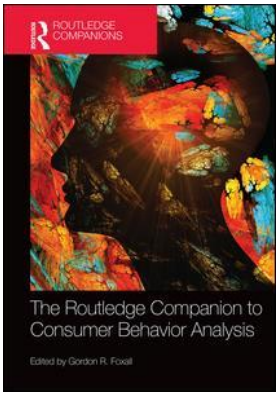

The Routledge Companion to Consumer Behavior Analysis

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What do consumers maximize?

The analysis of utility functions in light of the Behavioral Perspective Model

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Introduction

What do consumers maximize when choosing among products, services, or brands? A common assumption in marketing and economic sciences is that consumers have individual preferences and that their choices reflect such preferences. According to this view, consumers' maximizing behavior would derive from their obtaining the goods or services they prefer at the lowest possible prices. Taking this approach, one might be able to predict consumers' choices, as long as information concerning their preferences was available. For instance, knowing that someone prefers margarine over butter, one can predict that, if prices are the same, the person would maximize utility by choosing margarine over butter.

Although useful in some contexts, this approach has theoretical limitations. When one considers the logic of the usage of the term "preference" (cf. Ryle, 1949), this type of prediction is not really surprising and may, in some situations, even be seen as trivial. To describe someone as preferring margarine to butter is a way of saying that, if offered the opportunity to choose between the two, then the person will choose margarine. Sometimes one does not get to know what the person usually consumes but only what the person says she would choose if given the opportunity. That is to say, in many situations one only knows consumers' stated preferences, which are not necessarily their actual preferences. However, if what the person says about her preferences does not coincide with the choices she makes, we tend to accept what she does rather than what she says (cf. Peters, 1958). For example, questions will be raised if someone who states that she prefers margarine is seen repeatedly choosing butter. Either the person has not been sincere or there are other unknown factors that influence her choices.

Independently of knowing consumers' past choices or their stated preferences, this approach tends, theoretically, to an extreme form of subjective analysis of consumers' preferences in the sense of not pointing to anything that consumers, in general, prefer. Each consumer would have his or her own preferences that remain unknown before we gather information about them. It is a relativistic, *post-hoc* manner of theorizing, which suggests that preferences are totally subjective and cannot be predicted in any way. Preferences can be used to predict choices, but they are not predictable in themselves. This kind of theory does not say anything about why consumers have the preferences they have.

The subjective relativism that permeates this approach limits utility maximization proposals, since the factors that influence preferences and, consequently, utility remain unknown. In the present chapter, we demonstrate how the Behavioral Perspective Model (BPM) can avoid this subjectivism by pointing to variables in the environment that influence the formation of consumers' preferences and, consequently, how utility is maximized. The BPM, by emphasizing the role of situational variables, can be used to locate consumer behavior in space and time, in contrast to the emphasis that has been given to intra-individual variables in current approaches of consumer behavior, which predominantly have adopted social-cognitive frameworks. The proposed conception of utility is much closer to Samuelson's (1965) *revealed preference* but emphasizes not simply observed patterns of behavior but the patterns of reinforcement that shape and maintain them.

The Behavioral Perspective Model

The BPM offers a framework to interpret consumer behavior, largely based on principles derived from behavior analysis, behavioral economics, and marketing (Foxall, 1990/2004, 2002, 2010). According to this perspective, consumer behavior occurs at the intersection of the consumer's learning history and the current consumer behavior setting, producing environmental consequences (reinforcement and punishment). These consequences alter the probability of recurrence of the behavior in similar settings on future occasions. Consumer behavior typically involves both reinforcing and punishing consequences, because the acquisition of goods and services is accompanied by some punishers, such as monetary costs or time investment (Foxall, 2010).

The BPM proposes that consumer behavior is predominantly influenced by two types of consequence: utilitarian and informational reinforcement (and punishment). Utilitarian consequences are directly related to the use or consumption of a given product or service, whose physical characteristics and practical benefits strengthen (reinforcers) or weaken (punishers) the probability of acquiring the product or service. They are mediated by the product or service. For instance, the major utilitarian reinforcement associated with owning a car is to have door-to-door transportation. Informational consequences are mediated by other persons and are similar to what Skinner (1992) identified as social and verbal consequences. Specifically, in the BPM, these consequences are related to symbolic elements of the consumer context, which can be defined as *status* or *social feedback* (either positive or negative) that are associated with a particular purchase (Foxall, 2010). For example, in the case of owning a car, programmed social reinforcement, in the form of social *status*, is usually higher if the car is a Bentley or a Mercedes rather than a Renault, given similar car models. In either case, the consumer would get door-to-door transportation (i.e., the basic utilitarian reinforcement), but owning a prestigious car make is likely to increase social admiration and approval.

Consumer responses, such as searching, purchasing, and consuming, are followed by utilitarian and informational consequences, which may increase or decrease the probability of similar responses occurring in similar situations in the future. Features and dimensions of such situations that become associated with utilitarian and informational reinforcement (or punishment) become discriminative stimuli in the behavior setting whose presence increases (or decreases) the probability of a consumer response. Associations between elements of the setting and the respective consequences constitute the learning history of each consumer.

In the case of utilitarian and informational reinforcement, generally the more the consumer obtains of them, the better. The model predicts that consumers prefer products, services, and brands that offer higher levels of utilitarian and informational reinforcement to those that offer

lower levels. From this, one can consider that the model predicts that consumers maximize utility via increases in utilitarian and informational reinforcement obtained from products and services, and decreases in utilitarian and informational punishment associated with products and services.

Before presenting a utility function based upon the BPM, it seems appropriate to explore some features of utility maximization models in general, introducing some basic concepts used in microeconomics.

Utility maximization

In consumer demand theory in microeconomics, consumers' preferences are usually represented as choices between different quantities of commodities.[1] Assuming that consumers have limited income, the amount spent on each commodity may influence directly the amount that can be spent on the others. Indifference curves, such as those shown in Figure 12.1, represent graphically possible commodity bundles; that is, combinations of quantities of two commodities that are equivalent to the consumer. The figure shows commodity bundles that combine quantities of products (or services or brands) *X* and *Y* and three indifference curves.

Each indifference curve (i.e., I_1, I_2, and I_3) contains commodity bundles that would give the consumer the same level of utility (i.e., "satisfaction", "happiness", "reinforcing value"). So, for instance, points *L*, *N*, and *J*, which are all located on I_1, give the same level of utility. Suppose that *J* represents a bundle formed of six units of *Y* and two units of *X*, whereas *L* represents a bundle formed of two units of *Y* and four units of *X*, but they are on the same indifference curve, I_1. The consumer would be indifferent to whether they obtained bundle *J* or *L*. Typically utility increases as the curve is farther from the origin; that is, the level of utility represented by bundles on I_3 is higher than the utility on I_2, which, in turn, is higher than on I_1. So, utility is higher in *M* than in *K*, which is higher than in *J*, *N*, and *L*. Based upon the assumption that more is better, the best alternative to the consumer would then be to consume bundles on the highest indifference curve (i.e., I_3).

However, this is not a possible alternative due to budget restrictions. The straight line *xy* represents the budget line; that is, how much the consumer can spend on commodities *X* and *Y*. If it is assumed, for example, that the consumer has a budget of US$10 and that each unit of *X* and *Y* costs US$2 and US$1, respectively, all possible combinations of quantities of *X* and *Y* are on the budget line, ranging from spending all on *X* (i.e., nothing on *Y*) to spending all on *Y* (i.e., nothing on *X*), which are the extreme points of the budget line (*x* and *y*). With this budget, the consumer cannot afford any bundles on I_3.

Another relevant characteristic of typical indifference curves (i.e., those for commodities that are partially substitutable) is that the more the consumer has of commodity *X*, the more the consumer is likely to give up units of *X* to obtain units of *Y*; and vice versa, the more the consumer has of *Y*, the higher the propensity to give up units of *Y* to obtain units of *X*. This is why indifference curves are curved and convex to the origin. This propensity to substitute one commodity for the other gives the *marginal rate of substitution* and can be measured by the slope of the indifference curve

According to this approach, the optimum consumer choice would be to consume bundles on the highest possible indifference curve that can be reached with the available budget. In the example given, this occurs at point *K*, where the budget line is tangent to the highest indifference curve it can reach, which is I_2, and where the slope of the budget line equals the slope of the indifference curve.

An advantage of adopting this economic framework is that it offers a set of integrated assumptions, concepts, and equations to interpret choice phenomena. For example, adopting a

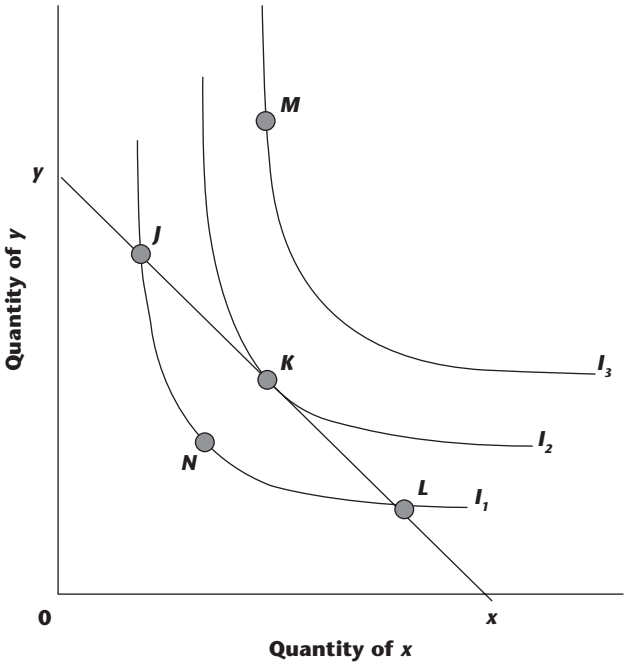

Figure 12.1 Indifference curves and budget constraint

Cobb-Douglas function, which is commonly employed in microeconomics, the utility function would be:

$$U_{(x,y)} = x^a y^b \tag{1}$$

where U represents utility, x is the quantity of commodity X, y is the quantity of commodity Y, and a and b are empirically obtained parameters. The two parameters could be reduced to one, by adopting a monotonic transformation of the Cobb-Douglas function, which has the same values of parameters (i.e., a and b; consequently, indifference curves would be the same), taking a and b to the $1/a+b$ power (Varian, 2010). The exponents would become $a/a+b$ and $b/a+b$, which would be equivalent to:

$$a = 1 - b \tag{2}$$

The budget line for the function is:

$$m = p_x x + p_y y \tag{3}$$

where p_x and p_y stand for the price of X and Y, respectively, and m is income.

Maximization of the function will occur when the marginal rate of substitution (slope of the indifference curve) is equal to the slope of the budget line; that is, when:

$$\frac{a}{b}\frac{y}{x} = \frac{p_x}{p_y} \tag{4}$$

This set of concepts and equations enables the calculation of the values of parameters a and b, which give the solution to the utility function (Equation 1).

Utility maximization and the BPM

In typical applications of demand theory, commodities *X* and *Y* are products, such as hamburgers and ice cream, or potatoes and beef steaks. Commodities bundles would be, for example, various combinations of quantities of hamburgers and ice cream. The curvature of indifference curves is easily understood with concrete examples, such as choice between hamburgers and ice cream: the more units of hamburger one has, the higher the propensity of trading units of hamburger for units of ice cream; that is, the higher the marginal rate of substitution.

We have noted that, according to the BPM, consumers' choices are influenced by the utilitarian and informational consequences that a given behavior produces in similar occasions, and that utility would, on this assumption, be a function of the quantity of obtained utilitarian and informational reinforcement. Rather than choosing among different quantities of products (or services or brands), consumers would be choosing among different quantities of utilitarian and informational reinforcement offered by different products (or services or brands). In the utility maximization framework presented in Figure 12.1, commodities *X* and *Y* would be utilitarian and informational reinforcement obtained by purchasing or consuming products, services, or brands.

This change in interpretation suggests that, for example, when looking for a car to buy, a consumer might actually be searching for a means of transportation that is comfortable, speedy, and safe, which are typical utilitarian consequences of owning a car. The person might also be looking for social recognition and status, because owning a car, in some social circles, might also generate social admiration and approval. However, if public transportation can offer comfortable, speedy, and safe means to move around, a consumer may choose this type of transportation instead of buying a car. Here the consumer is obtaining similar quantities of utilitarian reinforcement and, most likely, spending less money. Depending upon the consumer's social environment, using public transportation might also produce more social approval than owning a car, particularly in groups that value environmentally friendly acts. But even if owning a car is valued in one's social group, the consumer may decide to trade informational reinforcement for utilitarian reinforcement, considering, among other things, that using public transportation is cheaper (i.e., budget restrictions).

The same type of analysis would apply to simpler daily choices, such as choosing between eating, as a snack, chocolate cookies or fruit. The utilitarian reinforcement of having the cookie, derived from its sweet taste, may be greater than that obtained by eating an apple. However, informational reinforcement, in the form of social approval concerning health and looks, may be higher for eating the apple than the cookie. The consumer would choose a bundle that maximizes the combination of quantities of utilitarian and informational reinforcement.

This also applies to brand choice. When deciding between two different brands of baked beans, for example, a famous, high-quality, well-known brand would offer a high level of informational reinforcement, whereas a supermarket own brand, positioned as being cheap, gives little social reinforcement. Different formulations of the brand would offer different levels of utilitarian reinforcement, such as baked beans with or without sausages. Within budget restrictions, the consumer would choose certain combinations of quantities of utilitarian and informational reinforcement offered by the available brands.

Considering that utilitarian and informational reinforcement are part of the environment, this interpretation reduces the subjectivism of current utility maximization analyses. Attributes of products and services that function as utilitarian reinforcement are objectively identified and usually the theme of advertisements. So, for example, if a given model of car has air-conditioning and a more modern engine that consumes less fuel and is more powerful than its rivals, this

would be known to the manufacturer and therefore widely publicized to consumers. These features would, most probably, also justify the establishment of a higher price for that type of vehicle.

The same is true of other factors associated with products and services that have utilitarian reinforcing properties. Packaged food items that have additional features added to their basic versions include baked beans with sausages, juice made from organic fruits, diet or lite versions of chocolate, cookies or yogurt, and double chocolate layers for cookies. Hotel services may offer additional utilitarian benefits, such as parking, breakfast, or airport transportation. One important characteristic of utilitarian reinforcement is its specificity relative to each product or service category. Due to its association with functional benefits, each product or service category has its own possible sources of utilitarian features. The features that can be added to cookies are of a different kind than those that can increase the utilitarian level of soups or butters. Attributes of cars are different from those that can be added to flats or to bicycles or to hotels. Each category presents its own possible utilitarian sources of reinforcement. Moreover, the reinforcing or punishing functions of utilitarian features will depend upon certain circumstantial variables surrounding consumers, such as regional preferences, cultural eating habits, and regional weather. Despite the programmed utilitarian contingencies offered by the market, different consumers may be differently influenced by such programmed contingencies.

The level of utilitarian reinforcement offered by different products has been measured using a dichotomous variable to indicate a lower or higher level of utilitarian reinforcement (Foxall et al., 2004; Oliveira-Castro et al., 2008; Cavalcanti et al., 2013). The level of programmed reinforcement was defined by analyzing the marketable features of each product category, which are usually apparent on the package and item description. They were then classified into two levels, offering higher or lower utilitarian reinforcement. The kind of scale to be used is relative to the main research interest. A measure with multiple levels could be adopted if it is possible and convenient to develop a scale with more points. If one were to classify car models, for instance, motor engines and bundles of accessories could be the base for scaling utilitarian features in several levels.

In the case of informational reinforcement, the main source of consequence is the social environment. This type of consequence is derived from feedback to consumer responses. Purchasing a product of a well-known, high-quality brand is likely to be followed by social manifestations of approval and admiration, functioning as social reinforcement. Similarly, buying an unknown brand of questionable quality might be accompanied by negative and doubtful comments concerning the deal, which will function as social punishment. These social contingencies can be measured in different ways. For example, previous research has measured the level of informational reinforcement programmed by different brands by examining the positioning of the brands in terms of their market amplitude (i.e., multinational, national, or regional) and pricing (i.e., premium, medium, or own brand) (Foxall et al., 2004). Another measurement of informational reinforcement adopted a simple questionnaire which asked respondents to rate the quality level and familiarity of brands (Oliveira-Castro et al., 2008; Pohl & Oliveira-Castro, 2008). The application of a questionnaire functions as a probe to investigate existing social contingencies, in the sense that brands that consumers consider to be well known and having high quality are those whose purchases are more likely to be followed by social approval.

In general, informational reinforcement may be similar across different products and services, considering that in all of them such reinforcement would be associated with social approval or *status*. Despite such a general characteristic, specific types of informational reinforcement are programmed by specific groups of people. An environmentalist group would, for instance, approve the use of bicycles and condemn the use of large SUVs, whereas among many other groups of people a large expensive car would confer high social *status*. Therefore, depending on group characteristics, different types or variations of products and services will bring social approval and *status*.

Maximizing utilitarian and informational reinforcement

Oliveira-Castro et al. (2015) tested the adequacy of this utility maximization framework in the context of brand choice. The authors used consumer panel data containing information from more than 1,000 consumers purchasing four products during 52 weeks. The data were divided into three periods of 17 or 18 weeks each, with the purpose of testing the reliability of parameters and individual differences. All brands purchased in the panel had their level of utilitarian reinforcement defined as higher or lower, according to additional attributes or a more sophisticated formulation they offered (cf. Foxall et al., 2004). So, less sophisticated formulations of a product, for example rich tea biscuits, were ranked as offering a lower utilitarian level of reinforcement (equal to 1), whereas more sophisticated formulations, such as chocolate chip biscuits, were ranked as offering a higher level of utilitarian reinforcement (equal to 2).

Informational reinforcement programmed by each brand was measured using a questionnaire, which asked respondents to state, on a four-point scale, the level of familiarity (e.g., this brand is "not known at all" to "very well known") and quality (e.g., this brand has "unknown quality" to "high quality") of each brand (Oliveira-Castro et al., 2008). These respondents were not part of the consumer panel and formed a convenience sample of persons that had lived most of their lives in the United Kingdom. Four questionnaires were used; one for each of the products investigated. Each questionnaire included, for each product, all the brands purchased by the sample of consumers in the panel, after filtering for attributes that are more related to utilitarian reinforcers than informational reinforcers. Then, variations of pack sizes and product formulations (e.g., plain baked beans vs. baked beans with sausage; rich tea cookies vs. chocolate chip cookies; plain baked beans vs. organic) by a given brand name were all classified as the same brand. Brand names that belonged to a more general brand but differed with respect to their positioning were classified as different brands (e.g., Asda vs. Asda Smart Price; Tesco vs. Tesco Value). The same group of respondents answered the questionnaires about baked beans (23 respondents), fruit juice (22 respondents), and yellow fats (22 respondents), whereas another group (33 respondents) answered the questionnaire about cookies. The main reason for this separation was the number of brands in each category. The questionnaire for cookies included 315 brands, whereas for baked beans, fruit juice, and yellow fats, the numbers of brands were 45, 99, and 89, respectively.

To obtain one informational level score for each brand, the mean score for knowledge and quality was calculated for each respondent and for each brand. The averages of these mean values were then calculated for each brand across all respondents, referred to as *MKQ* hereafter. A reliability analysis of MKQ was conducted by randomly assigning questionnaire respondents into two or three groups of approximately equal sizes, whose average MKQ given to each brand was correlated (Pearson) across all brands (*N* ranged from 45 for baked beans to 315 for cookies). Correlation coefficients between scores obtained by pairs of groups, three pairs for cookies and one for each of the other products, ranged from .872 to .984, showing acceptable reliability. According to this procedure, a value of MKQ was attributed to each brand purchased on each shopping occasion by each consumer in the panel data. For instance, Heinz™ baked beans was given a value of MKQ equal to 2.957, whereas Asda Smartprice™ baked beans received an MKQ equal to 1.065.

Having defined the levels of utilitarian and informational reinforcement offered by each brand, the next step was to estimate the prices of utilitarian and informational reinforcement. This is required to calculate parameters of the utility function (Equation 1), since maximization is dependent upon consumers' budgets, which is defined in terms of the quantity bought and price paid of each commodity (i.e., utilitarian and informational reinforcement), as shown in

Equations 3 and 4. Considering that the prices of products and services are not explicitly defined in terms of utilitarian and informational reinforcement, these prices were estimated based upon the changes in prices associated with changes in the levels of utilitarian and informational reinforcement. This was accomplished using the following linear regression:

$$PU_{ci} = m\ UTI_{ci} + n\ INF_{ci} \tag{5}$$

where *PU* refers to the price per unit of measure (e.g., 100 g), *UTI* and *INF* stand for the level of utilitarian and informational reinforcement of the brand bought, *m* and *n* are empirical obtained parameters, and subscripts *c* and *i* refer to each consumer and each shopping occasion, respectively. Parameters *m* and *n* can be used to estimate how product prices change with changes in utilitarian and informational reinforcement, and the ratio *m*/*n* can be interpreted as an estimate of the proportion of utilitarian and informational prices in the market, as follows:

$$\frac{p_{1c}}{p_{2c}} = \frac{m}{n} \tag{6}$$

where p_{1c} and p_{2c} refer, respectively, to the average prices of utilitarian and informational units paid by each consumer, calculated across all shopping occasions during each 17-week period. Combining Equation 6 with the following adaption of Equation 3, it was possible to calculate p_{1c} and p_{2c}:

$$I_C = p_{1c}x_{1c} + p_{2c}x_{2c} \tag{7}$$

where I_c refers to the total amount spent by a given consumer across all shopping occasions of a given period, a *proxy* of *income*, and x_{1c} and x_{2c} stand for the average quantity bought of utilitarian and informational reinforcement by each consumer during a given 17-week period. The values of x_{1c} were obtained with the following formula:

$$x_{1_c} = \frac{\sum_{i=1}^{n}\left(q_{ci}UTI_{ci}\right)}{\sum_{i=1}^{n} q_{ci}} \tag{8}$$

where q_{ci} refers to the quantity of product bought (e.g., grams or milliliters) by each consumer on each shopping occasion. The variable *UTI* and the subscripts *c* and *i* are as previously defined. Then, Equation 8 was calculated across all shopping occasions of a given consumer, for each period and for each product. The values of x_{2c}, i.e. the average quantity bought of informational reinforcement, were calculated analogously:

$$x_{2_c} = \frac{\sum_{i=1}^{n}\left(q_{ci}INF_{ci}\right)}{\sum_{i=1}^{n} q_{ci}} \tag{9}$$

Therefore, after calculating the values of I_c, x_{1c}, and x_{2c}, and assuming that p_{1c} is equal to $(p_{2c}.m/n)$, from Equation 6, it was possible to calculate p_{2c} using Equation 7 and p_{1c} from Equation 6. These were calculated for each period of each consumer buying each product category.

These values of x_{1c}, x_{2c}, p_{1c}, and p_{2c} were then used to calculate the parameters of the utility function from Equation 4. This was done using a linear regression through the origin, calculated across consumers within a given period, whose slope was equal to *b*/*a*. By combining this value of the slope with Equation 2 (i.e., $a = 1 - b$), it was possible to obtain the values of *a* and *b*, Equation 1, for each period of each product category.

The results indicate that Equation 4 fitted the data very well, with all values of r^2 above .74. The values of parameters *a* and *b* obtained for Equation 1 were specific for each product category and consistent for the same product across time periods, showing *a* always larger or always smaller than *b*, with the exception of one out of 12 cases, probably due to effects of market price increases.

The analyses based upon this model enable the calculation of the level of utility obtained by each consumer buying each product during each time period. With such information it is possible to examine whether individual differences in utility level for each product are stable across time. To do this, Pearson correlation coefficients were calculated, relating the level of utility obtained by each consumer, on each product category, in the first and second, second and third, and third and first periods. The results indicated that all correlation coefficients were all significant and higher than .80, except for biscuits, whose coefficients were all significant and higher than .60. These results demonstrate that individuals differ with respect to the level of utility they obtain by buying each product and that such differences are stable and consistent across time. It is reasonable to suppose that such differences may be related to income level, considering that consumers with higher income can obtain higher levels of utility, since products and brands offering higher levels of utilitarian and informational reinforcement are typically more expensive.

The temporally consistent values of parameters *a* and *b* demonstrate the reliability of the proposed measures and suggest that these values can be used to estimate the importance or weight of utilitarian and informational reinforcement in generating utility for consumers when purchasing each product category. This finding has several managerial implications, such as information concerning the type of marketing strategy that is more promising to each product category; for example, it could help managers in deciding if they should invest more in innovation concerning product attributes (utilitarian reinforcement) or in brand differentiation (informational reinforcement).

Conclusions

This adaption of a standard utility maximization model for the analysis of consumers' brand choices made it possible to measure the average level of utility, calculated across consumers, obtained in buying each product category. The results indicate that consumers obtain, on average, significantly different levels of utility when buying specific products, in the following order: biscuits higher than baked beans, baked beans higher than yellow fats, and yellow fats higher than fruit juice. Such results might be very useful in the analyses of inter-category choices and money allocation. When consumers decide how much to spend in each product category, their choices might be influenced by the level of utility they can obtain from purchasing each product. Given an equal amount of money to spend between two products, it is reasonable to suppose, *ceteris paribus*, that consumers will allocate resources to the product that generates higher utility. In the same vein, it would be interesting to investigate possible relations between utility levels across products and elasticity of demand. More inelastic demand would be expected for consumption of products that bring higher levels of utility, *ceteris paribus*.

The application of this utility maximization model to brand choice produced encouraging results in showing that the BPM may constitute a theoretical framework to explain consumer utility functions. The possibility of identifying and measuring programmed utilitarian and informational reinforcement can reduce the level of subjectivity inherent in current consumer behavior interpretations. Although individual differences in consumption will not be totally eliminated, considering that programmed contingencies may influence different consumers

differently, preferences will not be interpreted as subjective and unexplainable. Questions about what makes some features reinforcing to some individuals and not others still need to be answered, and the model suggests that those answers will be found in consumers' past experiences with different attributes and products. But, according to the analysis proposed here, given certain programmed utilitarian and informational contingencies, much can be predicted about consumers' preferences. Attributes that function as utilitarian and informational reinforcements usually do so for the majority of consumers, although not necessarily for all of them.

This can be conceived as an intermediate level of explanation, filling the gap between total subjectivism (i.e., each consumer has preferences whose sources are unknown) and total objectivity (i.e., given such contingencies will all behave in such a way). Much of what marketing managers do is related to identifying what is considered to be important or desirable for different segments of consumers. The BPM provides a framework that is useful in executing such a task by pointing to different types of consequences that influence consumers' choices, namely consequences derived from consumers' social environment and consequences generated using products and services.

Note

1 Introductions to utility functions are readily available in foundational economics texts such as Samuelson and Nordhaus (2009). Very accessible intermediate treatments can be found in Estrin et al. (2012) and Varian (2010). A key advanced treatment is that of Rubinstein (2012). For an informative discussion in terms of the development of economic theory and cognitive science, see Ross (2005). Staddon (2001) provides an illuminating account in the context of behavior theory, and Glimcher (2011) in that of neuroeconomics.

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