	Constant=39
Theme A: Specific Deliverables			
Every vehicle comes with a 100,000 mile powertrain warranty	8	17	2
Any problems you have in the first 30 days will be fixed for free	6	9	3
We meet or beat any advertised price for comparable vehicles	3	2	3
Every one of our vehicles has passed a rigorous certification	1	1	2
No surprises...the advertised price won't change when you get...	-4	1	-8
Theme B: More Pleasurable Shopping Experience			
Work with only one sales person from beginning to end	4	-4	11
No tag-team sales tactics	3	-3	8
Our on-staff credit specialist will help you arrange financing	-5	-16	4
We offer fair no-haggle prices on every vehicle	-6	5	-16
Theme C: Visuals			
Visual - mechanic.jpg	3	4	2
Visual - employee_and_customer.jpg	-3	0	-5
Visual - home1.jpg	-3	-7	1

Segmentation at the early development stage as an aid to identify new directions

One of the key issues in early stage research is the nature of the respondents. Typically with focus groups there are too few respondents on which to erect a segmentation scheme. Most of the time the early stage research uses respondents of different types, assuming some type of segmentation such as brand used most often, age, gender, market, etc. Segmentation is usually left to subsequent, considerably larger, more costly projects. The goal for segmentation is to identify the groupings of the population for targeted product development and marketing (Green & Krieger, 1991; Moskowitz, 1996). Formal segmentation using statistical procedures is not thought of as being particularly meaningful at the early developmental stages.

Conjoint measurement permits the creation of segments. In early stage studies such as those presented here the sample size may be small, and the number of elements may be limited. However, there is still the possibility of gleaning insights about potentially new segments in the population. If we envision the research as being early stage, and as the quantitative equivalent of qualitative work, then there is no reason why an exploratory segmentation should not be done. The segmentation can be used to develop hypotheses for further exploration.

These data permit segmentation using k-means clustering. The clustering algorithm (Systat, 1997) uses the set of 12 concept elements. Each respondent generates his own set of elements. One can compute the ‘distance’ between two individuals, based upon their individual utility values for the 12 elements. This distance is defined by the value (1-R), where R is the Pearson correlation between the two people based upon their 12 utility values.

The cluster results from Iteration #1 suggest two key groups, and thus possibly two new directions. The first segment represents half of the participants; they respond to concrete offers that can be specified and carried out with little interpretation. The second segment also represents half of the participants; they respond to descriptions of a simple, “low-hassle” sales environment. In both cases it is clear that the message used to design the sales environment and communicate to the consumer, should be concrete and immediately testable. There is little interest in non-specific promises.

Iterating to new sets of elements, based upon ongoing learning

The first iteration revealed two key segments; those who wanted a concrete indication of what would be accomplished, and those who wanted an easy, simple sales situation, respectively. These two segments can be treated as two possible directions for communication. Iteration #2, considerably smaller in size (33 respondents, not 72), was conducted in order to assess responses to potential improvements. The results from Iteration #2 appear in Table 2.

1. There were no clear improvements in terms of the specific deliverables. The element 'every vehicle comes with a 100,000 mile powertrain warranty' continued to be a winner, as was the guarantee 'Every vehicle comes with a worry-free powertrain warranty up to 100,000 miles.
2. There was a clear improvement in the statements dealing with the *selling* environment and customer-seller interaction.
3. The size of iteration #2 is in keeping with the 'quali-quant' approach, although with the Internet and with larger incentives it might be possible to increase the base size significantly, and perhaps even shorten the time to acquire the results.

Table 2

Results from iteration #2, and winning elements from iteration #1

Element	Total Panel
Base Size	33
Constant	41
Theme A: Specific Deliverables	
<Carryover From Iteration #1 To Iteration #2>Every vehicle comes with a 100,000 mile powertrain warranty	8
Every vehicle comes with a worry-free powertrain warranty up to 100,000 miles	6
<Only In Iteration #1>Any problems you have in the first 30 days will be fixed for free	6
The powertrain on every vehicle is guaranteed up to 100,000 miles	5
Knowledgeable sales people can answer all your questions	2
You are protected up to 100,000 miles with a limited powertrain guarantee	2
Any problems within the first 30 days are fixed for free	0
Every used vehicle comes with a bumper-to-bumper 30-day warranty	-1
We stand behind the vehicles we sell	-8
Theme B: More Pleasurable Shopping Experience	
Honest sales people who won't trick you with numbers	8
Knowledgeable sales people can answer all your questions	6
Friendly sales people who won't pressure you to buy	5
<Only In Iteration #1>Work with only one sales person from beginning to end	4
Theme C: Visuals	
Visual - Honda.jpg	4
Visual - Passport.gif	-1
Visual - Prelude.gif	-2

Results from the final iteration, #3, appear in Table 3. Success in this case is operationally defined as *an increasing number of high impact elements*, where utilities in general are higher than the utilities in the iterations that went before. Specifically, to the degree that the research provides guidance we should see more utilities above 6, and far fewer utilities below 0. The results presented in Table 3 show that the key themes are *value* and *control*, rather than statements about finance and pricing. In addition, *convenience* is important, as defined by specific dealer's policy (e.g., service center staying open on Saturday and Sunday).

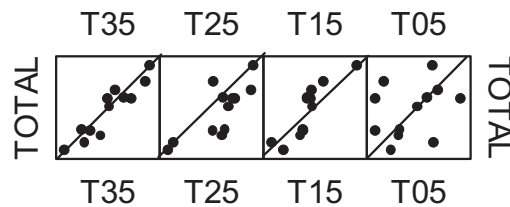
Table 3

Results from Iteration #3

Base Size	42
Constant	30
Theme A: Specific Deliverables	
Fair value for your trade-in	7
Have any of our used cars inspected by the mechanic of your choice	5
Competitive prices on all types of mechanical service	2
Complete vehicle history report with every used car	11
Low-interest financing	0
Low monthly payments	-6
Theme B: More Pleasurable Shopping Experience	
Service center open on Saturday and Sunday	10
Shuttle service from our service department to your home or work	9
Friendly sales people who won't pressure you to buy	6
<Carryover From Iteration #2>Honest sales people who won't trick you with numbers	5
The World's #1 Used Car Specialist	-1
We make shopping for cars like shopping for clothes	-2

With such early stage 'quali-quant' methods, there is no reason except for expediency, as to why the study should be terminated at three iterations. One could have carried on the iterations to five, six or more.

It is important to keep in mind that early stage research, of the type shown here, does not rely upon large number of respondents. Rather, it is important to obtain directional guidance at each iteration. Thus, the base sizes need not be the conventional 100+ respondents often used in quantitative research. Rather, the base size may drop down to the 20-40 respondents needs to obtain reliable results from conjoint analysis (see Figure 7 below, and Moskowitz *et. al.*, 2000 for a demonstration of the stability of this form of conjoint analysis on the Internet).



Note: The figure shows how subsets of size 35, 25, 15 and 5 co-vary with the full results from 42 respondents.

Fig. 7. Stability of results

The Role Of Open Ends

The in-going assumption in this study was that the participation of a respondent in the conjoint study would open up the respondent to new ideas. In earlier studies we have found that respondents who first participated in the conjoint exercise and then participated in a focus group appeared to be open to providing new ideas. The excitement of participating in the exercise aided the subsequent focus group, making it richer.

We explored the viability of adding open-ended questions to this Internet-based conjoint analysis, with the objective of making the information richer at the early developmental stages. That is, the open-ended questions were designed to have the respondent provide additional infor-

mation that could be fed back into the conjoint studies at a later iteration. The two open-ended questions searched for the following:

1. Three new ideas, that were not in the element set used for conjoint analysis
2. The specific features they look for in a dealer

A sense of the richness of the results from the open ends appears in Table 4. The open ends are arranged by respondent (who can be identified by their UID or unique identification number), and secondarily by the segment. With the UID it is possible to follow up with respondents later on, if the respondents volunteer to be re-contacted. With the segmentation it is possible to probe the respondent later on, to understand more about the nature of the segments, or directions for the concepts.

Only about 40% to 50% of the respondents have completed the open ends. Of those who participated many provided three elements that they would have liked to add to the conjoint task. Table 4 shows that the comments span a much wider range than the 12 elements tested. It appears therefore that involving the respondent in a conjoint analysis task at the start of the evaluation may generate sufficient involvement to produce a rich stream of material for subsequent analysis and assessment. The cost and effort to obtain such open-end answers are relatively low, and the output tends to be quite relevant to the topic. This relevance might come from the fact that the respondent has just participated in a targeted conjoint task, and so there is no need for an orientation and a warm-up. The conjoint task serves that purpose, as well as providing information about the utilities of elements currently deemed important by the researcher. In some ways the approach to asking the respondents to provide new elements differs from the conventional research procedure which uses the qualitative portion of the research program to create the element base, from which the conjoint analysis study is constructed and run. In this 'quali-quant' approach the conjoint analysis is used both to obtain data from respondents as well as to excite the respondent to provide new elements in the subsequent open ended questions.

Table 4

Text from the two open-ended questions (three new ideas; features searched for in a dealer).
(Each line represents the open-ended responses from one respondent)

Three New Ideas	Dealer Likes
Segment #1 – Oriented Towards Deliverables	
Service; willing to negotiate on price; low APR	Friendly and knowledgeable staff
Lower pricing; less pushy sales personnel; better warranty	Good quality for a good price
Reputation; location; service	Reputation; contacts; prior dealings
	Friendly staff, locally/Canadian owned, fair pricing, good service, customer follow up
	Price and warranty
No-haggle pricing on used cars; I like to be able to negotiate	
Allowing an unrelated technician inspect the vehicle; seeing the maintenance history of the vehicle; extended test drive, several hours at least.	Cleanliness, honest people, happy customers, a workshop that customers can enter whenever they wish. (i.e., go see what's going on with my car when I want)
Salespeople who don't lie; genuine savings; cars which have truly passed rigorous testing	Courteous staff; truthful staff; actually being noticed when you walk in and not having to search for 30 minutes for a salesperson
Give cars for free	Nice toilets
We'll show you the inventory cards and disclose the "dead cost"	Honesty; I check the local courthouse for lawsuits and call the Attorney General's office for consumer complaints
I hate salesmen and seeing their faces made me cringe. Seeing the old guy under the hood was calming	A good selection of the type of vehicle I am interested in; word of mouth reputation keeps me from certain dealers; trick advertising is a major turn-off, such as advertising no down and 99 dollars a month, when the two don't go together
I like the no-haggle philosophy	Prompt and courteous service
I expect the sales person to know as much about the technical specs of the vehicle as possible. Selling add-ons after the sale is sneaky; techniques such as not letting you leave after you cannot work out a deal are too high-pressure	Non-pushy but knowledgeable sales people; good inventory; reasonable prices; honesty

Table 4 (continuous)

Three New Ideas	Dealer Likes
Wow, this is one cheesy sales pitch; not to mention dishonest, what with it posing as an impartial survey; but then again, dishonesty is what we all expect from used car dealers, isn't it?	Put your inventory on the web; I don't want to have to subject myself to the attentions of rabid salesmen unless I know you have what I want
Blue book values; fair trade in appraisal; longer warranty	
Honesty when selling the car	Low price, low mileage, honest dealer
In shopping for a used car many times, I will buy it from an individual. Mechanic on Warranty did add some credibility; Flags with Acura (well made foreign car, reliable); May be good for some today. Were you going for the flags or Acura in the background?	Information on the car; recently fixed accidents; then warranty if I buy from a dealership
Segment #2 – Oriented Towards A Pleasant Sales Experience	
Travel time to dealer	Competitive price; Dealer warranties & guarantees
	Convenience; friendly informative salespeople that will not try to trick you with numbers; reliable
I don't like to be treated like I don't know what I'm talking about just because I'm a woman. I like to deal with knowledgeable, HONEST sales people	Honesty, Integrity, Customer Service
All markups are high, the advertised price will change when I get there or I won't buy it	Someone who can answer specific detailed technical questions if I am looking at a new car
Haggling	Honesty; fair warranty; service
Cheap cheap cheap	None
I did not like most of your offers, and consider them irrelevant	Auto models, available features (like 100,000 warranty), price.
Big costly BMW	Brand name fancy costs a lot
	No BS no manipulation
Finding a car that actually has rear wheel drive and the balls to go with it; finding a car actually built in America by an American company	No....<expletive> salespeople
People who KNOW the cars they sell, however many different makes and models that may be; It helps when the salespeople know the answers to your questions	Clean, well organized. Well-presented prices, and options clearly marked
I want specs on cars, IE do you have sports cars, do you have lux cars, vans what; I am always looking for sports cars; The other stuff about price and such is good. But when a dealer claims that it has inspected the car, it almost turns me off	I look for sporty cars. And lots of people
	Good selection of the car; I'm looking for prices in the ballpark of what I've seen online or in private sales; intelligent, not-pushy salespeople; clear list of car's features and advertised price
	Good reputation
	Honesty

Findings & Discussion

These results suggest the feasibility of iterative development at the early development stage, using the 'quali-quant' strategy:

1. Effective, low-cost iteration with increasing clarity of understanding is possible with quantitative methods. With the evolution of the Internet it is now possible to merge the power of early stage iteration with the power of quantitative research as revealed by conjoint analysis. The use of simple ordinary least-squares modeling makes the results immediately intuitive as well. Since the experimental design generates utilities whose absolute values are meaningful, the researchers need not worry about the number of concept elements in a study as a complicating factor driving the utility values (REF). Rather, it is possible to compare the utility values across iterations, to get a sense of the true importance of the concept elements as it is re-tested.

2. Self-authoring systems can be used by the researcher without the necessity of extensive training in technology and procedures. As people become increasingly conversant with and comfortable with Internet-based research, it is inevitable that many of today's research techniques will migrate to the Internet. Conjoint measurement is no exception. The research industry in some respects is evolving from a group of experts or knowledge workers feeding insights to clients into

a system whereby anyone can do research. The notion of everyone as a researcher, novel in 1997 (REF), is becoming increasingly clear today as a very viable direction. The development of computer-based wizards, i.e., stepwise templates requiring simple responses, should promote this increasing involvement. One consequent of the empowerment of all to become researchers is that those involved in retailing will be able to solicit the customer's opinions with the same powerful tools that manufacturers currently use. There no longer will be the necessity of years of training to do this research. We should expect to see stronger marketing performance by companies that use a combination of insight and consumer knowledge.

3. Iterative research allows the answers to emerge gradually, with ongoing iteration, rather than forcing the researcher to select from the best of the current alternatives. As this paper suggests, shown, conjoint analysis can incorporate the iterative voyage of discovery into a quantitative tool. Conjoint measurement deals with the complexities of description. Once a positive vein is discovered, wherein the elements perform well, it is in the researcher's interest to mine that promising vein of information, by expanding on winning elements, amplifying their language, while at the same time deleting losing elements. A key benefit of this iterative approach is that the researcher is given sufficient time to digest the information before moving to the next iteration. Thus the research can digress into interesting byways, and potentially discover new ideas and produce new insights as part of the process.

4. Early stage segmentation can guide the iteration exercise because it reveals different promising directions of communications. Early stage research looks at segmentation as pointing to a variety of different and promising veins of features and communications. The segments are the intermediates by which promising elements can be identified. This approach to segmentation as a source of new opportunities focuses on segmentation as a diagnostic about the external world, rather than using the segmentation to understand differences among people. The segmentation is thus a psychological assay of the opportunities that are available.

Impact on the retailer

With the constant evolution of the retail environment, retailers need to have a rapid access to product related information in order to improve customer service and meet customer needs. The procedure described here contains an interactive component and aids the retailer in capturing consumer feedback and targeting.

As indicated elsewhere retailers need to be able to interact with customers in multiple locations and through multiple channels (Wind, et al., 2002). Integrating customer experiences into research designs has helped CarMax to "fine-tune" and to expand the concept of a superstore retailer for used cars to include franchises of new cars. CarMax and its arch rival AutoNation position themselves as providers of haggle-free pricing, used car warranties, in-house financing and a customer friendly environment.

The hybrid combination of focus groups and conjoint analyses into the 'quali-quant' approach more efficiently connects retailers and prospective customers. The open-ended feedback provided by respondents who have just participated in a conjoint analysis exercise is also critical. Such quantitative data provide researchers and vendors with additional information and insights into the mindset of consumers, enrich the knowledge assets of the retailer, and improve the vendors' ability to better articulate the value proposition of their stores and products. The iterations described above are rapid and present a flow where the more promising elements are retained from one iteration to be tested and validated in the next iteration. The overall research result is better, more targeted information about the consumer wants, needs, and reactions to test communications. The overall business results should be improved information from the consumer to help the retailer fill customer's needs.

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