Testing the Potential Benefits of Brands in Horticultural Products: The Case of Oranges

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SUMMARY. The share of brand-name fruit and vegetables is much lower than that for general foods or processed industrial foods. The paper analyzes consumers' choice between generic and brand-name products and shows that consumers' preferences for horticultural brands increase with their appreciation of quality and with a low quality of the generic products, and that brand preferences are affected by socio-economic variables. The theoretical findings are supported by an orange (*Citrus sinensis*) consumer survey held in the UK and Israel. We found that in both countries consumers assign a relatively low value to orange brands. Consumers who are willing to pay for better quality are those who perceive brands as more important.

A brand is a way of signaling that a product is characterized by quality which is higher than the average quality in that category, and that quality is consistent over time and place. Higher quality and smaller variance reduce the risk of making unsuccessful choices, thereby increasing the expected benefit of buying, and reducing the consumer's search costs (Mahajan et al., 1994). As a result, buyers are presumably willing to

pay a premium for a strong brand. That premium has been used to estimate brand value, which is also termed brand equity (Aaker, 1991, 1996).

Developing and promoting a brand name requires a large investment, and therefore the seller who chooses to build a brand must be assured that the additional revenues generated will cover the costs of branding. This return has only rarely been achieved with horticultural products. For example, firms such as Castle & Cooke and Budd Co. that established brand names for cauliflower (*Brassica oleracea* group *botrytis*), broccoli (*Brassica oleracea* group *Italica*) and grapes (*Vitis vinifera*) were unable to recover their investment (Baylis, unpublished data). This is in contrast to the situation of most processed, frozen, and canned foods, such as Dole in juices, processed fruit and even raw meats, Foster Farms in chicken meat, and Angus meat for beef. The few examples of successful brands of horticultural products include: Sunkist oranges, Indian River grapefruit (*Citrus paradisi*), Dole pineapples (*Ananas comosus*), Pink Lady apples (*Malus sylvestris*) and pears (*Pyrus communis*), Washington apples, Iowa potatoes (*Solanum tuberosum*), Chiquita bananas (*Musa cavendishi*), and Swan pears. Most fruit and vegetables are traded in their generic form, i.e., not under a brand name.

When quality is important and unobservable before consumption, as is the case with many fruit, and when it is a low involvement product (inexpensive, low cost of making a wrong choice), then consumers' willingness to spend time on search is low, and as a tradeoff their tendency to rely on brands as a single source of information, increases (Zeithaml, 1988). However, this assumption does not seem to hold with fruit. The growing interest in and awareness of quality in fruit and vegetables (see Thai, 1993; Thai and Shewfelt, 1991) does not support the idea that the low share of brand-name fruit and vegetables is caused by the consumer's low valuation of quality. Other reasons for the scarcity of brands in horticultural products must therefore be sought.

The literature recognizes two major reasons for disappointment in product quality, which leads to customer dissatisfaction and makes a brand useless. The first is inconsistent quality, caused by poor terms of production,

and the second is termed quality gap, where the producer and the buyers differ in their perception of quality. Heiman et al. (2002) showed that retailers prefer oranges with longer shelf life while consumers value taste and, in particular, sweetness.

Horticultural products are characterized by an inherent distribution of quality (Zusman, 1967) which can only be narrowed down by employing strict quality standards (grading systems). Grading and branding are complementary marketing tools, and sellers chose the number of quality grades and whether to brand all grades with different brand names or only the top quality. Sunkist employs strict quality grading standards which divide the oranges into three grades: top quality (fancy) oranges are marketed with the brand Sunkist, the next level is sold as generic oranges (choice) and the lowest level is directed to the industry (Sunkist Growers, 2003). The problem, however, is with the remaining, considerable variability in quality within each grade (branded and generic), which undermines the willingness of buyers to pay for the brand-name product.

This paper focuses on consumers' perception of the importance of brands in oranges and aims at studying the reasons for the low share of branded citrus. We hypothesize that the low share of citrus brands is the outcome of consumers' low valuation of orange brands as being a significant quality cue.

We assume that the importance of brand increases with the buyer's willingness to pay for quality, his/her level of dissatisfaction with the current quality of oranges in the supermarkets, and his/her income. We test our hypothesis using data from a consumer survey held in the UK and Israel. Results indicate that the average consumer considers color, shape and price to be much more important cues than brand.

We begin this paper by analyzing consumer choice between brand-name and generic products. Following that, we describe the orange consumer survey and analyze its data. In the final section we discuss the broader significance of the results and outline future venues of research.

Consumer choice

Suppose that a representative buyer increases his or her well being by

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consuming oranges. The contribution of consumption of a particular good to the buyer's well being will be termed benefit. The cost of the good is the sum of product's price and search cost, which is the value of time invested in searching for the product that will yield the highest benefit for a given price in a store. A buyer will purchase a brand-name product only if the benefits derived from consuming the additional quality are higher than the difference in the total buying costs. The extra benefits are the product of the difference in quality and the buyer's valuation of quality. Brands may have better average quality, i.e., larger quantities in at least one of the product's attributes, or lower variance in quality, i.e., better selection. Thus a product may have a higher price tag, yet its total cost of buying will be lower as the consumer can make an instant selection. Since the quality of the brand-name product is higher than that of the generic product, its price needs to be higher; otherwise, every one will buy the branded product. In addition to higher quality, the consumer must appreciate this quality in order to guarantee the purchase of the brand-name product. An individual may be indifferent to the quality of the orange and thus from his/her perspective, the higher quality does not justify the price premium. Therefore, a brand-name product will be purchased if $\text{benefit}[\text{quality}(\text{brand})] - \text{price}(\text{brand}) - \text{search cost}(\text{brand}) > \text{benefit}[\text{quality}(\text{generic})] - \text{price}(\text{generic}) - \text{search cost}(\text{generic})$ [1]

$$\text{and} \quad \text{benefit}[\text{quality}(\text{generic})] - \text{search cost}(\text{generic}) > \text{price}(\text{generic}) \quad [2]$$

Inequality (2) assures that consumers are in a habit of buying citrus. If inequality (1) holds then buying branded oranges is preferred over buying generic oranges, but if only inequality (2) holds then buyers will consider only generic oranges. If the population is homogeneous with regard to its evaluation of quality and its search cost, then the solutions of inequalities (1) and (2) imply that either all the consumers buy brand-name oranges or the entire population prefers buying generic products.

On the other hand, if the population is heterogeneous with respect to its evaluation of quality and its search cost, then the solutions of inequalities (1) and (2) classify the population into two segments: buyers of generic products, and buyers of brand-name prod-

ucts. For buyers of generic products, inequality (2) is satisfied but inequality (1) is not satisfied, and for buyers of branded products, both inequalities (1) and (2) are satisfied.

Research hypotheses

Let $\Delta \text{benefit} = \text{benefit}(\text{quality of branded fruit}) - \text{benefit}(\text{quality of generic fruit})$, $\Delta \text{price} = \text{price}(\text{of branded fruit}) - \text{price}(\text{generic fruit})$, $\Delta \text{search cost} = \text{search cost}(\text{generic fruit}) - \text{search cost}(\text{branded fruit})$.

Arithmetic manipulation of inequality [1] indicates that a consumer will buy a brand-name product if and only if $[1.1] \Delta \text{benefit} > \Delta \text{price} - \Delta \text{search}$. The left-hand side of inequality [1.1] represents additional benefits which are derived from the higher quality of the brand-name fruit. A significant difference in quality between the brand-name and generic fruit is a necessary condition for branding but is not sufficient, since the prospective buyer needs to appreciate the higher quality: the lower the quality of the generic product, the higher the quality gap between the branded and the generic products. If the difference in the average quality between branded and generic fruit is insignificant, then even individuals with the highest valuation to quality would not consider buying branded fruit. Thus we distinguish between potential value, which is a theoretical value (the upper bound) of a brand given its quality is significantly superior, and value which is conditional to the actual quality difference between branded and generic fruit. Individuals with high valuation of quality would appreciate brands if and only if their qualities are indeed significantly higher, otherwise (when quality difference is insignificant) brands will have no value. For individuals with low valuation of quality, brands have no value that will justify paying a price premium. However, if branded and generic fruit are sold at the same price, the low-quality-value segment may consider buying branded fruit. Hypotheses (H1) and (H2) summarize this discussion. H1 = the higher the importance of quality, the higher the potential value of the brand. H2 = the lower the satisfaction from the quality of generic oranges, the higher the potential importance of brands.

Searching for high-quality fruit and vegetables from a generic variety is a time-consuming activity. Brands, which by definition preclassify the

produce and maintain high quality standards, pack and mark the product and reduce that search cost. Search cost is equal to the time spent in selection activities multiplied by the value of alternative usage of time, which is commonly measured by the hourly wage: the higher the income, the higher the search cost. High search cost increases the buyer's motivation to rely on brands in his/her selection. This is consistent with Zeithaml (1988), who found that working women use brands more heavily as a quality cue. It follows that H3 = the higher the income, the higher the importance of the brand.

Thus, the three presented hypotheses identify three factors that may influence the significance of branding oranges. It should be emphasized that the three hypotheses are not mutually exclusive; each of the factors might act in concert with the others in the support of branding.

Empirical study

In March 1999, two parallel consumer surveys were held in major shopping centers in Nottingham, U.K. and Rehovot, Israel. We surveyed 330 consumers at each location, and interviewed them using predesigned questionnaires about their consumption habits, taste and quality preferences, and their ranking of color, price, shape and brand as quality cues. The interviews took place after a taste panel in which responders tasted and evaluated the taste, aroma, and juiciness of three oranges: the traditional Israeli 'Shamouti' orange grown in the classical coastal area; a 'Shamouti' orange grown in southern semi-desert areas of Israel, and Spanish navel oranges.

The U.K. market was chosen because it is the largest buyer of Israeli oranges. For more than 60 years, Israel has advertised, promoted and sold all of its citrus export under the Jaffa brand. The U.K. has been the largest and most loyal buyer of this brand, and the Israeli variety, 'Shamouti,' has captured the largest market share. In the last 5 years, the quality gap between the Jaffa brand and generic oranges has diminished, and some experts argue that the new Spanish and Moroccan navel orange varieties are tastier. Spanish navel oranges are sold in their generic form or under the brand name OutSpane. The Israeli market is a good control group since the import of oranges into Israel is prohibited by law and oranges are sold

mainly in their generic form or under the Jaffa brand, from export surplus, and thus branding plays a little role in signaling quality. For this reason, it is expected that in Israel, brand-name oranges will not be perceived to be of higher quality, and buyers will not pay a price premium for Jaffa or other local brands.

Quality preferences were measured by guiding the responders to report about their preferences for six different attributes of oranges: juiciness, aroma, taste, texture of the fruit, ease of peeling and the ease of separating segments, which had been identified as the most important attributes in a pretest interview, using Likert-scale questions. How much do you consider the juiciness of the orange to be an important attribute? Unimportant (1), Not very important (2), Have no idea (3), Quite important (4), Extremely important (5).

Responders were then asked to rank color, shape, brand, and price on a four-point scale. When you choose an orange and try to predict the quality of the fruit, which of the following four attributes is the most influential? Please rank the four cues from the most important (ranked 1) to the least important (ranked 4). Rankings were used to estimate the relative importance of four quality cues when the responders make their choice at the point of purchase.

The next two questions estimated the importance of quality and the level of satisfaction from the quality of oranges in the marketplace by asking responders two direct questions: What is the price premium that you are willing to pay for oranges with superior quality? [0 (I am not willing to pay more), 10% to 15%, 20% to 30%, 35% to 50%, >50%].

Responders were then asked to in-

dicate their satisfaction with the quality of the oranges they were consuming: How satisfied are you with the quality of the oranges you purchased? [not satisfied at all (1), unsatisfied (2), I do not know (3), satisfied (4), highly satisfied (5)].

Finally, we asked the responders to report on some aspects of their socio-economic status, which included: income, size of household, age, gender, and marital status.

Summary of the survey results

Table 1 presents a summary of the survey statistics. The units of measurement in the first four rows represent the relative importance, toward a generic oranges rather than a specific brand, on the 0 to 4 scale. Family size is measured in real numbers, willingness to pay for higher quality is the price premium in percent, proportion of women is the percent of women in the sample, and income is measured on a 0 to 2 scale where 1 stands for average income. The summary statistics is presented for each country, where the first two columns represent samples mean and standard deviation for the U.K. sample, columns three and four present the mean and variance for the Israeli sample, and the last two columns show these statistics for the joint sample (U.K. plus Israel). Using *t* test to check the significance of the difference between the means of two populations, shows that U.K. buyers differ from Israeli shoppers in their willingness to pay for quality, the importance they attribute to brands, their satisfaction from quality of oranges currently sold in the marketplace, and in two demographic aspects: the proportion of women in the sample (higher in Israel) and family size (bigger in Israel).

The importance of brand as a quality cue (Table 1, first row) is

rather low. Israeli shoppers indicate that they do not consider brands at all, assigning value of 0.67 in the 0 to 4 scale. British buyers assign higher value (1.12) but still significantly lower than the median (2.5). Women pay much less attention to brand than men. Comparison of U.K. and Israel shows that while 55.8% of the Israeli sample does not consider brand as an indicator of quality, only 38.9% of the U.K. responders hold the same opinion. Among those who considered brand as a quality cue, 7.1% of the Israeli sample and 16.9% of the U.K. sample regarded brand as the most important cue. This, however, might not be a representation of the Israeli consumer in general but, rather reflects the fact that oranges are generally sold in Israel by their generic name.

Using the same data set we examined hypotheses $H_1 - H_3$ regressing the relative importance of the brand as a function of willingness to pay for quality (WTPQ), the current satisfaction from quality (S), and income (I). The dependent variable is the relative importance of the brand, B, measured as an inverse rank (4 = the most important, 1 = the least important). The predictors are derived from hypotheses $H_1 - H_3$ respectively.

Two other indirect measures of quality were estimated: the importance of juiciness, which was denoted J, and the importance of taste, T. When oranges are used to prepare juice, their quality matters less, and as indicated by hypothesis H_1 , it decreases the value of the brand, whereas when they are consumed as a fruit, taste matters more, increasing the importance of the brand.

Family size, F, and the gender of the buyer, G, were included as indirect measures of search costs. Family size adversely affects the per-capita income

Table 1. Summary of orange consumers survey findings.

Parameter	U.K.		Israel		Joint sample (U.K. and Israel)	
	Mean	SD	Mean	SD	Mean	SD
Importance of brand (0-4 scale)	1.12	1.11	0.67	0.91	0.90	1.04
Importance of juiciness (0-4 scale)	3.56	0.74	3.39	0.88	3.48	0.81
Importance of taste (0-4 scale)	3.68	0.55	3.90	0.41	3.78	0.50
Satisfaction from quality (0-4 scale)	2.58	0.97	3.07	0.83	2.82	0.94
Family size	2.80	1.37	3.92	1.61	3.34	1.59
Willingness to pay for higher quality (premium in percent)	0.16	0.37	0.11	0.318	0.138	0.35
Proportion of women	0.32	0.47	0.61	0.49	0.458	0.499
Income	1.15	0.80	1.28	0.82	1.21	0.81

and as per hypothesis H_{33} reduces the brand's importance. Experienced shoppers need less time to make their selection and thus we assume that they will give a lower valuation to brands. Women are the main shoppers in the U.K. and in Israel and thus we expect that the higher the proportion of women (G) in the sample, the lower the valuation of the brand. Equation [3] presents the econometric representation of the above discussion.

$$B = a + b_1J + b_2T + b_3S + b_4F + b_5WTPQ + b_6G + b_7I + \bar{E} \quad [3]$$

Table 2 presents the OLS estimation result of equation [3]. The first row shows the constant of the regression, which represents the value of brand, given that the other variables assume the value zero; the more explained by the regression coefficients, the lower the constant. For that reason the constant of the joint sample is higher than the constant of the separate estimation for U.K. and Israel. The constant may be interpreted as the value consumers assign for brand given that all other variables assume the value 0. Rows 2 to 9 present the coefficients of the seven explanatory variables. The value represents the marginal (the effect of increase in one unit) contribution of a specific variable to the valuation of brand. Negative sign indicates that the variable is inversely related with the valuation of the brand (Table 2).

The first and most surprising finding was the basic low value consumers assign to brand as represented by the constant, 1.773 on a 1 to 5 scale. Results of the joint sample show that the importance of brand as an indicator of quality decreases with previous satisfaction from the quality of oranges sold at supermarkets (fourth row). Since the majority of the oranges sold in the U.K. and most of the oranges sold in Israel

are generic oranges, then satisfaction from previous quality represents the satisfaction from generic products, and if this is high then there is no need for branded fruit, supporting hypothesis H_2 . Results also indicate that the importance of brand increases with the willingness to pay for superior quality (supports H_1). Income had no effect on the valuation of brand.

The only significant socio-economic variable that affected the importance of brand was gender. Women shoppers in Israel assign a lower value to brand than men. This finding is different from the one reported in Zeithaml (1988). At first glance, this result is surprising, as women are the main shoppers and as such are expected to appreciate the benefits of buying brand-name products. But when we consider that saving on search costs is an important reason for buying brand-name oranges, and we recognize that women are more experienced shoppers and thus need less time to make their choice and that women on average are paid less than their male counterparts, the lower values make sense. Men who are less experienced and are afraid of making mistakes prefer brand-name oranges as an assistance to successful buying.

The split sample shows that the British buyers perceive brands as much more important than the Israelis, 1.653 and 0.564, respectively. This is apparently the outcome of two factors. First, most oranges sold in the U.K. have been sold for the last century under the Jaffa brand, whereas in Israel oranges are sold in their generic form. Second, in the U.K. there are many varieties of oranges that come from different origins and have distinct characteristics. Brands provide consumers with an easy way of distinguishing between the

varieties. In Israel, import of oranges is prohibited and brands have no practical meaning.

General discussion

This research aimed to explore the reasons for the lower share of brand-name horticultural products in contrast to the high share of brand-name products in the general food category. We conjectured that the main obstacle in branding fruit and vegetables is the low significance that consumers assign to brand-name horticultural products because of their variability in quality.

We analyzed consumer's choice between brand-name and generic products, and hypothesized that consumer's perception of brand importance increases with: a. stronger preferences for quality, b. lower quality of generic substitutes, and c. higher income. We tested these three hypotheses by analyzing a survey of 660 consumers held in the U.K. and Israel.

We found that individuals perceive brand as being of very minor importance in oranges. This is probably the outcome of poor differentiation in quality between branded and generic oranges in the U.K. and the Israeli markets. We hypothesized that maintaining superior quality is a prerequisite for brand value, thus even if a consumer would prefer buying branded over generic oranges, he/she will not do it when the quality difference is insignificant. Buyers who indicated higher willingness to pay for better quality oranges had also higher valuation for brand-name, supporting our first hypothesis. We also found that brand importance increases with dissatisfaction with the quality of oranges that are currently sold in the supermarkets, and are mostly generic, supporting the second hypothesis, that lower quality

Table 2. Estimated effects of importance of orange attributes (juiciness, taste and quality), satisfaction from current quality, family size, gender of responder and income on the importance of brand.

	U.K.		Israel		Joint sample (U.K. and Israel)	
	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant of regression	1.653	0.506	0.564	0.589	1.773	0.368
Importance of juiciness	-0.250^a	0.083	0.043	0.059	-0.055	0.051
Importance of taste	0.124	0.113	-0.006	0.131	-0.07	0.084
Satisfaction from quality	-0.127	0.063	0.06	0.063	-0.107	0.044
Family size	0.065	0.046	0.016	0.033	-0.006	0.027
Willingness to pay for quality	0.365	0.163	-0.123	0.163	0.203	0.119
Gender of buyer	0.191	0.129	-0.325	0.108	-0.188	0.082
Income	-0.059	0.081	-0.042	0.066	-0.027	0.053

^aParameters in bold are significant at $\leq 5\%$.

of generic fruit will lead to higher valuation of brand. We were unable to support our third hypothesis which stated that the higher the income, the higher the importance of brand as a signal of quality. The main reasons for the lack of significance of the income factor might be the narrow distribution of income in our survey (most of the responders reported earning an average income). Furthermore, in our times oranges are perceived as an inexpensive commodity and not anymore as a differentiated product.

One of the interesting findings which was revealed by the data is that Israeli men value brands more than Israeli women, implying that they may be less confident in their choices. The difference between men and women in the U.K. in their valuation of brand-name oranges was not significant.

Generalization of the present paper's findings will become possible only after analysis of brand valuation in other countries and in different product categories. In the U.S there are some examples of successful citrus brands. Sunkist and Indian river are good examples. Sunkist practices brand policy, which includes a strict quality control on packing houses and retailers and on licensees as an important element in its strategy. Quality standards, include shape, color, size, and acidity level (Sunkist Growers, 2002). Future research would benefit from a survey

comparing the importance of brands among different horticultural products in a variety of processed forms. Consumers buy processed horticultural products, which are basically industrialized products, and reveal low valuation for brand-name in fresh fruit and vegetables.

It would be of interest to determine whether the valuation of brands varies among consumers, and whether this variance holds across different product categories. If consumers who buy only brand-name fashion are also characterized by higher valuation of brand-name horticultural products, then the marketer could use segmentation techniques and direct his marketing offer to this segment.

The findings of this research could be confirmed and strengthened by using scanner data (sales reports from supermarkets) to compare prices and quantities of brand-name and generic produce. This approach has some limitations as most products are generic and supermarkets are not very enthusiastic about sharing their data with researchers.

In conclusion, this research shows that cooperatives of growers and trade companies can benefit from branding only if they can obtain significant and noticeable quality standards, can maintain consistency of the superior quality over time, and can establish a long-lasting, public reputation for the brand-name product.

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