**What Makes Consumers Pay More for National Brands than for Store Brands --- Image or Quality?**

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## ABSTRACT

Private labels or store brands have become a major force to reckon with in grocery products. They account for over one-fifth of total volume sales in the United States and are growing faster than national brands. Generally, prices of national brands are higher than store brand prices. Therefore, a consumer would purchase the national brand (store brand) if the premium s/he is willing to pay for the national brand over the store brand is more (less) than the actual price differential between the two brands. Thus our understanding of why some consumers purchase national brands and others purchase store brands would be enhanced by gaining insights into why consumers are willing to pay a price premium for national brands over store brands.

In this study, I attempt to understand why consumers are willing to pay a higher price for national brands than for store brands in grocery products. Is it because of perceived quality differential or non-quality utility? Non-quality utility is defined as the price premium that consumers would pay for a national brand over a store brand even when they perceive the quality of the two brands to be the same. The utility arises from positive brand image, brand associations, or brand equity.

The study draws upon a general utility framework and develops an econometric model for separating the total price premium that consumers are willing to pay into three components – perceived quality differential, quality sensitivity, and non-quality utility. The econometric model is estimated using a survey that collected information on what consumers reported that they are willing to pay for national brands vs. store brands. The data set consists of 2237 observations from 132 consumers on 20 grocery products.

The key qualitative insight is that perceived quality differential and non-quality utility or brand image dominate in different stages of the purchase process. Perceived quality differential or acceptable store brand quality is the primary driving force in a consumer's decision to participate in or consider store brand purchase. However, when it comes to deciding how much more to pay for national brands over store brands, brand image or brand equity is the dominant factor. In fact, consumers will pay a reasonable premium for national brands even if they perceive the national brand and store brand to have the same quality. This finding represents good news for national brand managers because it allows them to command a reasonable price premium even when retailers close the quality gap. National brand managers should maintain and increase their brand's equity through frequent and effective advertising and other equity-enhancing strategies.

Retailers should recognize the importance of national brand equity and set their price differential appropriately. Just because retailers have closed the quality gap does not mean that they can close the price gap and maintain a low price differential. They should also not set the price differential too high and charge a low price for store brands since low prices may create negative brand associations for the store brand. The paper also discusses several other finding and their implications for segmentation and promotion strategies for both manufacturers and retailers.

# INTRODUCTION

Private labels or store brands have become a major force to reckon with in grocery products. Private labels account for about one-fifth of total volume sales in the United States, one-fourth in Canada, and an even greater proportion in Europe (Hoch and Banerji 1993; Dunne and Narasimhan 1999). The Private Label Manufacturers Association (PLMA) website reports that store brand sales in grocery products in the United States have grown from $34 billion in 1994 to $43.3 billion in 1998, outpacing national brand growth.

Central to our understanding of the private label phenomenon is the question – why do some consumers purchase national brands and others purchase store brands. When faced with a choice between the two brands at the retail outlet, a consumer's decision can be stated as follows. Generally, prices of national brands are higher than store brand prices. Suppose the price of a national brand is $1.00 and the price of a store brand is $0.80. Then, the price differential is 20 cents. If a consumer is willing to pay more than 20 cents premium for the national brand, ceteris paribus, s/he will buy the national brand. If a consumer is unwilling to pay the 20 cents premium, s/he would purchase the store brand. More generally, a consumer would purchase the national brand (store brand) if the premium s/he is willing to pay for the national brand over the store brand is more (less) than the actual price differential between the two brands. Thus our understanding of why some consumers purchase national brands and others purchase store brands would be enhanced by gaining insights into why consumers are willing to pay a price premium for national brands over store brands. The distribution of price premium or reservation price differential has also been of substantial interest to analytical modelers (e.g., Rao 1991) in determining equilibrium pricing and promotion strategies.

Why are consumers willing to pay more for national brands than for store brands? It has been traditionally believed that national brands are of relatively higher quality than store brands. So, an obvious answer to why consumers pay more for national brands is that consumers perceive the national brands to be higher in quality. Recently, however, retailers have given greater importance to quality of store brands and have attempted to close the quality gap. For instance, in a 1991 Gallup survey, 67% of consumers (up from 42% in 1984) reported that "store brand items usually perform as well or taste as good as nationally advertised brands" (Fitzell 1992, p.148). The PLMA website reports that in a more recent (1999) Gallup study, 75% of consumers ascribed the same level of product quality to national brands and store brands. Yet, national brands continue to command some premium even in commodity products (e.g., milk, flour) suggesting that consumers derive utility from the national brand beyond what is dictated by quality. Thus the premium consumers are willing to pay for national brands over store brands can arise from three sources:

(i) Consumers may believe that there is quality difference between national brand and store brand that warrants payment of a higher price for national brand

(ii) Consumers may not necessarily feel that quality difference is high, but they may be very sensitive to quality changes and so they are willing to pay a higher price for national brand.

(iii) Consumers may believe that there is little difference in quality between national brand and store brand on average, but may still want to pay a higher price for national brand simply because of their familiarity, imagery or other positive associations with national brands that go beyond quality perceptions.

These three possibilities provide the motivation for this paper. In particular, we attempt to address the following questions:

1. *Can we separate the premium that consumers are willing to pay for national brands over store brands into three components arising from:*

   (i) *Perceived Quality Differential,*

   (ii) *Quality Sensitivity*

   (iii) *Utility beyond what is explained by average perceived quality difference – we call it "Non-Quality" Utility*

2. *Based on the above separation, can we understand why some consumers are willing to pay more for national brands than for store brands? Is it because of perceived quality differential, quality sensitivity, or non-quality utility?*

The growth of private labels over the last decade has generated substantial research covering a wide array of topics. However, to the best of our knowledge, past research has not addressed these issues.

Answers to the above questions can have important implications for manufacturers and retailers. If quality is the dominant reason why consumers pay more for national brands, then both national brand manufacturers and store brand managers should focus on the product and try to improve their physical and perceived quality. If non-quality factors dominate, then managers should focus on image-building strategies such as advertising.

By analyzing why consumers pay a premium for national brands over store brands, our research also contributes to the literature on brand equity. Brand equity is one of the most important concepts arising from the eighties and has been shown to be positively related to market share, return on investment, and stock-market value (Aaker 1991, Kerin and Sethuraman 1998). The concept has been defined in multiple ways. At the consumer level, it has been defined as the set of associations and behaviors on the part of the customers that permits a brand to earn greater volume or margins (Marketing Science Institute definition, as reported in Keller 1998, p. 43). Thus brands with positive customer-based brand equity should be able to command a price premium over other comparable brands. This notion of brand equity as the premium consumers pay for a brand has been used to measure equity by academic researchers (e.g., Park and Srinivasan 1994) and research firms such as Intelliquest and McKinsey&Co (The Wall Street Journal 1993). This dollar-metric approach to measuring brand equity has been found to be one of the best for predicting brand choice and market shares (Agarwal and Rao 1996).

Our paper adapts the dollar-metric approach and estimates the shared brand equity enjoyed by national brands over store brands for each individual consumer and each product category. With private labels closing the quality gap, the strategy for survival and growth of national brands will ultimately depend on their ability to maintain and enhance their brand equity. Measuring national brand equity and identifying which type of consumers have higher or lower brand equity can help brand managers focus on the right consumer segments and design appropriate marketing strategies.

The paper is divided as follows. First, we draw upon a general utility framework and develop the econometric model for separating total price premium that consumers are willing to pay into the three components – perceived quality differential, quality sensitivity, and non-quality utility. Second, we describe the survey used for collecting data and estimate the model – the survey collected information on what consumers reported that they are willing to pay for national brands vs. store brands, not what they actually paid. The data set consists of 2237 observations from 132 consumers on 20 grocery products. Third, we analyze the estimates from the model and obtain several insights. Fourth, we provide some strategic implications of our findings. Finally, we conclude by discussing the limitations and directions for future research.

## FRAMEWORK AND ECONOMETRIC MODEL

The econometric model for separating quality and non-quality premium is derived from the basic utility theory framework, which we describe first.

### Utility Framework

We start with the conventional utility model involving price and quality and define the utility (V) for national brand (NB) like in Blattberg and Wisniewski (1989) as:

(1) $V_{NB} = \beta Q_{NB} - P_{NB}$, where

$Q_{NB}$ is the quality of national brand and $P_{NB}$ is the price of national brand. Coefficient $\beta$ is consumer's desire for quality or quality sensitivity relative to price sensitivity taken as 1. We will call the non-price term $\beta Q_{NB}$ as non-price dollar-metric utility, $U_{NB}$. Equation (1) suggests that the non-price utility arises exclusively from quality of the national brand. However, literature on brand loyalty/equity suggests that brand strength or equity can arise from factors other than quality. In particular, Aaker (1991, p. 17) states that, besides quality, brand equity or consumer's utility for a brand may arise from loyalty, awareness, brand image and brand associations. We believe this non-quality utility is a particularly important consideration in the context of national brand vs. store brand competition since national brands are considered the "image" brands while store brands are considered the "no-frills" price brands. To incorporate the non-quality strength, we introduce an intercept term ($\alpha_{NB}$) in the utility equation as follows:

(2) $U_{NB} = \alpha_{NB} + \beta Q_{NB}$.

The intercept ($\alpha_{NB}$) can have several interpretations. From an economic utility standpoint, it can be thought of as "intrinsic" utility or preference for the brand. From a marketing standpoint, an intercept term has been used to capture consumer-level brand loyalty or equity (e.g., Jedidi, Mela and Gupta 1999, Kamakura and Russell 1993). At an aggregate level, the term has been used to represent national brand strength (e.g., Raju, Sethuraman and Dhar 1995).

Equation (2) is similar to Park and Srinivasan's (1994) separation of attribute and non-attribute based equity in a general context. Their model (3) can be written in our context as $U_{ik} = n_{ik} + f(S_{ik})$ where $U_{ik}$ is utility or preference of consumer i for brand k (similar to $U_{NB}$ in our model). Coefficient $n_{ik}$ is the non-attribute based utility (analogous to $\alpha_{NB}$ in our model); function $f(S_{ik})$ is the dollar-metric value of attributes based on their perceived levels (analogous to $\beta\, Q_{NB}$ in our model). While Park and Srinivasan (1994) use multiple attributes, consistent with our research focus and existing literature on national brand vs. store brand competition, we consider quality as the primary composite attribute.

Corresponding to Equation (2), we can write the utility for store brand (SB) as

(3) $U_{SB} = \alpha_{SB} + \beta\, Q_{SB}$ .

From Equations (2) and (3), we can state that a consumer will buy the national brand if

(4) $U_{NB} - U_{SB} = (\alpha_{NB} - \alpha_{SB}) + \beta\, (Q_{NB} - Q_{SB}) > P_{NB} - P_{SB}$ , and store brand otherwise.

$U_{NB} - U_{SB}$ is the utility differential, reservation price differential or the price premium consumers are willing to pay for national brands over store brands – for brevity, we will simply call it *Premium*. Expression $(\alpha_{NB} - \alpha_{SB})$ represents the utility not directly associated with quality – we call it simply as *non-quality utility or non-quality premium*, $\alpha$. Expression $\beta\, (Q_{NB} - Q_{SB})$ is the quality-based utility or *quality premium*. It is influenced by *quality sensitivity* ($\beta$) and *perceived quality differential* ($QD = Q_{NB} - Q_{SB}$). Thus Equation (4) can be written as:

(5) $\quad Premium = \alpha + \beta\, QD$ .

Equation (5) forms the basis for developing the econometric model.

**Econometric Model**

The econometric model is developed by taking a multiple-consumer, multiple-category perspective. From Equation (5), the premium consumer i is willing to pay for national brand over store brand in product category j can be written as:

(6) $\quad Premium_{ij} = \alpha_{ij} + \beta_{ij}\, QD_{ij}$

Equation (6) cannot be estimated since two parameters ($\alpha_{ij}$, $\beta_{ij}$) are to be measured for each i, j observation. So, we decompose the non-quality utility of i'th consumer for product j as

$\alpha_{ij} = \alpha^c_i + \alpha^p_j$ , where (the superscript c and p denote consumer and product, respectively):

$\alpha^c_i$ = non-quality utility or premium that is unique to consumer i but invariant across products.

$\alpha^p_j$ = non-quality premium that is unique to product j but invariant across consumers.

This decomposition is similar in spirit to the ones used in experimental designs where the effect due to two treatments i, j are decomposed into (main) effect due to treatment i and effect due to treatment j. Here, the two "treatments" are product and consumer. The decomposition reduces the number of estimates while capturing variations due to consumer and product differences.

Similarly, we decompose the quality sensitivity of i'th consumer for product j as

$\beta_{ij} = \beta^c_i + \beta^p_j$ , where

$\beta^c_i$ = quality sensitivity of consumer i that is invariant across products for the consumer.

$\beta^p_j$ = quality sensitivity unique to product j and invariant across consumers.

Based on the decomposition, we can rewrite Equation (6) as follows:

(7) $\text{Premium}_{ij} = \alpha^c_i + \alpha^p_j + (\beta^c_i + \beta^p_j)\, QD_{ij}$

Equation (7) can be estimated using linear regression by creating appropriate dummy indicator variables for consumers and products as follows:

(8) $$\text{Premium}_{ij} = \sum_i \alpha^c_i\, \text{CONSUMER}_i + \sum_j \alpha^p_j\, \text{PRODUCT}_j + \sum_i \beta^c_i\, \text{CONSUMER}_i\, QD_{ij} + \sum_j \beta^p_j\, \text{PRODUCT}_j \,.\, QD_{ij} + \text{Error, where}$$

$\text{CONSUMER}_i$ = Dummy indicator for i'th consumer = 1 for i'th consumer, and 0 otherwise.

$\text{PRODUCT}_j$ = Dummy variable indicator for j'th product = 1 for j'th product, and 0 otherwise.

For estimating Equations (8), we need data on (i) perceived quality differential between national brands and store brands and (ii) premium consumers are willing to pay for national brands over store brands from several consumers for several products. In the case of n consumers and N products, there are nN observations and 2(n+N) parameters to be estimated. In the next section, we describe the survey we use to obtain the data and the estimation procedure.

## DATA AND ESTIMATION

### Measures and Sample

We measure perceived quality differential and premium willing to pay for national brands by directly asking consumers through a survey. Survey-based methods are often used in understanding brand choice and price sensitivities (e.g., Bucklin and Srinivasan 1991; Dillon and

Gupta 1996). Self-explicated approaches to customer preference structure measurement have also been found to have high robustness and predictive validity (Park and Srinivasan 1994).

In each selected product category, we ask the consumer to focus on the national brand that they are most familiar with and a private label or store brand in the retail store that they frequently shop. Because our econometric model is based on observations across multiple consumers (i) and multiple product categories (j), we construct measures of perceived quality differential and price premium that are comparable across consumers and product categories.

We measure perceived quality differential between national brand and store brand as follows: We state to the consumers that the quality of national brand is 100 and ask them to rate the quality of the store brand on a scale between 0 and 200 with intervals of 10 (0 being much worse than national brand, 100 being equal to national brand, and 200 being much better than national brand). If X is the quality of the store brand perceived by the consumers, quality differential is computed as QD = 100 - X. The quality differential measure can range from –100 to +100. Since we are interested in consumers' opinions/perceptions rather than actual knowledge, respondents are encouraged to answer the comparison questions even if they have not bought a national or a store brand, but have an opinion about it. They were asked to omit a product category if they do not purchase the product or do not have an opinion.

The reservation price differential is measured in a similar manner. We state that the normal purchase price of the national brand in a product category is 100 . We ask respondents to indicate on a scale ranging from 0 to 200 (with intervals of 10), the maximum price they will pay to purchase the store brand – for example, a score of 90 would mean they are willing to pay a 10%

premium for the national brand (100-90). If Y is the price they say they would be willing to pay for the store brand, then the premium consumers are willing to pay for the national brand is computed as PREMIUM = 100 - Y. Thus the premium expressed as a percentage of national brand price can range from -100% to +100%. Note that the measure of reservation price differential is based on what consumers reported that they are willing to pay for national brands vs. store brands, not what they actually paid.

A sample of 350 randomly selected households from a medium-sized metropolitan area received the questionnaire. Respondents received $10 for completing the questionnaire. The respondents were asked to provide their perception of quality differential and premium willing to pay for 20 selected grocery products: *Aluminum Foil, Analgesics, Liquid Bleach, Cake Mix, Cold Cereal, Processed Cheese, Ground Coffee, Cookies, Dishwashing Liquid, Dog Food, Fabric Softener, Flour, Frozen Pizza, Frozen Vegetables, Jams/Jellies, Ketchup, Refrigerated Orange Juice, Shampoo, Soft Drinks, Toilet Tissue*. The product categories were judgmentally selected to cover a wide range of commonly purchased food and non-food grocery products. We also collected demographic information from these respondents. A total of 136 completed questionnaires were returned of which 132 were usable. Four questionnaires were excluded because the reported values were extreme (-100 or +100) for almost all product categories.

**Distribution of Quality Differential and Price Premium**

The sample of 132 respondents provided information for up to 20 product categories. Several consumers did not respond to some product categories because they do not buy them or did not have an opinion about store brands. Thus there are 2237 observations from 132 consumers across 20 product categories.

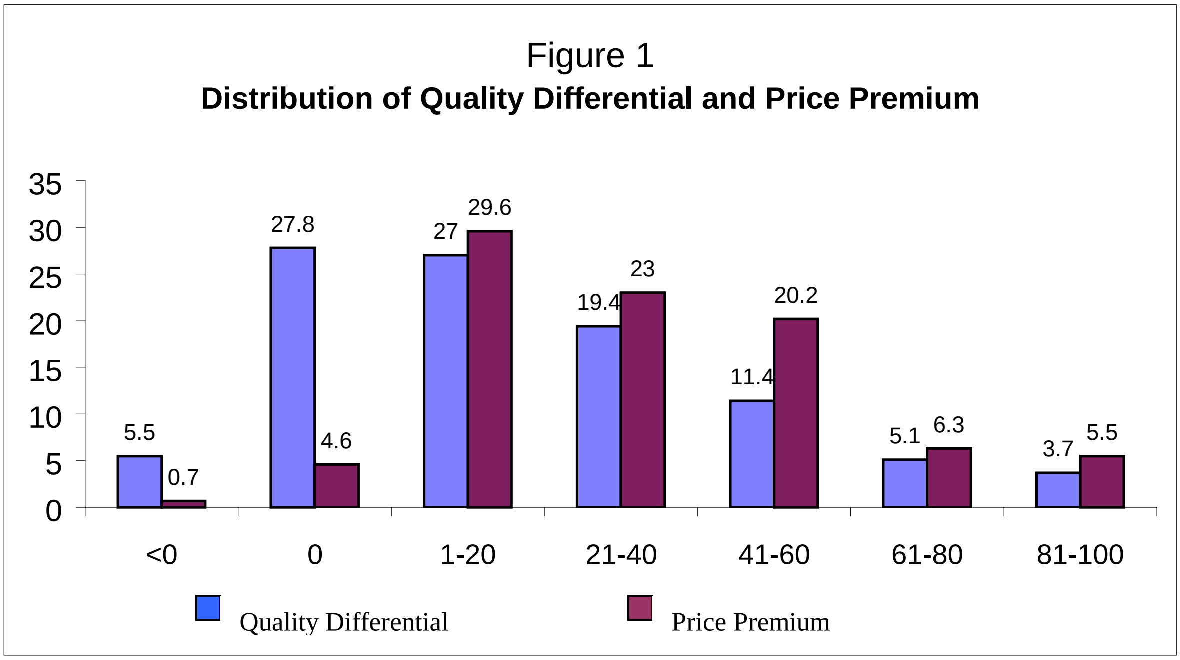



Figure 1 provides the distribution of perceived quality differential between national brand and store brand. In less than 6% of the 2237 observations, consumers perceived the quality of private labels to be higher than that of national brands. This finding is consistent with the general notion that private labels are as good or inferior to national brands. In a substantial number of observations (28%), consumers perceived the private labels to be equal in quality to that of the national brands. This finding is also consistent with recent trends, which suggest that a large number of consumers feel store brands usually perform as well as nationally advertised brands. The mean perceived quality differential is 22.7% and the median is 20%.

Figure 1 also gives the distribution of price premiums consumers state they are willing to pay for national brands over store brands. While in about 33% of the observations, consumers perceive the store brands to be equal or higher in quality to national brands, in only 5% of the cases are they willing to pay the same or higher price for the store brand. This finding is consistent with general belief that consumers derive utility from national brands beyond what is explained by quality. Our model enables us to quantify this aspect by separating quality and non-quality utility. The mean price premium is 36.7% (median = 30%).

**Estimation**

First we describe the procedure we use for estimating the model (Equation 8). There are 264 (132 $\alpha^c_i$ + 132 $\beta^c_i$) consumer parameters and 40 (20 $\alpha^p_j$ + 20 $\beta^p_j$) product parameters to be estimated. We first note that Equation (8) is separable in consumer and product parameters (design matrices can be partitioned) so that we can write Equation (8) as:

(11) $$\text{Premium}_{ij} = \left[\sum_i \alpha^c_i \,\text{CONSUMER}_i + \sum_i \beta^c_i \,\text{CONSUMER}_i \,\text{QD}_{ij}\right] + \text{Residual}$$

(12) $$\text{Residual} = \left[\sum_j \alpha^p_j \,\text{PRODUCT}_j + \sum_j \beta^p_j \,\text{PRODUCT}_j \,.\, \text{QD}_{ij}\right] + \text{Error.}$$

Therefore, first we estimate the consumer parameters using Equation (11). We exclude the intercept term so that all 264 parameters can be estimated. The $R^2$ for the consumer model is .914 (adj. $R^2$ is .903, $F_{264,1973} = 79.6$, $p < .001$). In other words, the consumer parameters explain a substantial portion of the total variation in price premium. We then take the residual from the consumer model and estimate Equation (12). The $R^2$ for the model is .048 (adj. $R^2$ is .03, $F_{40,2197} = 2.75$, $p < .01$). Together, the regression model (Equation 8) explains about 96.2% of total variation in the premium willing to pay for national brands indicating an extremely good fit with the data.. From these estimates, we can compute non-quality utility for each consumer i for product j as $\alpha_{ij} = \alpha^c_i + \alpha^p_j$, quality sensitivity as $\beta_{ij} = \beta^c_i + \beta^p_j$ , and quality premium as $\beta_{ij}\, QD_{ij}$ .

## ANALYSIS OF PREMIUM COMPONENTS

### Descriptive Statistics

Quality Sensitivity ($\beta$). Quality sensitivity measures the average increase in the percentage premium consumers are willing to pay for national brands over store brands for a 1% increase in perceived quality differential across categories. The measure is dimensionless. In general, the parameter is expected to be positive (the higher the quality differential, the greater is the premium willing to pay), and can be greater than 1. In about 90% of the observations, $\beta$ is between 0 and 1. In about 8% of the observations, $\beta$ is negative which could have arisen due to estimation / measurement error. Deleting these observations or truncating them to zero could lead to potential biases. Therefore, in the spirit of other works, which analyze parameter estimates (e.g., Assmus, Farley and Lehmann 1984, Sethuraman, Srinivasan and Kim 1999), we retain them in our data. We however deleted observations from one consumer with "extreme" values (large negative $\beta < -1$), resulting in a total of 2218 observations. The mean quality sensitivity is 0.356 (median = 0.305). In other words, a 1% increase in perceived quality differential increases the premium willing to pay for national brands by 0.36%, on average.

Non-Quality Utility ($\alpha$). In general, we expect $\alpha$ to be non-negative – quality being equal, consumers will likely pay more for national brand. However, it can be negative if a consumer has more positive associations with the store brand. $\alpha$ is negative in about 1% of the observations. In about 90% of the observations, $\alpha$ is between 0 and 50%. Mean $\alpha$ = 28.1% (Median = 26.1). In other words, even if there is no perceived quality differential, consumers state they would pay 28.1% premium for national brands, on average. We also tested the "internal consistency" of the estimate of $\alpha$ in the following ways and found the magnitude of the estimate to be robust.

1. Note that $\alpha$ is the estimate of premium when perceived quality differential is zero. We considered only those 623 observations with QD = 0. The mean premium willing to pay for these observations is 27.6%.

2. To see if these 623 observations were driving the estimate, we excluded these observations and estimated a simpler aggregate model: $\text{Premium}_{ij} = \alpha + \beta\, QD_{ij}$ with the remaining observations. The estimate of $\alpha$ is 26.8%.

3. We included all 2218 observations and estimated the simple model: $\text{Premium}_{ij} = \alpha + \beta\, QD_{ij}$. The estimate of $\alpha$ is 26.6.

<u>Quality and Non-Quality Premium.</u> The mean quality differential for the 2218 observations is 22.8. The average premium is 36.7% and the mean quality premium ($\beta$*QD) is 8.6%. In other words, of the average 36.7% premium that consumers say they would pay for store brands, about 8.6% (23% of the total) can be attributed to quality differential and the rest 28.1% (77% of total) to "non-quality" utility.

In summary, the findings indicate that *a substantial portion of the premium consumers are willing to pay for national brands over store brands would be paid even when the perceived quality differential between the two brands is small or zero.*

**Relationship between Premium Components and Demographic Characteristics**

By decomposing the total premium into its components, we are now in a position to obtain some insights into why some consumers would pay a greater premium than others. Is it because of differences in quality differential, quality sensitivity and/or non-quality utility?

Our survey provided information on the following demographic variables:

Age: "Young" (18-40 years); "Middle" (41-60 years); "Old" (> 60 Years)

(Because there were only 4 consumers in the 18-22 group, they were combined with 23-40 year olds.)

Annual household Income: Low (0 - 25 K$); Middle (25 K$ - 50 K$); High (> 50 K$)

Gender: Male; Female

Education: High-School ( or below); College

Family size: Number of persons living in the household.

Because this area is relatively under researched, we do not have concrete prior hypotheses relating demographic characteristics to premium components.

To assess the influence of demographic characteristics on premium components, after accounting for product category differences, we estimate the following regression models:

(13) Non-Quality utility, $\alpha_{ij} = f$ ( $PROD_j$ , Age, Income, Gender, Education, Family size)

(14) Quality sensitivity, $\beta_{ij} = f$ ($PROD_j$ , Age, Income, Gender, Education, Family size)

(15) Quality differential, $QD_{ij} = f$ ($PROD_j$ , Age, Income, Gender, Education, Family size)

For completeness, we also estimate the model:

(16) $Premium_{ij} = f$ ($PROD_j$ , Age, Income, Gender, Education, Family size)

Because the dependent variables are likely to be correlated, estimating the models using a simultaneous equation system is appropriate. However, because the independent variables are the same for all models, estimation of individual models using OLS would yield the same results as "Seemingly Unrelated Regression" equations. There are 2149 observations in which information is available for all variables. Collinearity does not appear to be a problem in the data set (highest correlation between demographic variables is 0.25). Table 1 presents the OLS regression results. Table 2 presents the means of premium components by demographic groups. Together, they provide several interesting insights, which we discuss below, for each demographic variable.

Tables 1 and 2 about here

Age: Age is negatively related to reservation price differential. That is, based on self-report, younger (18-40) consumers would pay the most premium for national brands followed by middle age (41-60) consumers. Older (>60) consumers would pay the least. Why is this so? Our results reveal that it is due to all three premium components. Relative to older consumers, younger consumers have higher non-quality utility, higher quality sensitivity, and perceive higher quality differential between national brands and store brands. Particularly noteworthy is the big difference in non-quality utility ($\alpha$) which is about 9%. This finding is fairly intuitive. Because of their age and greater desire for social acceptability, young consumers would be more imageconscious and favorably disposed toward national brands. Middle age consumers appear to be the most quality sensitive among all age groups.

Income. One would expect that, because of their reduced purchasing power, lower-income consumers would be willing to pay a smaller premium for national brands than other income groups. Interestingly, the middle income consumers are the ones who are willing to pay the lowest premium for national brands. This finding is consistent with a 1991 Gallup survey which noted that consumers most likely to buy store brands are the middle-income ($25,000-$45,000) consumers (Fitzell 1992, p. 149). Why do low-income consumers want to pay more for the national brands? Our analysis (Tables 1 and 2) reveals that it is mainly because of the difference in non-quality utility (brand image) – low-income consumers have significantly higher $\alpha$ than middle-income consumers. Fitzell (1992) and other private label promoters have bemoaned this "unfortunate" situation. Low-income consumers stand to benefit the most from private labels because the brands are lower-priced reasonable alternatives to national brands. Yet, these are the very people who are unwilling to buy store brands because they are attracted by the imagery of national brands and use it to reflect their status. As would be expected, high-income consumers have the highest quality sensitivity (most discerning consumers).

Gender. Females state that they are willing to pay a slightly higher premium for national brands. Regression results indicate that this difference is due to their higher quality sensitivity.

Education. Educated consumers, because of their ability to process product information from package labels and other sources, are more likely to recognize that store brands are comparable in quality to national brands. Consistent with this notion, we find that consumers with college education believe that there is less quality differential between national brands and store brands than consumers with high school (or less) education.

Family size. There is no significant effect of family size on price premium consumers will pay for national brands, even though smaller families (singles and couples) have greater non-quality utility than larger families.

**Relationship between Premium Components and Store Brand Familiarity / Purchase**

In our survey, we obtained information on familiarity with store brands in each product category by asking them if they are : (i) very familiar with store brands, (ii) somewhat familiar with store brands, or (iii) not familiar with store brands. The means of premium and its components organized by the extent of familiarity are given below:

| Store Brand Familiarity | # obsns. | Non-quality Utility ($\alpha$) | Quality Sensitivity ($\beta$) | Quality Differential (QD) | Premium |
|---|---|---|---|---|---|
| Very Familiar | 603 | 27.5 | 0.42 | 12.7 | 33.0 |
| Somewhat Familiar | 834 | 27.8 | 0.31 | 19.8 | 34.1 |
| Not Familiar | 758 | 28.3 | 0.36 | 33.8 | 41.8 |

Familiarity with store brands does reduce the premium consumers are willing to pay for national brands. There may be a reciprocal relationship between the two variables. Because consumers are not willing to pay a high premium for the national brands, they buy the store brand and become familiar with it. Once they become familiar with the store brand, they probably recognize the comparable quality of store brands and therefore decide not to pay a higher premium for national brands. In either case, clearly those who are very familiar with store brands perceive the quality differential to be less than those who are not familiar with store brands. However, familiarity with store brands does not significantly reduce the non-quality utility. Even those very familiar with store brands, on aggregate, say they would pay a non-quality related premium of 27.5% for national brands.

In our survey, we also asked consumers to indicate for each product category whether they have purchased a store brand in the category in the last twelve months, and if so, whether store brands represented minor share (less than 50%) or major share (over 50%) of total purchase in the category. Our interest here is to ascertain what utility component discriminates the most among these three groups. The following table presents the average premium and its components for the three groups:

| Observation Type | # obsns. | Non-quality Utility ($\alpha$) | Quality Sensitivity ($\beta$) | Quality Differential (QD) | Quality Premium | Premium |
|---|---|---|---|---|---|---|
| Exclusive NB Purchase | 1086 | 29.9 | 0.36 | 36.8 | 14.6 | 44.9 |
| SB Purchase < 50% | 758 | 26.6 | 0.33 | 14.0 | 4.6 | 31.1 |
| SB Purchase ≥ 50% | 367 | 25.4 | 0.39 | 1.6 | 0.27 | 25.5 |

As would be expected, the price premium that the consumers state they would pay for national brands is considerably higher in cases where they have not purchased a store brand than in cases where they have. The non-quality utility is also slightly higher in the case of exclusive national brand purchase. What really distinguishes the three groups is the perceived quality differential. Those who have never purchased a store brand in the category perceive the store brand to be considerably inferior in quality compared to national brands. On the other hand, those who make major store brand purchases, believe there is no difference in quality between the two brands. However, even they would pay about 25% premium for national brands. Taken together, the results indicate that *perceived quality differential is the major factor in a consumer deciding whether or not to consider purchasing a store brand, but non-quality utility is the dominant factor in the consumer deciding how much premium s/he will pay for national brands over store brands.*

**Analysis by Product Category – Calculation of Brand Equity**

Table 3 provides information for each product category we analyzed. The categories are organized in the ascending order of mean perceived quality differential (Column 3). Categories such as bleach and flour, which are typically considered commodity products, have the lowest perceived quality differential, while more differentiated products such as shampoo and soft drink have the highest perceived quality differential. Thus our measure of perceived quality differential appears to have some face validity.

Tables 3 about here

We did not have any source (such as consumer report or experts) for collecting objective quality differential in this particular market. Therefore, we used the overall "objective" store brand quality measures from Hoch and Banerji (1993) as surrogates. Hoch and Banerji asked 25 retail experts to rate the quality of the best private label in comparison to leading national brands in the product category on a scale: 1 = much worse; 5 = about the same. The experts' ratings were averaged to get mean private label quality. The quality differential between national brand

and store brand can be obtained as 5 – observed mean score. The quality differential would range from 0 or no quality difference (5-5) to 4 or maximum quality difference (5-1). In our quality differential scale no quality difference is zero and maximum quality difference is 100. To make the two scales comparable, we assumed that a quality difference of 1 in the Hoch and Banerji scale would represent 25 point quality differential in our scale. For instance, suppose the mean expert quality rating of private labels is 4.6. Then the quality difference in Hoch and Banerji scale is 0.4, which converted to our scale would be 10 (0.4*25). The "objective" quality ratings computed in the above manner are reported in Table 3 (Column 4).

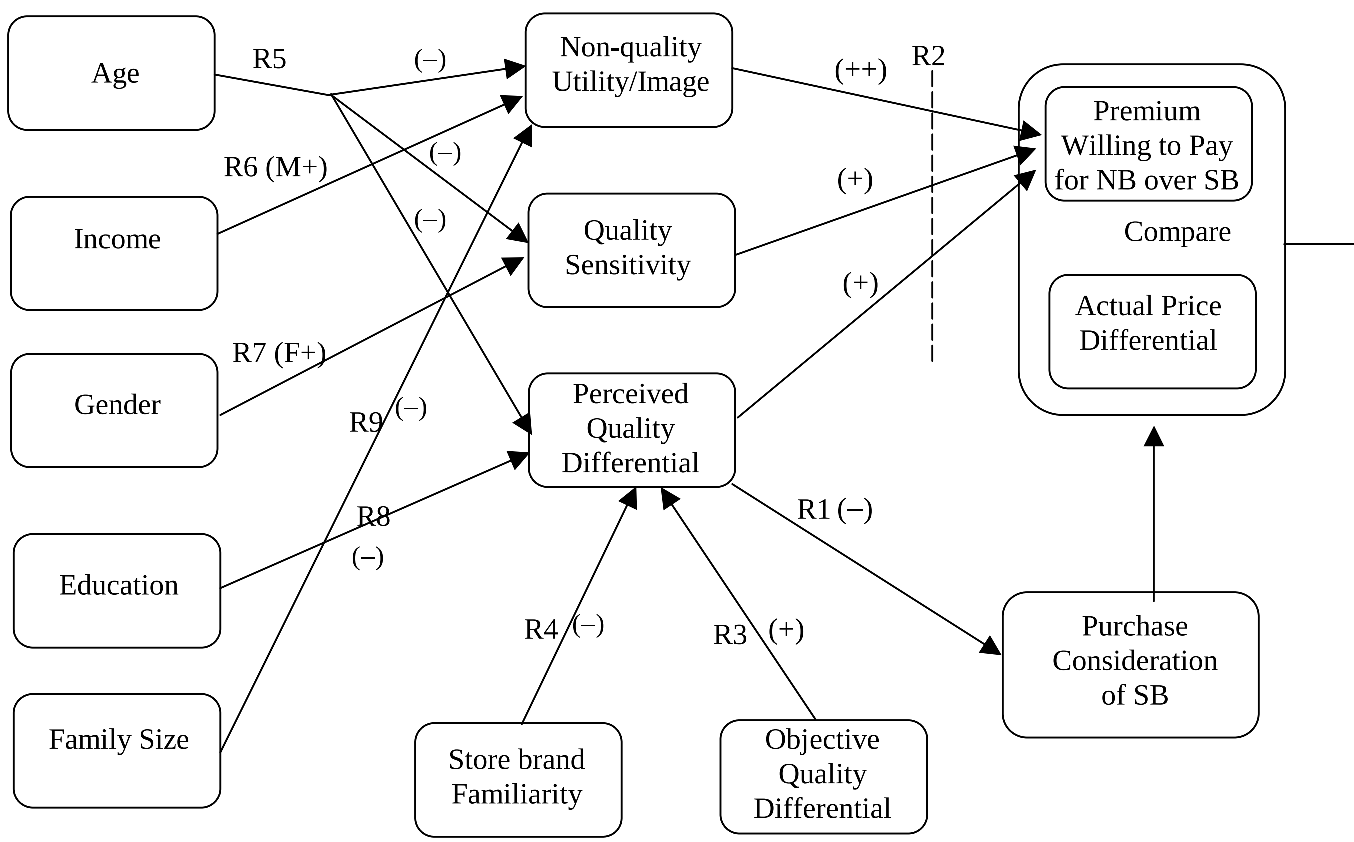
The Pearson and Spearman correlations between perceived quality differential in our data and the "objective" quality differential from Hoch and Banerji (1993) are both 0.58. We find this correlation to be reasonably high given that the data were collected from different markets using different measures at different time periods. One notable deviant is frozen vegetables. Generally, we believe that vegetables are commodity products with little quality differential. Consistent with this expectation, the mean perceived quality differential is the third lowest at 12.8%. Surprisingly, the expert rating of quality differential is one of the highest among the twenty categories. Two explanations have been offered: (i) Though the basic product may be the same, private label frozen vegetables (e.g., peas) may be non-uniform in size. (ii) A good frozen product should withstand unfreezing and refreezing as many as six times. If we delete this category, the Pearson and Spearman correlations increase to about 0.70. In summary, the data indicate a fairly strong positive correlation between "objective" quality differential and perceived quality differential.

We use the objective quality differential measure (Column 4, Table 3) for computing national brand equity based on the Park and Srinivasan (1994) framework. They conceptualize attribute-based brand equity as the utility based on the differences between subjectively perceived attribute levels and objectively measured attribute levels, and non-attribute based equity as the brand's overall preference unrelated to measured product attributes (p. 274). In our model, quality is the composite attribute and quality-based equity would be measured as $\beta$ * (perceived quality differential – objective quality differential). Non-quality based national brand equity is measured by $\alpha$. Table 3, Columns (5), (6) and (7) provide estimates of quality-based, non-quality based and total national brand equity, respectively. National brand quality equity is generally positive as expected (except for the frozen vegetables category with questionable objective quality rating). However, quality-based equity is generally small compared to non-quality based equity. On aggregate, quality based equity accounts for about 14% of total brand equity (Table 3, last row). This finding is quite consistent with Park and Srinivasan's (1994) analysis of toothpaste and mouthwash categories where they find that brand equity is less driven by attribute-based equity and more by non-attribute based equity. In fact, in their study, the proportion of total national brand equity (relative to store brands) accounted for by attribute-based component was 20.2% for Crest, 17.3% for Colgate, and 10.3% for Scope (Table 2). These numbers are comparable to the 14% in our study. It is also worth noting that customer-based national brand equity is considerable (about 30%) even in commodity products such as bleach and flour.

**Summary of Results**

Our analysis yields several results that offer qualitative insights into store brand purchase behavior. These results are summarized below. Figure 2 presents a schematic representation of the relevant phase of the purchase process in which the various results apply.

**Figure 2**
**Summary of Results**




Note: NB = National Brand; SB = Store Brand
+ = Positive relationship; – = Negative relationship; ++ = Dominant factor
F = Female; M = Middle Income
R1 – R9 represent results summarized in the text.

R1. *Perceived quality differential (acceptable store brand quality) is the primary driver in a consumer's decision to participate in or consider purchase of a store brand.*

R2. *The premium consumer will pay for the national brand over the store brand is determined by a consumer's perceived quality differential, quality sensitivity, and non-quality utility (brand image). Of these, non-quality utility appears to be the dominant influencer. In particular, consumers will pay a reasonable price premium for national brands even if they perceive no difference in quality between national and store brands.*

R3. *Perceived quality differential is positively related to objective quality differential.*

R4. *Perceived quality differential is considerably lower if consumers are familiar with store brands.*

R5. *Younger consumers would generally pay a higher premium for national brands than older consumers and this occurrence is mainly because they have higher non-quality utility (imagery) and higher perceived quality differential.*

R6. *Middle income ($25,000-$50,000 annual household income) consumers would pay the lowest price premium for national brands. Low-income consumers would pay a higher premium than middle income consumers because of their higher non-quality utility (image equity). High-income consumers would pay larger premium than middle-income consumers because of their greater non-quality utility and quality sensitivity.*

R7. *Females are more quality sensitive than males.*

R8. *Educated consumers (with college education) perceive the quality differential between national brands and store brands to be less than those with High school or less education.*

R9. *Smaller families have greater non-quality utility than larger families.*

## MANAGERIAL IMPLICATIONS

We now discuss some strategic implications for manufacturers and retailers.

### Manufacturer Strategies

Customer-based national brand equity accounts for a substantial portion of the premium consumers will pay for national brands over store brands. At a macro level, the notion that brand equity represents a substantial portion of a company's asset has been documented (e.g., Simon and Sullivan 1993). Our research shows that, at a micro-level, brand equity plays a significant role in national brands vs. store brand purchase in grocery products. This finding represents good news for national brand managers because it allows them to command a reasonable price premium even when retailers close the quality gap. National brand managers should maintain and increase this equity through frequent and effective advertising and other equity-enhancing strategies (see Aaker 1991, Keller 1998). The importance of non-quality utility suggests that they should focus more on image-based emotional advertising than on quality or attribute-based advertising.

Results from consumer-level analysis suggest product management and targeting strategies. In particular, our findings suggest two distinct segments that are most prone to paying a high premium for national brands in grocery products.

*Low-income (< $25,000), Low-education (high school or less), Young (18-40) segment*. Taken together, these consumers have the greatest imagery associated with national brands. Either because of their lower education or because of their imagery, they already perceive a high quality differential between national brand and store brand, however they are not that quality sensitive. The strategy for national brand managers would therefore be to offer good (acceptable) quality products at reasonable prices and, at the same time, reinforce the image component with targeted advertising.

*High-income (>$50,000), College-educated, Middle age (41-60) consumers*. These consumers are the most discerning (quality sensitive) consumers. They also have a greater ability to spend money, because of their higher income level. Therefore, it would be worthwhile offering premium high-quality brands targeted at these consumers.

**Retailer Strategies**

Perhaps the most important implication for retailers relates to managing price differential between national brands and store brands. We discuss this aspect first. Then, we discuss other retailer strategies.

Consumers appear to be willing to pay a reasonable price premium for national brands even if their perceived quality differential is zero. Retailers should recognize this characteristic and ensure that the actual price differential is above this “minimum” price differential -- just because retailers have closed the quality gap does not mean that they can close the price gap.

The actual price differential should not be too high either. Hoch and Lodish (1998) argue for reducing the price differential between national brands and store brands because retailers are leaving money on the table. Our research offers other related reasons why price differential should not be too high.

1. If perceived quality differential is “high” consumers will probably not buy the product any way (Result 1). Therefore, there is no point in trying to entice a person who perceives low store brand quality (high quality differential) with big savings (high price differential).

2. A high price differential may lead to perception of store brand as a cheap, low-quality brand.

3. Even if it does not alter the quality perception, a high price differential may lead to increased non-quality utility for national brand through price expectations. This logic relates to the finding that frequent price deals can reduce reference prices for the brand (Kalyanram and Winer 1995). If a consumer repeatedly sees 40% -50% price differential between national brand and store brand, then that becomes the reference price differential. They expect to get that much saving from the store brand even if they believe there is not much difference in quality between national brand and store brand.

In summary, the key message is that retailers can not set the price differential too low, nor can they set the price differential too high. Donegan (1989), Hoch and Lodish (1998) and Sethuraman (1992) recommend the price differential to be generally between 15% and 30%. However, the required price differential would vary with markets and retailer objectives.

The following are the other strategic implications of our findings for retailers wishing to increase their private label share. First, retailers must ensure that the objective quality of store brands is close to that of the national brands – our research indicates that objective quality is positively related to perceived quality. Second, the retailers can attempt to reduce perceived quality differential between national brands and store brands through offering samples – our research indicates that consumers would consider purchase of store brand if quality differential is not high and that familiarity with store brands reduces the perceived quality differential. Third, retailers can attempt to reduce non-quality utility (brand equity) component of price premium. This may be accomplished by enhancing the image of store brands through better packaging or local advertising, or countering the image impact of national brands. A recent ad for Sprite says "Image is nothing, Thirst is Everything!" Similar campaigns or "Why Pay More" slogans may be some ways to counter the national brand image. These strategies should be especially used to switch low-income and younger consumers – our research indicates that these segments value the brand image of national brands more than other groups.

## CONCLUSIONS

In this paper, we have described an econometric model and its application for separating the total price premium that consumers state they are willing to pay for national brands over store brands into premium that is attributable to quality differences between the two brands (quality premium) and premium not directly attributable to perceived quality (brand equity). Our method is based on the utility framework and uses data from a consumer survey.

The key qualitative insight obtained from our empirical study is regarding the role of quality and brand image in the purchase process. Our results suggest that perceived quality of store brand (or quality differential) plays a dominant role in a consumer's decision to consider purchase of a store brand. This aspect is consistent with the quality threshold or acceptable quality notion. However, quality plays a relatively lesser role in how much they would pay for the store brand vis-a-vis national brands. The price premium is predominantly influenced by non-quality utility, which may arise due to familiarity, imagery, or simply due to habit.

**Limitations and Future Research Directions**

Our methodology has some limitations. First, our measure of perceived quality differential and price premium are based on self-report. This approach is fairly well-established research practice. A number of past research studies involving attribute tradeoffs or price sensitivities, including most conjoint analysis studies, use the self-report approach. Second, in measuring quality differential and price premium, we have used national brand as the anchor. Our reasoning for use of national brand anchor is as follows. Literature on reference prices and referent brand suggest that the referent brand is likely to be the most recently or most often purchased. Kalyanram and Winer (1995) find convincing empirical evidence that past prices are considered when consumers form reference prices. In about 50% of the cases, consumers purchased national brands exclusively and in the other 50% of the cases, they purchased national brands and store brands. Therefore, national brand appeared to be a better candidate for being an anchor. Consistent with this argument, in our pretests consumers given store brand anchor said they were uncomfortable anchoring on a brand that they are not familiar with. Third, we use percentage premium measure so as to be consistent across all products and consumers and not absolute price differential (dollars and cents). Fourth, we have considered national brand and private labels as single identities, though there are likely to be differences among national brands and among private labels.

In Table 3, we have shown that our measure of perceived quality differential is strongly positively related to “objective” quality differential measure obtained from an external source. Thus perceived quality differential measure appears to have external validity. To assess the external validity of the price premium measure, we compared our survey measure with that obtained from aggregate U.S. supermarket data for the same year (Infoscan Supermarket Review 1995) provided by Information Resources, Inc. For each product category, we computed the average price differential between national brand and store brand from the Infoscan Supermarket Review. For this price differential, we computed the market share of private labels predicted in our survey and compared it with actual all U.S. private label share given in the Supermarket Review. Details are given in the appendix. The correlation between predicted and actual market share is 0.85 and the Mean Absolute Percentage Deviation between the two market shares is 29.5%. Given the differences in the markets and the type of measures, we believe these numbers indicate a strong relationship thus providing some external validity to the survey-based price premium measure.

Furthermore, as we have noted in the paper, several of our findings are consistent with expectations and prior research providing face validity and nomological validity to our approach. Importantly, our key result that non-quality utility is a major driver of brand equity is consistent with Park and Srinivasan (1994). Therefore we believe our broad qualitative insights regarding national brand vs. store brand competition are robust. Future research can validate and refine these results using alternate methodologies (e.g., lab or field experiments) and in different markets. In addition, an important topic for future research is to identify the source of the non-quality utility. Is it reputation, loyalty, experience, or habit?

APPENDIX

## Assessing External Validity of Price Premium Measure

The aggregate U.S. market average price differential between national brands and store brands obtained from Infoscan Supermarket Review (1995) is provided in Column 2 of Table A1 (below) for each product category. The aggregate U.S. market share of private labels at this price differential is given in Column 3. For the same price differential, we calculated the private label share predicted from our survey in the following manner.

First, we calculated the number of consumers in our survey whose reservation price differential is less than actual price differential. This quantity represents the number of potential store brand consumers. However, not all of them would purchase the store brand all the time. In particular, there are three types of consumers in our survey with different purchase behavior, as indicated in the following table. Therefore, we weighted the number of store brand consumers by the midpoint of their store brand purchase share.

| Store brand purchase Segment | # of consumers | # of consumers with reservation price differential less than actual price differential | Segment Weight | Weighted # of consumers purchasing private labels |
|---|---|---|---|---|
| Not purchased (0%) | $N_1$ | $N_1'$ | 0 | 0 |
| Minor purchase (0-50%) | $N_2$ | $N_2'$ | 0.25 | $0.25\ N_2'$ |
| Major purchase (50%-100%) | $N_3$ | $N_3'$ | 0.75 | $0.75\ N_3'$ |
| Total | $N_1 + N_2 + N_3$ | | | $0.25\ N_2' + 0.75\ N_3'$ |

The predicted store brand (%) market share is calculated as $\dfrac{0.25\ N_2' + 0.75\ N_3'}{N_1 + N_2 + N_3} * 100$

The predicted market share is provided in Column 4 of Table A1. The correlation between actual and predicted market share is 0.85 and the Mean Absolute Percentage Deviation between the two is 29.5%.

Table A1

**Actual and Predicted Private label market Shares**

| Product | Actual (%)<br>Price Differential<br>Supermarket review | Actual (%)<br>Market Share<br>Supermarket review | Predicted<br>Market Share<br>from Survey |
|---|---|---|---|
| Aluminum Foil | 35.0 | 49.1 | 31.9 |
| Analgesics | 31.1 | 25.3 | 23.8 |
| Bleach | 37.6 | 36.0 | 19.9 |
| Cake Mix | 16.4 | 5.5 | 4.6 |
| Cereal | 40.6 | 10.4 | 11.3 |
| Cheese | 22.1 | 26.6 | 18.1 |
| Coffee (Ground) | 17.2 | 8.4 | 5.1 |
| Cookies | 39.9 | 16.4 | 16.0 |
| Dish Liquid | 36.7 | 6.2 | 5.9 |
| Dog Food | 41.5 | 13.1 | 9.3 |
| Fabric Softener | 34.3 | 22.8 | 10.8 |
| Flour | 27.6 | 21.4 | 15.8 |
| Frozen Pizza | 32.1 | 7.5 | 8.0 |
| Frozen Vegetables | 31.3 | 39.1 | 25.0 |
| Jams/Jellies | 26.4 | 27.0 | 18.9 |
| Ketchup | 25.6 | 17.6 | 7.6 |
| Orange Juice | 30.5 | 30.2 | 21.0 |
| Shampoo | 26.2 | 3.2 | 1.8 |
| Soft Drink | 32.1 | 10.7 | 6.1 |
| Toilet Tissue | 27.0 | 13.5 | 7.9 |

**Table 1**

**Relationship between Premium Components And Demographics — Regression Results**

| **Demographic Variable** | **Group** | **Dependent Variable** | | | |
|---|---|---|---|---|---|
| | | **Non-Quality Utility (α)** | **Quality Sensitivity (β)** | **Quality Differential (QD)** | **Premium** |
| Age (years) | 18-40 | 7.0 (1.02)* | 0.15 (.023)* | 7.91 (1.83)* | 10.9 (1.62)* |
| | 41-60 | 2.35(1.06)* | 0.21 (.024)* | 4.41 (1.91)* | 6.95 (1.68)* |
| | >60 | 0 | 0 | 0 | 0 |
| Income ('000 $) | <25 | 2.2 (.90)* | −.04 (.024) | 1.39 (1.62) | 1.73 (1.42) |
| | 25-50 | −4.21 (.88)* | −.02 (.02) | −2.38 (1.59) | −5.82 (1.40)* |
| | >50 | 0 | 0 | 0 | 0 |
| Gender | Female | −0.69 (.71) | 0.05 (.016)* | 1.85 (1.28) | 1.56 (1.13) |
| | | 0 | 0 | 0 | 0 |
| Education | College | −0.93 (.70) | −0.014 (.02) | −5.91 (1.27)* | −3.29 (1.12)* |
| | High School | 0 | 0 | 0 | 0 |
| Family Size | Ratio | −0.87 (.30)* | 0.03 (.07) | −0.15 (.53) | −0.50 (.47) |
| $R^2$ (adj $R^2$) | | 0.10 (.10) | 0.11 (.10) | 0.13 (.12) | 0.08 (.08) |

Note: Standard errors in parentheses.
* = significant at 5% level (two-tailed test)

**Table 2**

**Means of Premium Components**
**By Demographic Groups**

| **Demographic Variable** | **Group** | **# of Obsns.** | **Non-Quality Utility (α)** | **Quality Sensitivity (β)** | **Quality Differential (QD)** | **Premium** |
|---|---|---|---|---|---|---|
| Age (years) | 18-40 | 1007 | 30.9 | 0.36 | 24.9 | 39.7 |
| | 41-60 | 816 | 25.9 | 0.44 | 21.7 | 35.8 |
| | >60 | 303 | 21.8 | 0.20 | 18.3 | 27.3 |
| Income (in '000 $) | <25 | 686 | 31.4 | 0.30 | 25.6 | 39.1 |
| | 25-50 | 640 | 24.1 | 0.35 | 19.9 | 31.2 |
| | >50 | 823 | 28.0 | 0.43 | 22.6 | 38.0 |
| Gender | Female | 1521 | 27.6 | 0.37 | 23.0 | 36.8 |
| | Male | 628 | 28.8 | 0.34 | 22.3 | 35.3 |
| Education | College | 1345 | 27.7 | 0.38 | 20.9 | 35.9 |
| | High School | 804 | 28.4 | 0.34 | 26.0 | 38.0 |

Note: Means by family size not reported as it was treated as a continuous variable.

Table 3

**Analysis by Product Category - Calculation of Brand Equity**

| | | Quality Differential | | Mean National Brand Equity | | |
|---|---|---|---|---|---|---|
| Product (1) | # obsns. (2) | Perceived (3) | Objective (4) | Quality (5) | Non-Quality (6) | Total (7) |
| Bleach | 106 | 5.9 | 0 | 2.12 | 31.5 | 33.6 |
| Flour | 117 | 8.4 | 2.5 | 1.48 | 30.2 | 31.7 |
| Frozen Vegetables | 122 | 12.8 | 20 | -2.81 | 26.7 | 23.9 |
| Analgesics | 119 | 16.1 | 5 | 3.89 | 26.9 | 30.8 |
| Jams/Jellies | 113 | 16.7 | 7.5 | 3.59 | 28.6 | 32.2 |
| Fabric Softener | 93 | 17.5 | 12.5 | 1.40 | 30.2 | 31.6 |
| Aluminum Foil | 127 | 18.3 | 7.5 | 4.00 | 24.9 | 28.9 |
| Orange Juice | 118 | 18.7 | 7.5 | 3.47 | 27 | 30.5 |
| Cheese | 127 | 19.3 | 5 | 7.01 | 21.2 | 28.2 |
| Cookies | 117 | 22.1 | 17.5 | 1.38 | 29.9 | 31.3 |
| Cake Mix | 102 | 22.6 | 20 | 1.07 | 27.6 | 28.7 |
| Dish Liquid | 125 | 24.1 | 20 | 1.07 | 29.1 | 30.2 |
| Coffee (Ground) | 92 | 25.4 | 10 | 7.55 | 23.5 | 31.0 |
| Ketchup | 118 | 28.3 | 10 | 8.24 | 26.9 | 35.1 |
| Frozen Pizza | 94 | 28.4 | 20 | 2.44 | 27.5 | 29.9 |
| Cereal | 122 | 29.6 | 7.5 | 7.10 | 30.9 | 38.0 |
| Dog Food | 33 | 36.3 | 10 | 9.73 | 28.7 | 38.4 |
| Toilet Tissue | 129 | 34.5 | 22.5 | 4.32 | 28.6 | 32.9 |
| Soft Drink | 121 | 36.4 | 22.5 | 4.90 | 31.4 | 36.8 |
| Shampoo | 123 | 37.3 | 17.5 | 5.94 | 32.9 | 38.8 |
| Aggregate | 2218 | 22.8 | 10 | 4.6 | 28.1 | 32.7 |

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