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Functional Measurement Analysis of Brand Equity: Does Brand Name affect Perceptions of Quality?

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This research project used Functional Measurement to examine how the brand name of consumer products impacts intended purchasing decisions. Thirty undergraduate students tested actual products from three different product categories (crayons, tissues, and tortilla chips). Each product category consisted of three different brands; one with high brand value, one with medium, and one with low brand (generic) value. For each brand, there were five conditions: 1) the product with the correct brand name; 2) the product with a switched brand name; 3) the product with another switched brand name; 4) the product alone with no brand name; and 5) the brand name alone with no product. Participants were unaware that products had been switched. After trying each product, participants rated their likelihood to purchase on a 9-point Likert scale: 1 being "definitely would not buy" and 9 being "definitely would buy." Results revealed that perceptions of quality were dependent on both perceived product quality and brand name. Unexpectedly, results also showed that the strength of the brand equity effect is dependent on product type, e.g., chips showed the strongest brand effect. For most product categories, main effects and interactions were significant. Functional measurement analyses revealed that brand name effects were independent of product quality. In conclusion, the brand name associated with a product led people to evaluate quality of that product as either higher or lower depending on the strength of the brand name.

Brand Equity is defined as "the marketing and financial value associated with a brand's strength in the market, including actual proprietary brand assets, brand name awareness, brand loyalty, perceived brand quality, and brand associations" (Pride & Ferrell, 2003, p 299). This definition includes many variables that impact brand equity, but that are not easily measured nor defined. Brand Equity has been studied many times, but there

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is no clear consensus as to how to define or measure the relevant variables. Our approach was to use Functional Measurement (Anderson, 1996) both to measure and to evaluate the interactions of these variables.

Research on brand equity has reflected many areas of psychology including cognitive, social, personality, and neuroscience (Grewal, et al., 1998; Chakrapani, 1974; & McClure, et al., 2004). Although the current study involves judgment and decision making, it is helpful to consider research from other realms as well. This will help better understand brand equity in its entirety.

Most research on brand equity has been conducted by businesses studying their own in-house products. Consequently, this research is proprietary, i.e., not openly available; moreover, the reliability of these studies is questionable. Studies involving the brand equity variables will be discussed as follows: brand name, price, and store name; brand loyalty; brand knowledge/learning; and expectations.

Brand Name, Price, and Store Name. Rao and Monroe (1989) conducted a meta-analysis to see how price, brand names, and store names affect perceptions of quality (brand equity). The effects of price and brand name were both statistically significant. However, store name was not. Brand name had a larger effect than did price and store name. The authors concluded that when consumers infer quality from price, they compare the price of the current product to the price of either another product or a price in memory. If the current product's price is higher than the comparison price, then the current product is perceived as higher quality.

Grewal, Krishnan, Baker, and Borin (1998) looked at how store name, brand name, and price discounts affect the brand equity of a store. The authors created a three-factor model of purchase intent and found 41% of the variance was explained by three variables. They also reported a "positive relationship between perceived brand quality and perceived value" and that "internal reference price strongly influenced perceived value" (Grewal, et al., 1998, p 343). This increased perceived value led to a positive willingness to buy.

Unlike Rao and Monroe, Grewal, et al. found that store name affected purchase intent. An example from their study is as follows: if you are going to buy a bike of a certain brand, you have options on which store to get it from. If the store has a higher store image, you will perceive that bike as having a higher quality than if you got the same bike from a store with a lower store image. Grewal, et al. also state that if a store carried products that were perceived as higher quality, then that store would be perceived as

higher quality. Therefore, it matters to the store what products they agree to sell.

Both Rao, et al. and Grewal, et al. agree that brand name and price affect perceptions of quality. Is this finding universal across the world? Dawar and Parker (1994) decided to study that. They found that brand name was the largest determinant of product quality across cultures. Their sample included MBA students from 38 mostly industrialized countries. Participants were asked about their purchase intentions and ownership of several electronic products as well as their product familiarity, information search, and judgment of quality. The results supported the generalizability of the link between brand name and inferred quality.

Brand Loyalty. What makes people consistently purchase one brand over another? McConnell (1968) looked at the effect of brand loyalty and price on purchase intent. Participants were offered three beers (Brand M, L, or P) and asked to pick one. They were told how much a six-pack of each brand would cost as well as shown the approximate price difference per bottle by placing coins on the products. Brand preferences were observed for most participants. "Almost half of the subjects (47 percent) selected one brand for three-quarters or more of the trials" (McConnell, 1968, p 16). After trial 13 or 18, participants were given a monetary incentive to choose the beer chosen the least in the trials up to this point. Participants were more likely to switch early after being offered this incentive, but then would switch back to their preferred beer. McConnell also observed that participants became loyal to the more expensive beer faster than to the lower priced beer.

A shopping product that is least expensive is looked at as having lower quality than a product of a higher price. For example, when purchasing a television, most consumers would consider a Sony TV as having higher quality than the Wal-Mart equivalent because Sony TVs are usually more expensive. This is not only due to inferring quality from price, but by also looking at brand names. However, this has not been extensively researched (although see Kardes, et al, 2004).

Not only brand name and price have an effect on brand loyalty. Some studies show that the personality of a consumer also has an impact. Chakrapani (1974) looked at brand loyalty and repeat purchases. Participants completed Eysenck's Maudsley Personality Inventory and kept rack of their next 10 purchases of the following products: bread, butter/margarine, coffee/tea, and cigarettes. A brand loyalty score was computed and compared to the participants' personality score. Chakrapani

observed differences in brand loyalty between people with varying personalities. For example, consumers lower in extraversion and neuroticism were more brand loyal, whereas extraverts were more likely to try different brands. It was also found that participants were more brand loyal to coffee/tea and cigarettes compared to bread and butter/margarine. Thus, it was inferred that the effect of brand loyalty is dependent on personality and product type.

A concept related to personality is self-concept, or how people view themselves. Dolich (1969) studied self-concept and its congruence with a person's preferred brands' concept. Four products were used in this study: beer, cigarettes, bar soap, and toothpaste. A semantic differential scale measured participants' real-self image, ideal-self image, and brand image. Adjectives were chosen based on descriptions from advertisements of the four products. Participants were first asked to rate themselves on the semantic differential scale where they felt they best fit. Secondly, they had to rate a preferred or non-preferred brand on the same scale. Dolich observed that people tend to like/purchase brands that are correlated with their self-concept.

Landon (1974) similarly found that purchase intentions were positively correlated with self- and ideal self-images. When the brand image was positively correlated with a person's self-image, they were more likely to purchase that product. It was also found that, depending on the product, purchase intentions correlated better with either self- or ideal self-images. Again, this shows that consumer preference is dependent on product category type (consumable, shopping, etc). It also seems that the congruence of self-concept and brand is important for brand loyalty.

Consumers infer product quality from variables, such as brand name and price. If a company knows that their consumers are brand loyal and perceive their products as high quality, it is easier to introduce another product. A brand extension is "the deployment of an existing brand to launch a new product that is not part of the original product family or category" (Bless & Greifeneder, 2009). Aaker and Keller (1990) reported that when the original brand was perceived as higher quality and the extension was a good fit, the extension was looked at in a positive light. However, Erdem (1998) stated that "a strong parent brand and a good fit do not ensure success if the quality of the extension does not match consumer expectations." From these studies, it can be seen that strong brand names and their perceived quality may help create more successful products if done correctly.

There are times when major two brands go head-to-head against one another. One of the biggest brand rivalries has been Coca Cola vs. Pepsi. What makes people brand loyal to one or the other? McClure, et al. (2004) studied Coke vs. Pepsi preferences using fMRI scans. When subjects were told they were tasting Coke, whether they were or not, the hippocampus, dorsolateral prefrontal cortex, and midbrain were activated, leading to the conclusion that "brand knowledge biases preference decisions" (McClure, et al., 2004). Similarly, Deppe, et al. (2005) and Paulus, et al. (2003) found that when making preference judgments, the medial prefrontal cortex is activated.

Brand Knowledge and Learning. Jacoby, et al. (1971) reported that previous knowledge of an "ultrapremium beer" brand name produced a higher quality perception than an "inexpensive regional beer." If previous knowledge is positive, then brand name has more of an effect. For example, Dodds, et al. (1991) concluded "favorable brand and store information positively influenced perceptions of quality and value, and subjects' willingness to buy." Therefore, knowledge of the brand name helps to increase perceptions of quality as long as it's a brand with a higher brand value.

Along with effects of knowledge, learning can also affect purchase intentions. Van Osselaer and Alba (2000) found that learning the product's brand name alone predicted subjects' quality judgments. But, when learning both the brand name and attributes at the same time, subjects based their quality judgments on the attributes. If you are at the store and are looking for chips, for example, you might base your purchase decision completely on brand name. If you are purchasing a television and are comparing attributes, however, you may also base your decision on which attributes you want most. Of course, this is when product category (consumable vs. shopping goods) could have an impact.

Expectations. A major difference between consumable and shopping goods comes from our expectations of durability of those products. Consumable goods are not expected to last long, but shopping goods are. Shopping products are "items for which buyers are willing to expend considerable effort in planning making purchases" (Pride & Ferrell, 2003, p 252). When a shopping good fails in a short amount of time, our expectations are not met and we are disappointed. Wine is one product that some consider a consumable product and others a shopping product. Connoisseurs take time in deciding which wine to purchase, like shopping

products. Others may consider wine to be a simple consumable good. So how do the expectations of wine consumers influence perceived quality?

A study performed by Wansink, et al. (2007) measured the expectations of wine novices to see whether wine from California was viewed differently than wine from North Dakota. The authors' study was held during a dinner party. As guests arrived, they were taken randomly to one of two tables. There was a bottle of wine at each table, one stating it was from California and the other from North Dakota. In reality, the wine was the exact same, with bottles given different labels. Guests drinking the wine from "California" rated it as higher quality than the guests drinking wine from "North Dakota." Therefore, expectations lead to different quality perceptions.

Another study of quality perceptions by Wheately (1973) examined taste expectations by changing the color of traditional food. Participants sat in a specially lit room and ate what looked like normally colored steak, peas, and fries. During the middle of their meal, the special lights were turned off to reveal that the steak was blue, peas were red, and their fries were green. Many participants refused to eat anymore and some even became ill. They associated these colors with spoiled food that changed their taste perception. The reason this color change shocked participants is because we are not used to these foods having these colors.

Koch and Koch (2003) found that the colors blue, purple, and gray are not positively associated with any tastes. These colors are not usually found in the natural environment unless the food has become moldy or old. Therefore, when we see food that is blue, for example, we assume that it is moldy and could make us sick.

A study by Dougherty and Shanteau (1999) showed how expectations can affect quality perceptions. Subjects tested consumer products and rated overall quality. There were no product names given; only labels stating whether Consumer Reports magazine rated the product as high, medium, or low quality. The experiment was to see whether people's perceptions of quality were affected by quality ratings from a credible source. They found that subjects' "evaluations of consumer products are modified by their expectations" (Dougherty & Shanteau, 1999, p 58). The methodology to be used for the current study is derived from this experiment.

Dougherty and Shanteau (1999) also tested whether their results followed the adding or averaging model from Information Integration Theory (Anderson, 1996). "The adding model assumes that judgments of multi-attribute stimuli are made by summing the subjective values of the different attributes" (Dougherty & Shanteau, p 52), whereas the averaging

model assumes that those judgments are averaged rather than added. Based on previous literature (Troutman & Shanteau, 1976; Shanteau, 1988; Shanteau, Troutman, & Ptacek, 1977), Dougherty and Shanteau (1999) predicted that the averaging model would best describe expectations of consumer products. Their results supported this prediction.

Research involving brand names has involved many fields, but there is still much to be learned. Most previous investigators found it difficult to measure the effects of brand name on perceptions of quality. In order to accomplish this, the current study used a within-subjects design and assessed brand name separately from other brand equity variables. The study included products from several categories, as well as brands with different apriori quality ratings.

The current study aims to learn what effect brand name has on perceptions of quality. Based on previous research, the hypothesis is that participants will be more likely to prefer the brand with higher value, even when the product is of lower quality. We looked at participants' quality ratings after they had experienced the products first-hand.

METHOD

Participants. Thirty Kansas State University undergraduate students were given class credit in General Psychology for participating in this study. The mean age was 19.5 with 21 females.

Materials. Three brands from three different product categories were used: tortilla chips (Tostitos, Mission, and Kroger), crayons (Crayola, Roseart, and Dollartree), and facial tissues (Kleenex, Puffs, and Wal-Mart). These product categories were chosen to account for three of the five senses; taste, sight, and touch. Obvious differences between the three products in each product category were controlled for: the crayons were all orange in color; the tissues used were basic white tissues with no aloe or lotion; the tortilla chips were all triangular chips and were, by sight, indistinguishable from each other. The products were chosen because most college students have used these products and can afford them. They are all consumable products in that they are inexpensive and are meant to be used in a short period of time. Pride and Ferrell (2003) listed the world's most valuable brands, which is how the high and medium values from each product category were chosen. The low value products were generic brands found at local grocery stores.

Where necessary, products were repackaged to be in an appropriate container. For example, tissues were placed in either Kleenex, Puffs, or Walmart tissue boxes.

Procedure. There were 12 "stations" for each product in quasi-randomized order. Stations were the positioned around a room where the products were placed. A 9-point Likert scale was used to assess quality ratings.

Design. Each participant was shown all cells in a 3 x 3, products x brand names, design. In addition, participants also saw all products alone and brand names alone. Thus, for each product, there were five conditions: (1) the product had its correct brand name; (2) the product was given one of the other (switched) brand names; (3) the product was given the remaining (switched) brand name; (4) there was no brand name on the product (product alone); and (5) the brand name alone was shown (with no product provided). For example, (1) Tostitos chips were in their own bag, (2) Tostitos were in the Mission bag, (3) Tostitos were in the Kroger brand, (4) Tostitos were in a plain bowl with no label, and (5) there was an empty Tostitos bag with no chips. This pattern was repeated for each product in the three product categories. In total, each participant had 45 data points for analysis, one for each station. The stations were quasi-randomized so that no product followed a product in the same product category. The starting station and direction was randomized for each participant.

Procedure. Participants began by completing an informed consent form and demographic questionnaire. They started at the first station which was practice using an unrelated product -- iPod headphones. As they moved from station to station, they were instructed to try each product. If it was a crayon, they were asked to color with it. If it was a tissue, they felt it. If it was a tortilla chip, they ate it. After they tried the product, they rated how likely they were to purchase it on a 1 to 9 Likert scale, with 1 being "definitely will not purchase" and 9 being "definitely will purchase." Participants did the same at each station. For the stations where only the brand label was presented, the participant was asked to rate how likely they were to purchase based on their previous knowledge of that brand.

Once participants completed ratings of all products, they were asked for feedback about the task. Feedback involved questions about which products they felt was the easiest and hardest to rate and why, as well as whether any one station stood out and for what reason.

RESULTS

Analyses of variance were performed to analyze group results. All significant results were at $p < .001$, except for the main effect of product for chips.

The mean results for Crayons are shown in Figure 1, with error bars around each point. The top line gives the means for Crayola crayons. As can be seen, when the actual Crayola was labeled "Crayola," the mean quality rating was about 7 on the 9-point scale. When Crayola was labeled "Roseart," the rating dropped to just above 6; when labeled "Dollartree," the rating was about 5.7. For comparison, when Crayola was given no label (Product Alone), the mean rating was a little over 6.5. In itself, this clearly shows a branding effect – the same crayon was given rather different ratings depending on brand name. The results for the other two crayons, Roseart and Dollartree, show a similar pattern of results. That is, when labeled "Crayola," the rating was higher than when labeled "Roseart" or "Dollartree."

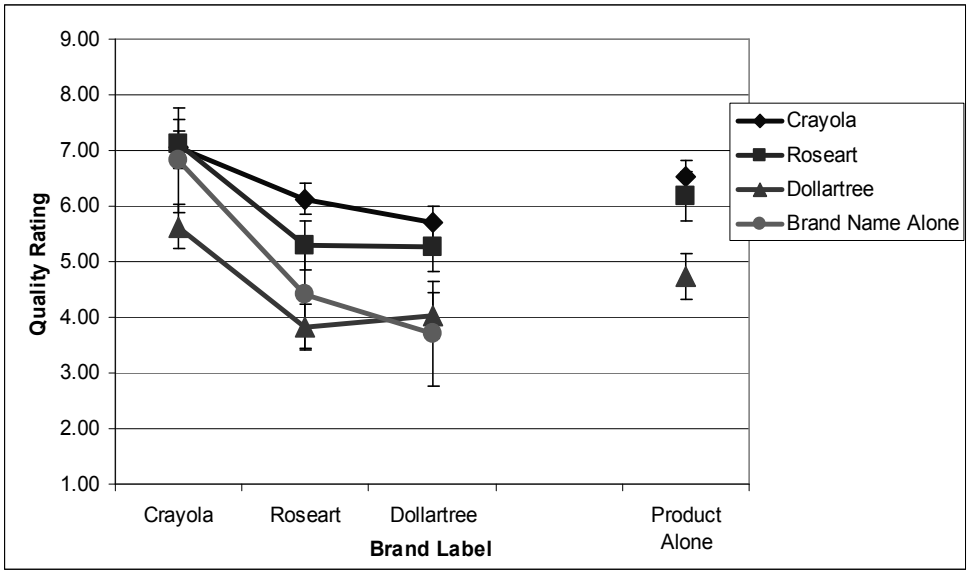

Figure 1. Mean ratings for Crayons.

The line for Brand Name Alone (no actual product) reveals a steeper slope. This is consistent with the pattern predicted by an averaging model, i.e., a crossover interaction. While such patterns have been frequently

observed in other contexts for purely verbal stimuli, such as written personality descriptions (Anderson, 1974), the present participants were given real products to try out.

The graphical pattern was supported by statistical analyses. For the 3 x 3 design (without the Brand Name Alone condition), the interaction was non-significant. However, for the 4 x 3 design (with Brand Name Alone present), the interaction was significant (F = 11.47, MSe = .31). It is also worth noting that the main effects for both actual Product (F = 14.80, MSe = .39) and Brand Label (F = 29.97; MSe = .29) were significant.

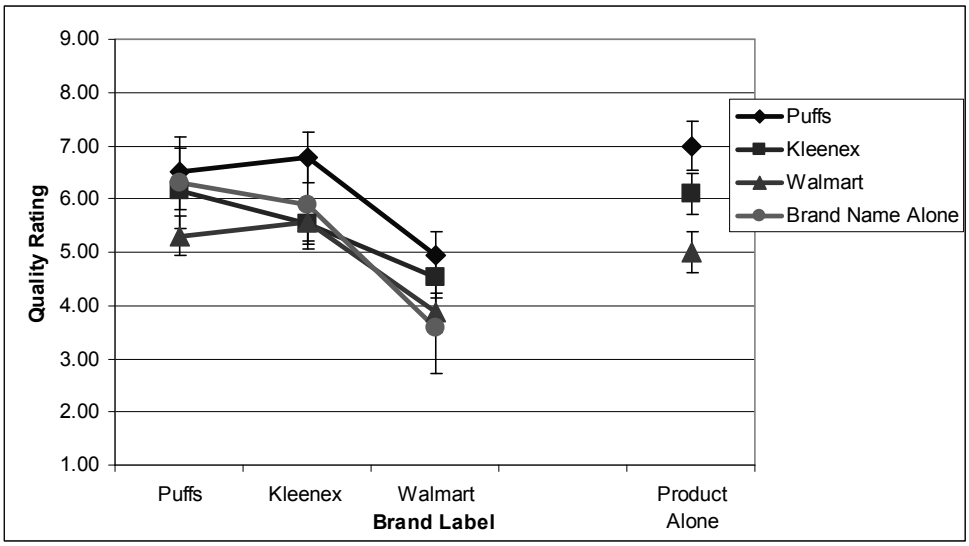

Figure 2. Mean ratings for Tissues.

Similar results were obtained for the other two products, e.g., see Figure 2 (for Tissues) and Figure 3 (for Chips). As can be seen, the pattern for the 3x3 designs show approximate parallelism and a crossover interaction for the 4 x 3 designs. The latter interactions were significant for Tissues (F = 12.03, MSe = .34) and for Chips (F = 4.36, MSe = .14). Moreover, all main effects were significant, except for the Chips main effect (F = 1.12, MSe = .13).

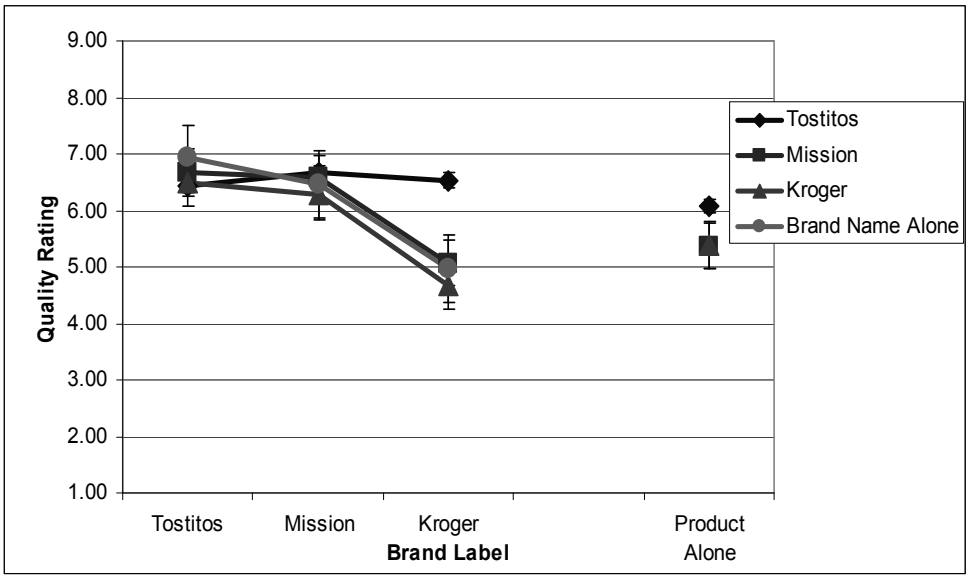

Figure 3. Mean ratings for Chips.

One point stands out for Chips: the Tostitos chips in the Kroger brand bag. Apparently, the taste of Tostitos stood out, even when presented in a generic package. When asked in post-experiment follow-up if any particular station stood out, five participants chose the Tostitos chips in the Krogers bag. They said they weren't expecting the chips to taste so good, since Krogers is not known for superior products. As seen in Figures 1 – 3, this was the only case where the rating of a product was not influenced by the packaging.

DISCUSSION

Overall, the results showed that consumers are influenced by the brand name as much as, if not more so than, the product itself. When presented without packaging (Product Alone), for example, consumers rated all of the chips basically the same. However, the ratings clearly shifted when the same chips appeared in the less desirable bags (Brand Label). Therefore, as is sometimes claimed for expensive wines, the consumers acted as if they had "tasted the label."

It is also important to note that the brand equity effect varied across product types. This can be seen in the different patterns for the three product

categories. Tissues and Chips had a different pattern then Crayons. Thus, it is essential to examine branding effects for each product type.

One result that remained consistent across products was a bias against generic brands. For all three products, the generic brand label yielded the lowest mean quality ratings. Thus, the lowest line in each figure is identified with the generic (store) brand. In most cases, however, the Product Alone (no brand names) results revealed little or modest difference between the products. Apparently, the lower reputation generic brands actually produced a negative equity effect.

The data also showed that, like the Dougherty and Shanteau (1999), the perceptions of the consumer products followed an averaging model, i.e., there is a crossover pattern. The attributes being averaged in this study are the products' brand name along with sensory attributes that in turn lead to perceptions of quality.

This can be represented in terms of an equation that has been slightly modified from Dougherty and Shanteau (1999):

$$QR = \frac{w_s s_s + w_b s_b}{w_s + w_b}$$

where, QR is the quality rating, w is the weight, and s is the scale value, for the sensory experiences, s, and the brand names, b, respectively. The formula is, of course, that of a weighted averaging model.

Possible limitations. The methodology of this study did have a couple issues that should be addressed. Although deception was used in this study, it had minimal impact. Specifically, three participants figured out that the labeling of products had been switched. Tests revealed that these participants were not statistically significantly different from the other participants in their mean quality ratings; they were therefore kept in the analyses.

A potential limitation was the small sample size. Although it might have been better to have more participants, strength of effect measures suggest that there is not much cause for concern. Also, since a within-subjects design was used, participants acted as their own controls. It is also important to keep in mind that the goal of this study was to analyze the process of brand equity, as opposed to specific product effects. Consequently, the focus was on whether the pattern of brand equity results generalized across products, not whether the product results generalized across a large sample size of consumers.

Another limitation is that participants were not actually purchasing the products; they were giving likelihood-to-purchase ratings. However, previous literature has found that purchase intent ratings are correlated with actual purchases (Ferber & Piskie, 1965; Clawson, 1971; Pickering & Isherwood, 1974; and Granbois & Summers, 1975).

Future research might incorporate other components of brand equity, such as price, advertisements, word of mouth/recommendations, packaging, etc. For instance, the interaction of price and brand name might lead to different results. Similarly, advertisements can create an illusion of better or worse quality than what the product really is. If a commercial has been poorly produced, for example, some might assume that the product being advertised is also of poor quality as well.

Word of mouth/recommendations can also affect perceived quality. This seems to be a variable based on what we learn from the experience of others. For example, if we need to purchase a vacuum cleaner and friend tells us not to buy a certain brand because he had a bad experience with it, we are less likely to buy that brand. Another form of recommendations is from experts, such as at Consumer Reports; Dougherty and Shanteau found that such recommendations affect participant's perceptions of product quality. Combining these variables, and more, might lead to an overarching theory of brand equity to be created.

CONCLUSIONS

This study has shown that Functional Measurement is revealing about the effect that brand name has on consumer's purchase intentions. Although we did not directly measure quality, it seems likely that participants' purchase intentions were based on their perceived quality. We also found that the strength of the brand equity effect is dependent on the product type, such that the effect is stronger for some brands, e.g., Crayons, than for others, e.g., Chips.

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