

Psychological Bias Caused by Notification of Brand Name in Sensory Evaluation of Mango Fruit Drink

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Abstract

Consumer buying habit of food product is driven by brand name. The objective of this study is to examine whether brand name have an effect on the evaluation of sensory-based attributes in the process of purchasing a product. Brand name plays an important role even it causes psychological bias in sensory evaluation of mango fruit drink. In this study we conducted five different sensory test-blind test, open test, interchange sample test, duplicate test and brand recognition test to check the bias caused by notification of brand name. Same respondents were evaluated for all the tests. Sensory evaluation was done on attributes like color, smell, taste, sweetness, mouth feel, viscosity and overall acceptance using the 1-9 hedonic scale. Tests results proved that brand name does cause bias during sensory evaluation of mango fruit drink. People knew mango drinks by their brand name and not by their taste or product quality. More successful the brand more rating it got during open and interchange sample test. After conducting the test it is observed that different product may taste more or less the same but brand name is unique which guides the sensory evaluation. People were not able to identify the brand by tasting it in brand recognition test. On an average only 20% of the consumers successfully identified the brand by taste.

Keywords: Sensory test; Brand name; Hedonic scale; Psychological bias

Introduction

Today's consumers are discerning, demanding and becoming more knowledgeable about food and beverages. They accept only products which are safe, value added and of high sensory quality [1]. Therefore, knowing consumers preferences and perceptions about the sensory characteristics of food products is very important to food and beverage manufacturers and retailers alike. Now-a-days customers have a good knowledge about the branded products and they trust more the well-known brands assuming they offer them good quality that they expect [2,3]. Brand name greatly affects the sensory result of the products [4-6]. A brand value depends on the quality of its products in the market and the need that a customer actually got satisfied with by using its products and services [7]. This builds the trust of the customers on that brand [8]. Customer loyalty is the result of consistently positive emotional experience, physical attribute-based satisfaction and perceived value of an experience, which includes the product or services provided by a company [9,10]. Customers trust is valuable asset for a company because it reduces vulnerability from competitors [7]. Customer decision making process is highly influenced by brand name in most of the cases.

Sensory evaluation of product is carried out to determine consumer acceptability [11]. Sensory Evaluation is defined as "A scientific discipline used to evoke, measure, analyze, and interpret those responses to products that are perceived by the senses of sight, smell, touch, taste, and hearing". The most widely used scale for measuring food acceptability is the 9-point hedonic scale (Table 1) [12]. David Peryam and colleagues developed the scale at the Quartermaster Food and Container Institute of the U.S. Armed Forces, for the purpose of measuring the food preferences of soldiers [13]. The sensory attributes for a fruit drink on which rating is given are Color, smell, taste, mouth-feel, sweetness, viscosity and overall acceptance [13]. Psychological factors affecting sensory test are Expectation error which occurs when an individual is given too much information about the samples, Stimulus error which occurs when an individual

is influenced by some characteristics of the sample, Halo effect which occurs when an individual rate more than one quality characteristics at a time, Suggestion error which occurs when an individual is aware of the reactions of other during sensory evaluation, Central tendency error which occurs when the individual may choose the mid-range to avoid extremes and Order effect error which occurs when samples are placed in a defined order. Knowing the brand name would also cause psychology bias during sensory evaluation of a product which comes under expectation error [14-16]. A study showed how brand name influence consumer decision of buying cars [17]. Best method to avoid expectation error is to do blind sensory test. In this paper we have tried to find out and prove that consumers are biased towards well-known brands.

For this study we have chosen six locally available mango fruit

Score/rating	std. hedonic scale
9	I like extremely
8	I like very much
7	I like moderately
6	I like slightly
5	I neither like or dislike
4	I dislike slightly
3	I dislike moderately
2	I dislike very much
1	I dislike extremely

Table 1: 9 Point hedonic scale.

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drink. Fruit drink is the largest market with an estimated market share of close 50% -60%, of which mango is the most popular flavor and accounts for 90% of volume across all the variants [18].

Methodology Used

Survey Method has been chosen to carry out the study. Similar study has been done on wine [19].

Respondents

A total of 80 respondents were taken as sample. These respondents are consumers of mango fruit drink. All the respondents were taken from organization-Flourish Pure foods Pvt. Ltd., Ahmedabad. Age group was from 20-50. Sensory sampling was done on the same respondents for all the tests. Each day all the respondents were taken for single test. Each time sealed pack of mango beverage was used. No restrictions were there on age, gender and location. All the respondents were physically and mentally fit. Neither of them had any undesired medical history which can influence the test result. All respondents before this study started had tried all the six mango beverages.

Mango beverage

We have used six different brands which were locally available in the market.

Sensory analysis

Sensory evaluation of the fruit drink was judged for color, taste, flavor, smell, viscosity and general acceptability on a nine point hedonic scale, varying from “dislike extremely” (Score 1) to “like extremely” (Score 9) was used according to [14]. The whole survey was divided into five tests: Blind sensory test, Open sensory test, Interchange sample test, Duplicate sensory Test and Brand recognition test [20-22].

We conducted five different tests to know the psychological bias that an individual does during sensory evaluation [23]:

- Blind sensory test of mango fruit drink of 6 different brands: In this test respondents were given 50ml of unknown mango fruit drink. The mango fruit drink were named as Brand 1, Brand 2, Brand 3, Brand 4, Brand 5 and Brand 6. They were asked to drink and fill the sensory evaluation form on different parameters like color, odor, taste, mouth-feel, sweetness, viscosity and overall acceptability using hedonic scale.

- Open sensory test of mango drink of 6 different brands: In this test the respondents knew which brand mango fruit drink they are going to evaluate. In this test the same respondents were given the same quantity of all the 6 brands of mango fruit drink. They were asked to evaluate on the same parameter as in blind taste.

- Interchanging pack test: In this test packs of different mango drink brands were interchanged. In brand 1 pack brand 3 mango fruit drink was filled and vice versus. In brand 2 pack brand 4 mango fruit drink was filled and vice versus. Brand 5 and Brand 6 were left unchanged. The same respondents were asked to fill the sensory evaluation form on same parameters.

- Duplicate Sensory Test of mango fruit drink: In this test, two brand samples were kept in duplicate. The respondents were given 8 samples to taste one after one and rate and asked them to rate using hedonic scale. Brand 1 and Brand 2 were kept in duplicate.

- Brand Recognition test: In this test respondents were given mango fruit drink and asked to identify the brand according to taste.

Limitation of the study

- Only limited numbers of respondents were tested.
- The test had no restriction of age.

Results and Discussion

Blind sensory test result

Blind sensory test result is most accurate and unbiased. For our study it will act as control or reference. This test result tells about consumer acceptability of particular food product. Respondents were asked to rate the samples using 1-9 hedonic scale on different attributes like color, odor, taste, mouth-feel, sweetness, viscosity and overall acceptance (Tables 2 and 3).

The blind sensory test result states that: Brand 1 mango fruit drink ranked 1st in all the parameters.

Brand 2 ranked 2nd in taste, mouth-feel and overall, ranked 3rd in color, smell, sweetness and viscosity. As this test is unbiased this test ranking is most accurate and would be treated as reference.

Open sensory test of mango fruit drink

This test is for analysis of biasing that respondents will do on knowing the information the pack provides. The respondents filled the same sensory evaluation table but this time they knew the brand which they were consuming (Tables 4 and 5).

Open sensory result shows that: Brand 1 and Brand 2 is still at 1st and 2nd position respectively But Brand 5 which ranked 5th in blind test ranked 3rd in open test which was surprising to note. The brands whose ranking changed, signifies that respondents had judged the mango fruit drink of less quality when they saw its label. The only difference between open and blind test is of the additional information the brand provides to respondents (Tables 6 and 7).

Fruit drink	Brand 1	Brand 2	Brand 3	Brand 4	Brand 5	Brand 6
Overall	1	2	3	4	5	6
Color	1	3	4	2	6	5
Smell	1	3	2	5	4	6
Taste	1	2	3	4	5	6
Mouth-feel	1	2	4	3	6	5
Sweetness	1	3	2	5	6	4
Viscosity	1	3	2	5	4	6

Table 2: Ranking list of blind test.

Fruit drink	Brand 1	Brand 2	Brand 3	Brand 4	Brand 5	Brand 6
Total avg. points	7.21 ± 1.0997	6.27 ± 0.998	6.22 ± 0.389	6.15 ± 0.838	5.96 ± 0.551	4.96 ± 0.947
Ranking	1	2	3	4	5	6

Table 3: Average points of all the attributes for blind test.

Fruit drink	Brand 1	Brand 2	Brand 3	Brand 4	Brand 5	BRAND 6
Overall	1	2	5	4	3	6
Color	1	2	3	6	5	4
Smell	1	2	4	5	3	6
Taste	1	2	5	3	4	6
Mouth-feel	1	2	4	3	3	5
Sweetness	1	2	4	4	3	5
Viscosity	1	2	5	3	4	6

Table 4: Ranking list of open test.

Fruit drink	Brand 1	Brand 2	Brand 3	Brand 4	Brand 5	Brand 6
Total avg. points	7.12 ± 1.002	6.73 ± 0.881	6.28 ± 0.403	6.09 ± 0.930	6.38 ± 1.11	5.73 ± 0.362
Ranking	1	2	4	5	3	6

Table 5: Average points of all the attributes for open test.

Pack	Brand 1	Brand 2	Brand 3	Brand 4	Brand 5	Brand 6
Fruit Drink	Brand 3	Brand 4	Brand 1	Brand 2	Brand 5	Brand 6
Overall	2	3	1	6	5	4
Color	3	2	1	6	5	4
Smell	1	3	1	4	2	5
Taste	2	1	3	5	1	4
Mouth-feel	3	1	2	4	3	4
Sweetness	1	2	1	4	3	3
Viscosity	2	4	1	6	5	3

Table 6: Ranking list of interchange pack test.

Fruit drink	Brand 1	Brand 2	Brand 3	Brand 4	Brand 5	Brand 6
Total avg. points	6.75 ± 0.248	6.29 ± 0.999	6.6 ± 0.916	6.57 ± 0.535	6.4 ± 0.721	6.3 ± 0.458
Ranking	1	6	2	3	4	5

Table 7: Average points of all the attributes for interchange test.

Interchanging pack test

Packs were interchanged and respondents were asked to fill the form. Ranking: Brand 1 ranked 1st, Brand 2 ranked 6th (Table 8).

Comparison of open test, blind test and interchange pack test

Brand 1 fruit drink ranked 1st in all the three tests, Brand 1 has worked effectively on the quality of fruit drink and has done right branding of the mango fruit drink. This is ideal behavior which ever other brand should do. Respondents were not biased when judging Brand 1.

Brand 2 fruit drink ranked 2nd in blind test (Reference test) and Open test (Analysis Test) because brand 2 was a well-known brand but brand 2 fruit drink ranked 3rd when its pack was interchanged highlighting the biasing which respondents did when the pack was changed with less famous brand.

Brand 3 fruit drink ranked 3rd in Blind test but when respondents were shown the pack it ranked 5th it clearly signifies the biasing which respondents did on seeing the pack. Similarly, for Brand 5 and Brand 6 the result was same. Biasing of respondents was there.

Brand 4 fruit drink ranked 4th in blind test which is control but on seeing the pack of the brand it ranked 3rd and in third test when the pack was interchanged with a not so famous brand it ranked 5th. These results clearly highlights the biasing which respondents did during the tests.

Fruit drink	Brand 1	Brand 2	Brand 3	Brand 4	Brand 5	Brand 6
Blind Test Avg	7.21 ± 1.09	6.27 ± 0.99	6.22 ± 0.38	6.15 ± 0.83	5.96 ± 0.55	4.96 ± 0.94
Open Test Avg	7.12 ± 1.00	6.73 ± 0.88	6.28 ± 0.40	6.09 ± 0.93	6.38 ± 1.11	5.73 ± 0.36
Interchange Test Avg	6.75 ± 0.24	6.29 ± 0.99	6.6 ± 0.91	6.57 ± 0.53	6.4 ± 0.72	6.3 ± 0.45

Table 9: Comparison of all the tests.

Fruit drink	Brand 1	Brand 2	Brand 3	Brand 1	Brand 4	Brand 5	Brand 6	Brand 2
Average	6.95 ± 1.27	6.45 ± 0.47	6.5 ± 0.80	6.5 ± 0.50	6.3 ± 0.78	6.6 ± 0.50	6 ± 1.34	5.95 ± 0.79

Table 10: Average points of each brand in duplicate test.

Brand 6 fruit drink ranked 6th in blind and open test but randomly ranked 2nd in interchange sample test even when its pack was not change. This Random result drives us to conduct duplicate test to examine the variation respondents will do when the samples are kept in duplicate. All these results clearly show that respondent's sensory preference is driven by the brand name of the mango fruit drink (Table 9).

Duplicate test

In this test Brand 1 and Brand 2 was kept in duplicate. All the 8 fruit drink were rated on same different attributes using hedonic scale.

Respondents rated Brand 1 and Brand 2 differently both the times which shows that they were not able to identify that the fruit drink were same. The respondents use their brain not their senses. The two fruit drink got different rates despite being the same. They considered all the fruit drink to be different. The average rate which Brand 1 got in first turn is 6.95 and in second turn it got 6.50 showing a variation of 0.45. Similarly, for Brand 2 in first it got 6.45 average rates while its duplicate fruit drink got 5.95 showing a variation of 0.50 (Figures 1 and 2) (Table 10).

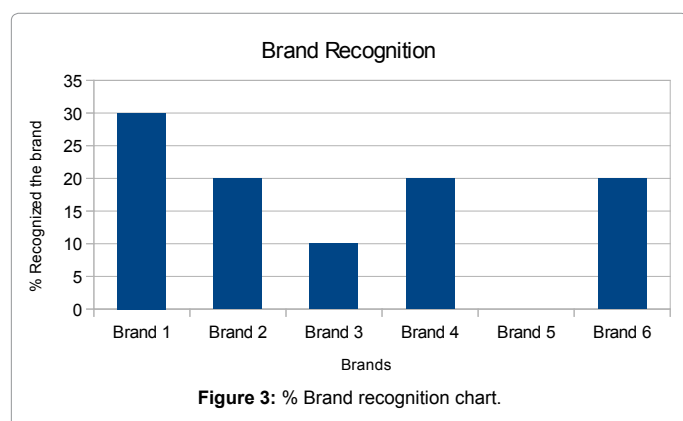
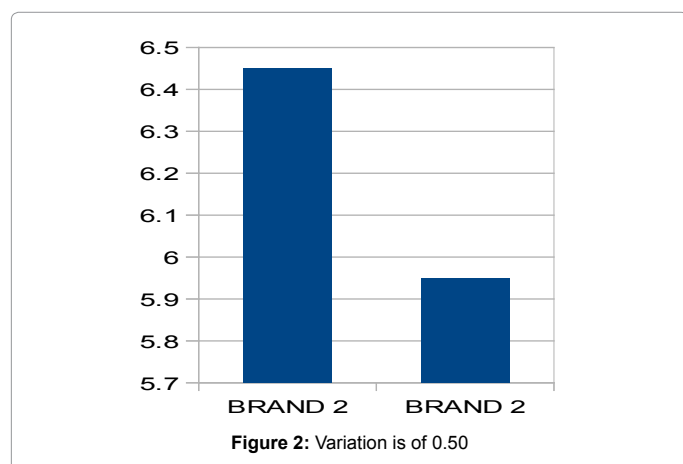
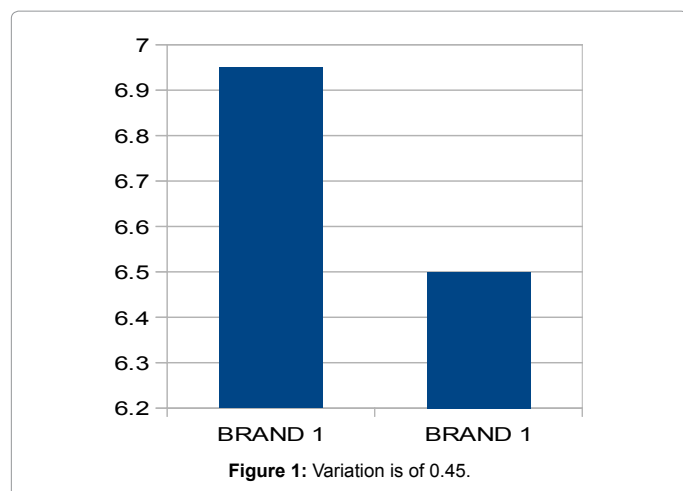
Brand recognition test

This test is also perceptual discrimination tests. In this test we wanted to find out whether the respondents are able to identify the taste, odor, mouth feel of the brands which they were consuming. In other words, the goal of the test is to determine whether the respondents can sense the dissimilarities between different brands. The results were surprising, for every brand on an average only 20% of the consumers identified the brand by tasting it (Figure 3).

- Brand 1: Only 30% of respondents identified the brand correctly. This percentage is very low, it is expected that people should have identified it correctly, because Brand 1 ranked 1st in the entire above test.
- Brand 2: Only 20% identified the brand correctly which shocking as Brand 2 is a well-known brand and is enjoying a huge market share.
- Brand 3: Only 10% identified it correctly.
- Brand 4: Only 20% identified it correctly.
- Brand 5: 0% of the respondents identified the brand. Brand 5 was a brand known for its taste.
- Brand 6: Only 20% of the respondents identified it correctly.

Ranking	1	2	3	4	5	6
Blind	Brand 1	Brand 2	Brand 3	Brand 4	Brand 5	Brand 6
Open	Brand 1	Brand 2	Brand 4	Brand 5	Brand 3	Brand 6
Interchange	Brand 1	Brand 6	Brand 2	Brand 3	Brand 4	Brand 5

Table 8: Comparison of all the tests.



All these results prove that respondents actually do not know the mango drink by taste they know the drink only by the brand name. Only few respondents were able to identify the mango fruit drink brand correctly. So only brand name plays an important role in the market and among the respondents because respondents get biased towards a well-known brand. If a new player wants to enter the market it has to pay special attention towards branding if it wants to enjoy a major position in the market.

Conclusion

The result of every test proves that brand name plays an important

role in sensory evaluation because consumers tend to get biased towards a well-known brand as they trust the brand. There is a tendency to rate higher a famous brand in all the attributes. If a food and beverage manufacturer wants to get an unbiased result it should conduct a blind test of the samples at least 3 times (to remove duplicity deviation) and use the average as the final result. This result will be true and unbiased. It is also being concluded that to be successful in the market product quality as well as brand image plays an important role.

References

- Siro I, Kopolna E, Kopolna B, Lugasi A (2008) Functional food. Product development, marketing and consumer acceptance—a review. *Appetite* 51: 456-467.
- Wulf K, Schroder GO, Goedestier F, Ossel GV (2005) Consumer's perception of store brands versus national brands. *JCM* 22: 223-232.
- Erdem, Tulin, Swait J (1998) Brand equity as a signaling phenomenon. *JCP* 7: 131-150.
- Erdem, Tulin, Swait J (2004) Brand credibility, brand consideration, and choice. *JCR* 31 :191-198.
- Ghose, Sanjoy, Lowengart O (2001) Taste tests: impacts of consumer perceptions and preferences on brand positioning strategies, *JTMAM* 10: 26-41.
- Bellizzi, Joseph A, Harry F, Krueckeberg JR, Hamilton, et al. (1981) Consumer perception of national, private, and generic brands. *Jour of Reta* 57: 56-70.
- Aaker, David A (1990) *Managing Brand Equity*, Free Press.
- Lau GT, Lee SH (1999) Consumers trust in a brand and the link to brand loyalty. *JMFM* 4: 341-370.
- Booth DA (1992a) Determinants of individuals' brand choices: attitudinal and sensory interactions. *BFJ* 93: 17-22.
- Booth DA (1987) Individualized objective measurement of sensory and image factors in product acceptance. *Chemistry & Industry* 13: 441-446.
- Peryam DR, Pilgrim FJ (1957) Hedonic scale method of measuring food preferences. *Food Technology* 11: 9-14.
- Jones LV, Peryam DR, Thurstone LL (1955) Development of a scale for measuring soldiers' food preferences. *Food Research* 20: 512-520.
- Meilgaard D, Civille GV, Carr (2007) *Sensory Evaluation Techniques*. (4th edn), CRC Press, Boca Raton, FL.
- Stone H, Sidel JL (1993) *Sensory Evaluation Practices* (2nd edn) Academic Press, San Diego, CA.
- Stone H, Sidel JL (2004) *Sensory Evaluation Practices* (3rd edn) Academic Press, San Diego, CA.
- Alagmir Md, Nasir T, Shamsuddoha Md, Nedelea A (2010) Influence of Brand name on consumer decision making process—an empirical study on car buyers. *The Annals of the «Stefan cel Mare» University of Suceava*. Fascicle of the Faculty of Economics and Public Administration 10: 142-153.
- IIFT Study of the Indian Fruit Juice market along with fruit Juice export potentiality analysis. Capacity Building Program on International trade towards enhancement of competitiveness of Indian Agriculture.
- Lowengart O (2012) The effect of branding on consumer choice through blind and non-blind taste tests. *Innovative Branding*.
- Moskowitz, Howard R (1985) *New Directions for Product Testing: and Sensory Analysis of Foods*, Westport, CT: Food and Nutrition Press, Inc.
- Munoz AM, King SC (2007) International consumer product testing across cultures and countries. *ASTM International MNL* 55.
- Peryam DR, Girardot NF (1952) Advanced taste test method. *Food Engineering* 24: 58-61.
- Chambers EIV, Wolf MB (1996) *Sensory Testing Methods* (2nd edn), ASTM, West Conshohocken, PA
- Kim MK, Lee YJ, Kwak HS, Kang MW (2013) Identification of sensory attributes that drive consumer liking of commercial orange juice products in Korea. *J Food Sci* 78: S1451-1458.