A Choice-based Conjoint Analysis of Chobani's Low-calorie Yogurt

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Abstract. Consumer behavior is essential to marketing practice and business strategies. Which attribute is the one that has the strongest influence on yogurt consumption? Thru analyzing data collected from surveys, this article builds on previous marketing trends: the continuous trend of high protein and low calories yogurt products. By examining Chobani and its competitors, Oikos and Light+Fit, the material presented includes STP analysis, Choice-based Conjoint Analysis and linear regression. In STP analysis, this paper categorizes consumers into distinct groups such as healthy weight-conscious individuals and indulgent yogurt lovers and set a Perceptual Map to position Chobani and its two competitors. Surprisingly, the conjoint analysis shows that price has the most substantial influence on consumer decisions (30.061%), with flavor variety (26.809%) and protein (26.057%) following, and calorie (17.074%) ranking last. A further linear regression shows that price sensitivity remains a significant factor even for health-focused products. Consumers prefer yogurt products that are low-priced, low-calorie, high-protein and with various flavors.

Keywords: yogurt preference, STP, conjoint analysis, low-calorie yogurt

1. Introduction

Consumer preference trends on yogurt are relatively important for marketing managers and businesses that produce yogurt. As it could have an important effect on their current and future market share. Chobani is on the top yogurt companies in the United States, it is well known as the most consumed yogurt brand in the United States.

After Chobani was found in mid-20 century it quickly took over the yogurt market share in less than 10 years. In 2015, even though Chobani is still in a leading position compared to other brands, the Dannon company had two brands, the 'Light and Fit' and the 'Oikos". By adding up the two it had a market share greater than the amount that Chobani is holding. The Dannon company is a top competitor of Chobani in the yogurt market. And in the same year 2015, Oikos introduced a new product the 'triple Zero'. Later in 2010 the 'Light and Fit Greek' were introduced.

Those launches of new produces pushed Chobani to later introduce its new product Chobani 'zero sugar' in 2021. As the product name suggests, this product is zero sugar product, which also made it a low-calorie product. This introduction is hoping to increase consumption by attracting consumers who are interested in low-calorie yogurt.

Many studies consider packaging, ingredients and flavor as key attributes. Wang et al. (2022) investigate the consumer preference for packaging designs [1]. Likewise, Chang et al. (2022) have developed a multi-attribute preference model to assess consumer preference for yogurt attributes such as ingredients, health claims or labeling [2]. Ghinea et al. (2023) investigates how emotions influence food product choice in a retail setting [3]. Ateka et al. (2022) assess the preferences of yogurt attributes among urban consumers in Nairobi and found consumers' strong preference for flavored yogurt [4].

A wide range of topics in the yogurt sector has already been covered in the literature. Annunziata and Vecchio (2013) conducted a conjoint analysis with probiotics [5]. As for high-protein yogurt, Coman-Miko (2024) compares customers' perception of nutrition labeling versus marketing claims [6]. Likewise, in hybrid yogurt market, Marlapati (2024) found that protein source is the most significant factor for customers' perception of hybrid yogurt [7]. Greek yogurt market is also a popular topic whereas Bir et al. (2021) found that consumer had positive WTP for Greek yogurt labeled free of high-fructose corn syrup and a higher WTP for low-fat yogurt when compared to nonfat for both yogurt types [8].

However, there's a lack of focus on the nutrient content such as calories and protein as the increasing demand from modern consumers for health and fitness [9]. The purpose of this article is to conclude which of the four factors: price, variety of flavors, calories, or protein has the most impact on purchase behavior. It could be easily believed that calories would have a significant impact on customer's choice as Chobani introduces its new product 'zero sugar' in 2021. In fact, after analyzing the data collected it is concluded that price is the most influential factor, followed by protein and variety of flavor lastly calories. Is it interesting to conclude that calories had the least impact on consumer selection when it comes to yogurt consumption.

2. STP analysis of Chobani, Oikos and Light+Fit

2.1. Segmentation

We split our main customer into four categories. (Figure 1)

The first one is Healthy male body builder who cares about protein and they need it to build their muscle. They do not really care about the flavour of the yogurt, so we assume that they will prefer Oikos.

The second one is healthy female weight loser. Their main concern is the calorie and the flavor, because they need low calorie to lose weight, and they want many flavors to reduce the pain of losing weight as is known to all when you go on a diet you certain do not want the repeated food. So, we recommend them to buy Chobani.

The third one is indulgent yogurt lover. What they most care about is the flavor and the taste. They do not care about the ingredient of the yogurt as long as it is yummy. As a result, they want to try as much flavor as possible. We will commend them to buy Light + Fit or Chobani.

The last one is the functional old people who care about the protean the calorie and the price. They are wanting low-calorie and high protean to avoid aging and the probiotics inside to stimulate gut. They maybe best suit for Light+Fit.

attribute	healthy male body builder	healthy female weight loser	indulegent yogurt lover	functional old people
care about	protain	calorie flavor	flavour taste smooth	protain calorie price
the importance of high protain and low calorie	need protain to build muscel	need low calorie to lose weight	not care	need low calorie and hight protain to avoid aging and the probiotics inside to stimulate gut
flavour of the yogurt	not care	want many fovour to reduce the pain of losing weight	want to try as much flavour as possible	care a little
brand preference	oikos	chobani	light+fit &chobani	light+fit

Figure 1. Segmentation of Chobani, Oikos and Light+Fit

2.2. Targeting

We have already segmented the yogurt market and targeted our main consumers: the healthy female weight loser and the indulgent yogurt lover. The next step is to develop useful tactics to appeal them to buy our product.

To appeal the healthy female weight loser, we will advertise in the jam, social media like Instagram or Weibo TikTok. The reason of doing this is because those social media is the one woman always focus on and because they live a healthy life style they will certainly go to the jam to work out

To appeal the indulgent yogurt lover, we plan to let consumer try different flavors for free in the supermarket advertise on TV invite influencer to evaluate. Because the main characteristic of those people are they always loving to try the new stuff and to judge it, we give them a chance to do so.

2.3. Positioning

We set a Perceptual map to position the Chobani and its' two competitors. (Figure 2)

The x axis stands for the number of the choice of flavor as you can see in the data, we collect the light and fit has the most flavor 16 thus ranking at the rightest side of the x axis followed by Chobani 11 and the oikos 9. Regarding the y axis, we choose the attribute of whether it is comfort food or nutrient food. We speculate the extent of its taste by the calories. Higher the calories more tastier the food is. As is shown it the graph, the Chobani posit below the x axis and in the middle of the y axis and is clearly apart from its two competitors.
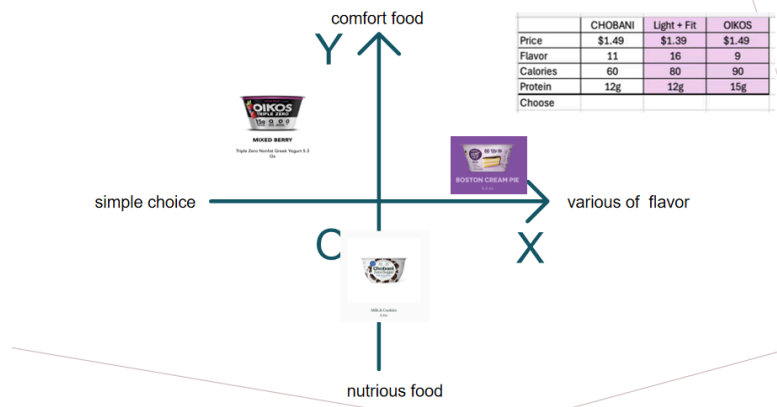
Figure 2. Perceptual map of Chobani, Oikos and Light+Fit

3. Materials and methods

3.1. Conjoint analysis design

Conjoint analysis is an effective approach for assessing consumers' preferences and choices regarding various attributes of yogurt. In this study, Choice-based Conjoint Analysis (CBC) was employed, as this method presents the features of three products simultaneously, providing a more accurate reflection of consumer decision-making in real-world shopping scenarios.

Based on the characteristics of the three products under investigation, calories and protein were selected as two of the key attributes. Additionally, price and the variety of flavors were identified as important factors influencing consumer yogurt purchases. As illustrated in Table 1, the four attributes examined are Price, Variety of Flavors, Calorie, and Protein. The Price attribute includes nine levels, ranging from $0.99 to $1.89, while the attributes Variety of Flavors, Calorie, and Protein each have four levels.

Table 1. Attribute and attribute levels used in choice-based conjoint analysis

Attribute	Attribute level
Price	$0.99 $1.09 $1.19 $1.29 $1.49 $1.59 $1.69 $1.79 $1.89
Variety of flavors	6 10 14 18
Calories	60cal 70cal 80cal 90cal
Protein	9g 12g 15g 18g

3.2. Data collection

Data collection was conducted through a questionnaire developed and distributed to a sample of 35 consumers. Nearly all participants were fitness enthusiasts or yogurt lovers aged 20-24, with half of the participants residing in the United States and the other half in China.

The questionnaire was divided into two parts. The first part was an information page, designed to provide participants with a clearer understanding of the three yogurt products. This section introduced the purpose of the study and the guidelines for completing the questionnaire, along with descriptions of the features and packaging of the three yogurt brands. The second part consisted of a series of mini-questionnaires, which were used to assess consumers' perceptions of the different yogurt attributes and their preference choices.

Since the original attributes could generate 9*4*4*4=576 possible combinations, adjustments were made based on real-world scenarios (e.g., higher-priced products tend to have lower calories and higher protein content), and efforts were made to ensure that each level appeared with equal frequency. This resulted in 100 mini-questionnaires, where the attributes of Light+Fit and OIKOS products served as constant reference points (Figure 1).

Table 2. Example of the choices presented in choice-based conjoint analysis

1	CHOBANI	Light + Fit	OIKOS
Price	$0.99	$1.39	$1.49
Flavor	6	16	9
Calories	60	80	90
Protein	9	12g	15g
Choose	X		

3.3. Data analysis

Data was collected using Excel. Conjoint analysis was performed using IBM SPSS, and a linear regression was conducted to further examine the extent to which different attributes influence consumer choices using Stata 17.0.

4. Results

4.1. Importance of attributes

Table 2 presents the part-worths and the relative importance of attributes presented to participants. The goodness of fit is indicated by Pearson's R and Kendall's Tau statistics, based upon the correlation of actual and predicted preference scores.

As shown in the figure, price has the highest share of importance (30.061%), indicating that price is the primary incentive influencing consumers' choices. Following that is the Variety of Flavors (26.809%), Calorie at 17.074%, and slightly lower than protein at 26.057%.

Interestingly, within the price range, besides the lowest point of $0.99, both $1.19 and $1.29 provide positive utility values for consumers (0.117 and 0.062, respectively), while prices above $1.69 lead to a rapid decline in utility values. On the other hand, an increase in the variety of flavors results in a decrease in utility value, suggesting that yogurt and fitness enthusiasts tend to prefer simpler yogurt flavors.

The ranking of the levels for each attribute is shown in Table 3.

Table 3. Utility value and relative importance of different attributes

Utility Scores of Attribute Levels and Relative Importance of Attributes in Yogurt			
Attribute	Relative Importance (%)	Attribute level	Utility

Attribute	Importance	Level	Utility
Price	30.061%	$0.99	0.566
		$1.09	-0.083
		$1.19	0.117
		$1.29	0.062
		$1.49	-0.103
		$1.59	-0.089
		$1.69	-0.100
		$1.79	-0.158
		$1.89	-0.212
Variety of Flavors	26.809%	6	0.483
		10	-0.211
		14	-0.165
		18	-0.107
Calorie	17.074%	60cal	0.309
		70cal	-0.052
		80cal	-0.133
		90cal	-0.124
Protein	26.057%	9g	-0.439
		12g	0.051
		15g	0.153
		18g	0.235

Pearson's R=0.202, Kendall's Tau=0.167

Table 4. Level ranking of attributes based on conjoint analysis

Attribute	Level Ranking
Price ($)	0.99> 1.19> 1.29> 1.09> 1.59> 1.69> 1.49> 1.79> 1.89
Variety of flavor	6.0> 18.0> 14.0> 10.0
Calorie(cal)	18.0> 15.0> 12.0> 9.0
Protein(g)	60.0> 70.0> 90.0> 80.0

4.2. Linear regression

A linear regression was conducted using consumer choice as the dependent variable, and the results indicate that the coefficients for all attributes are significant at the 0.01 level. Specifically, for every $1 increase in price, the likelihood of consumers choosing Chobani decreases by 46.6%. An increase in the variety of flavors makes consumers more likely to prefer Chobani products (0.793%). The increase in calorie content in yogurt reduces consumers' purchase intentions for the target product, with every additional calorie reducing the likelihood by 0.45%. In contrast, protein has a positive effect on consumer choice, with every additional gram increasing purchase intent by 2.7%.

In summary, consumers prefer yogurt products that are low-priced, low-calorie, and high-protein. While calories are an important factor in consumer yogurt choices, they tend to prefer products with

higher protein content. The increase in the variety of flavors decreases consumer utility, but increases purchasing likelihood. This may be because products with a greater variety of flavors often come with higher calories and protein. Based on the results of the linear regression, target consumers tend to prefer various yogurt flavors.

Table 5. Regression analysis of various attributes on consumer choice

Variables	Choose
price	-0.466***
	(0.0383)
Variety of flavors	0.00793***
	(0.00243)
calorie	-0.00450***
	(0.000604)
protein	0.0272***
	(0.00317)
Constant	1.247***
	(0.0771)
Observations	3,500
R-squared	0.242

Standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$

5. Conclusion

5.1. Limitations of study

First, increasing volume of data can decrease bias in the research and increase accuracy. Second, in our research consumers seem to be sensitive to the price level, but it could be due to the fact that most people taking our survey are college students aged 20-22. Students are more likely to have financial stress, so a small increase in pricing might mean a lot.

5.2. Suggestions for future research

Include more people taking the survey so more data can be collected. Could also potentially make another attribution of age. Maybe different age groups might have a different preference on yogurt selection. And could also include the gender attribution into consideration, as most people have the stereotype that women would favor low calorie products while men would favor high protein products. Hopefully future research can also break the stereotype that people usually have like what we have conclude in this article.

5.3. Concluding remarks

This article analysis the impact of four attributes on consumption of yogurt: price, proteins, variety of flavors and calories. While it might seem like calorie would have the highest relative importance with Chobani's introduction of its 'zero sugar' product in 2021 to compete with other yogurt brand over market share. Our research provides a surprising outcome that calories have the lowest relative

importance when it comes to yogurt consumption. Price is shown to be the most significant determinant of consumer choice, followed by protein and variety of flavor, lastly calorie. Our research indicates that price is still a major factor in consumer decision-making, and this is something businesses should take into consideration.

Acknowledgement

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