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ANALYSIS DO HEALTHIER FOODS COST LESS?

SQL

Introduction

The business question analyzed in this paper is do healthier food cost less? and what should Whole foods can do to take advantage for this? a data base with the required information from Whole foods SOMA store has been provided and is skewed, nevertheless, it has been analyzed using SQL to structure the information to address the question and enriched with outside research going beyond the numbers.

Defining what is Healthy.

While Whole Foods it's a retail company that segregates their products adding tags to their products showing what type of attributes they have and what diets works for each product. This analysis considers the definition from the dietary guidelines for Americans Proposed by the U.S. Food & Drug Administrator (FDA) for 2020 - 2025 in combination with the definition from the American Council on Science and Health, it was determined that a healthy dietary pattern consists of nutrient-dense forms of foods and beverages across all food groups, in recommended amounts, and within calorie limits.

For this analysis regarding Produce, Dairy and Eggs, Prepared foods, Bread Rolls & Bakery, desserts and Frozen Foods categories it is consider that healthy food will include the combination of organic, gluten free, low fat, sugar, conscious, low sodium, and Whole foods Diets (characterized as foods that have not been processed, refined, or had ingredients added to them) tags.

For meats products that are organic, vegan, or part of the paleo diet are considered as "healthy" in contrast processed, frozen, high % fat and pork subcategory are considered as unhealthy since it is rich in several important vitamins, it is also high in sodium and saturated fats, two things that should be avoided as part of a healthy diet.

In the case of supplements, only the products that are organic, gluten free or have low sodium are. considered as "Healthy", on the other hand any product used for "detox" is considered "Unhealthy" due that may include laxatives, which can cause diarrhea to sever enough to lead to dehydration and electrolyte imbalances.

For liquids including beverages, beer and wine organic, tea's, Cider and Sauvignon is considered "Healthy" because cider contains polyphenols, which are compound in plants that act as antioxidants, tea boost the immune system and Cabernet sauvignon are a great source of proanthocyanins. These are strong antioxidants that reduce oxidation damage to the body.

Lastly the NULL's were classified "Healthy" if the products were either vegan or organic.

Defining Cost

Cost is defined in accounting as an expenditure required to create and sell products and services, or to acquire assets. When sold or consumed, a cost is charged to expense. In the case of an asset, the charge to expense could be significantly deferred. The cost concept underlies the transition of assets from the balance sheet to expenses in the income statement.

For the business question stated within this analysis we are not considering the cost from the company perspective (Whole foods) but the cost from the customer perspective, taking the sale price of the products to evaluate this question.

Throughout the data base each price is different and refers to various products within 11 distinct categories. to be able to compare each product on the same bases this analysis considered a product price per calorie to unify the price. The calculation will be price per calories using the following formula to calculate the price per calorie of each product:

Price per calorie = (price / (calories per serving * (total size (grams(g))/ serving size))
unifying on g as grams and for liquids it is considered an equality of 1 ml = 1 g, in the case when units are different a conversion was made to grams.

Do Healthy Food Cost Less?

To answer the business question as Hypothesis test was set with the following guidelines:

Null Hypothesis (H_0) = AVG price of healthy food < AVG price of all food

Alternative hypothesis (H_a) = AVG price of healthy food > AVG price of all food

This implied a one-tail test where it will evaluate if the t-statistic would fall into the rejection region or accepting the Null hypothesis.

The variables considered where:

- Average price per calorie for all products = 3.74 as the population price to evaluate
- Average price per calorie for products classified as "Healthy" = 3.59 as the sample mean
- Standard Deviation = 8.68 for the samples where the products are classified as "Healthy"
- Sample Size of 147 where the products are classified as "Healthy"
- An alpha of 0.05 with a confidence level of 95%
- T-Statistic calculated with the following formula:
 - $((\text{Average price per calorie for products classified} - \text{Average price per calorie for all products}) / (\text{Standard Deviation} / \text{SQRT}(\text{Sample Size})))$
 - Resulting on -0.21
- For simplicity (due that SQL-Server does not incorporate a lot of statistical functions. T.INV is not present in SQL-Server) the calculation for the Cutoff value for the t-statistic was calculated using EXCEL and the formula = -ABS(T.INV(alpha,(n-1))), therefore, the final formula is = -ABS(T.INV(0.05,(147-1))) taking in to account alpha = 0.05 and n= 147
 - RESULTING on a Cutoff Value for t-statistic of -1.66

Does the t-statistic fall in the rejection region?

The t-statistic = -0.21 does not falls into the rejection region defined by the cutoff of the t-statistic = -1.66 thus concluding according to this analysis that yes healthy food cost less:

Null Hypothesis (H_0) = (AVG price of healthy food < AVG price of all food) Not rejected --> Healthy food does cost less.

Actionable Insights

This marketing proposal is formally issued to Hult International Business School on behalf of MBAN Candidate with the following term in mind. This recommendation is dedicated for an individual assignment assigned to Gianfranco Gino Eduardo Limon Rioja MBAN Candidate from Hult International Business School this analysis is not designed to move forward due to the fact that it will need more data and it's inconclusive.

With this analysis it was found that divided in categories 20% of Beer, 86% of Beverages, 52% of Bread Rolls & Bakery, 52% of Dairy and Eggs, 17% of Desserts, 26% of Frozen Foods, 60% of Meat, 59% of Nuts, 14% of Prepared Meals, 100% of Produce, 48% of Supplements and 53% of Wine were considered healthy.

1. Insight

A recommended actionable insight for wholefoods is to direct and define a marketing campaign focusing on Nutrition's, general population health, explaining how the consumer can save money eating healthier and avoiding sickness at the same time allowing them to have more time with their loved ones, additionally that it takes advantage of the fear from the pandemic and that currently people and families are looking to improve their eating habits.

2. Insight

The second recommended insight is to brand themselves as a healthy market and the place to go to be healthy and save money, this is beneficial due that builds relationships with suppliers and they also benefit for associating their brand with wholefoods, where it opens a space of negotiating supplier costs down on healthy products increasing revenue.

3. Insight

Third Insight is to advice focusing on organic food and local distribution due that people are increasingly interested on buying locally and healthier in addition to the fear of recession for 2023 is cost-effective to eat healthier and buy at wholefoods because is less expensive, increasing the volume sales on healthy food.

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