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A1 Assessment: Business Analysis with Structured Data

In 2019, Whole Foods launched the digital product catalog that allows customers to search and purchase for items according to their dietary preferences (The Produce News, 2019). These dietary preferences are known as badges in this case. By having these dietary preferences, it increases the transparency of what the consumers are consuming and making sure they purchase the product that fit with their dietary preferences and lifestyles (Taylor, 2019). These lifestyles range from vegan, vegetarian, paleo, engine2 diet and many more. This type of transparency is important because if consumers consumed the wrong diet, it could lead to health hazard or even death. This then begs the question whether the Whole Food is taking advantage of the number of badges attached to the product to charge a higher price.

When comparing the average price between having badges and no badges and after running the statistic tests, there is not enough statistical evidence to prove that the number of badges does impact the higher price. Running a deeper analysis, when we look at the range of number of badges, it is proven that the high number of badges increases the price. The number of badges between 1 to 9 is not statistically proven that it increases the price. But for number of badges 10 to 12 categorized as high amount of badges, there is enough statistical evidence to accept the claim that the amount of badges increases price. This is also supported when comparing between the number of badges from 7 to 9 and 10 to 12, as the test result showed that there is an impact on the price. Hence, this answers the question on whether the number of badges increases price and Whole Foods should take advantage of assigning more badges on its existing products.

When the products were categorized as food and non-food in this study to identify the impact of badges on prices, there was a difficulty in drawing a conclusion on non-food products because there were not enough samples under this bigger category. This draws an attention that if Whole Foods aim to be the company to have better transparency and have the spotlight as the company provider for healthy food and lifestyle, the dietary preferences should have more presence in the non-food section as well. Particularly for consumers that are in the veganism lifestyle, being vegan goes beyond just dietary decisions as it includes products such as cosmetics,

candles, soaps, and others (McRae, 2019). This is imperative because the veganism industry is growing with an expected 79 million vegans all around the world (Kim, 2022). Over the next 3 months, product owners in Whole Foods should review its product offerings and begin sourcing for products that can satisfy the badges criteria. With the presence of Whole Foods 365, the company can also take advantage of producing its own non-food vegan products.

Another insight from this is the utilization of the whole foods diet badge. The whole foods diet is a special diet introduced by the founder of Whole Foods, John Mackey that is centered around plant-based and whole food diet with an element of veganism. The whole food diet does not restrict only on plant-based diet food but also includes animal-based products contain protein and iron such as eggs is also part of the whole foods diet (Dolson, 2021). This type of diet confuses consumers adopting the vegan and vegetarian lifestyle because the whole foods diet still has elements of meat (Wholebody Solutions, 2019). From the sample, there are 184 products that have both vegan and whole food diet and, on the website, when the whole foods diet preference is chosen, salmon product was shown. This confuses consumers that are especially vegan and vegetarian when there are products in the Whole Foods product catalog has both vegan and whole foods diet badges. Vegan and vegetarian lifestyle strictly cannot have elements of meat in consumed food and products (Mcrae, 2019). With a growing number of customers adopting the vegan and vegetarian lifestyle Whole Foods should clarify the meaning of the whole food diet badges. Whole Foods should also review if there is a need to reassign these badges to the proper products as there is no statistical evidence proving that by allocating two of these badges together, the company can take advantage of charging a higher price.

Appendices

Appendix 1

Hypothesis test for difference between means	
Type of alternative hypothesis	One-tailed - greater than
Hypothesized difference	0.00
Category 1	zero badges
Category 2	with badges
Sample size 1	47
Sample size 2	765
Sample mean 1	8.46
Sample mean 2	7.76
Sample mean difference (1 minus 2)	0.70
Sample std dev 1	5.86
Sample std dev 2	7.29
Pooled std dev	27.69
Standard error of diff	0.89
Test statistic (t-value)	0.78
Degrees of freedom	55.00
p-value	0.22
	p-value is more than 10% accept null hypothesis
Test for equal variances	
Ratio of sample variances	0.65
p-value	7%

Appendix 2

Hypothesis test for difference between means	
Type of alternative hypothesis	One-tailed - greater than
Hypothesized difference	0.00
Category 1	no badges
Category 2	1 to 3 number of badges
Sample size 1	47
Sample size 2	212
Sample mean 1	8.46
Sample mean 2	8.69
Sample mean difference (1 minus 2)	(0.23)
Sample std dev 1	5.86
Sample std dev 2	8.11
Pooled std dev	13.11
Standard error of diff	1.02
Test statistic (t-value)	(0.23)
Degrees of freedom	90.00
p-value	0.59
	p-value is more than 10% accept null hypothesis
Test for equal variances	
Ratio of sample variances	0.52
p-value	1%

Appendix 3

Hypothesis test for difference between means

Type of alternative hypothesis	One-tailed - greater than
Hypothesized difference	0.00
Category 1	no badges
Category 2	4 to 6 number of badges
Sample size 1	47
Sample size 2	292
Sample mean 1	8.46
Sample mean 2	7.25
Sample mean difference (1 minus 2)	1.21
Sample std dev 1	5.86
Sample std dev 2	6.05
Pooled std dev	6.02
Standard error of diff	0.95
Test statistic (t-value)	1.28
Degrees of freedom	337.00
p-value	0.10
	p-value is more than 10% accept null hypothesis
Test for equal variances	
Ratio of sample variances	0.94
p-value	82%

Hypothesis test for difference between means	
Type of alternative hypothesis	One-tailed - greater than
Hypothesized difference	0.00
Category 1	no badges
Category 2	7 to 9 number of badges
Sample size 1	47
Sample size 2	185
Sample mean 1	8.46
Sample mean 2	8.39
Sample mean difference (1 minus 2)	0.07
Sample std dev 1	5.86
Sample std dev 2	8.74
Pooled std dev	12.26
Standard error of diff	1.07
Test statistic (t-value)	0.07
Degrees of freedom	104.00
p-value	0.47
	p-value is more than than 10% accept null hypothesis
Test for equal variances	
Ratio of sample variances	0.45
p-value	0%

Appendix 4

Hypothesis test for difference between means	
Type of alternative hypothesis	One-tailed - greater than
Hypothesized difference	0.00
Category 1	no badges
Category 2	10 to 12 number of badges
Sample size 1	47
Sample size 2	76
Sample mean 1	8.46
Sample mean 2	5.64
Sample mean difference (1 minus 2)	2.82
Sample std dev 1	5.86
Sample std dev 2	4.05
Pooled std dev	6.20
Standard error of diff	0.97
Test statistic (t-value)	2.90
Degrees of freedom	73.00
p-value	0.00
	p-value less than 10% accept null hypothesis
Test for equal variances	
Ratio of sample variances	2.09
p-value	0%

Appendix 5

Hypothesis test for difference between means	
Type of alternative hypothesis	One-tailed - greater than
Hypothesized difference	0.00
Category 1	7 to 9 number of badges
Category 2	10 to 12 number of badges
Sample size 1	47
Sample size 2	76
Sample mean 1	8.39
Sample mean 2	5.64
Sample mean difference (1 minus 2)	2.75
Sample std dev 1	8.74
Sample std dev 2	4.05
Pooled std dev	9.04
Standard error of diff	1.36
Test statistic (t-value)	2.03
Degrees of freedom	58.00
p-value	0.02
	p-value less than 10% reject null hypothesis
Test for equal variances	
Ratio of sample variances	4.66
p-value	0%

Appendix 6

Hypothesis test for difference between means	
Type of alternative hypothesis	One-tailed - greater than
Hypothesized difference	0.00
Beverages	
Category 1	have whole foods diet badge
Category 2	whole foods diet and vegan badge
Sample size 1	50
Sample size 2	45
Sample mean 1	9.52
Sample mean 2	9.50
Sample mean difference (1 minus 2)	0.02
Sample std dev 1	7.96
Sample std dev 2	8.05
Pooled std dev	8.00
Standard error of diff	1.64
Test statistic (t-value)	0.01
Degrees of freedom	93.00
p-value	0.50
	p-value more than 10% accept null hypothesis
Test for equal variances	
Ratio of sample variances	0.98
p-value	94%

Appendix 7

Hypothesis test for difference between means	
Type of alternative hypothesis	One-tailed - greater than
Hypothesized difference	0.00
Beverages	
Category 1	have vegan badge
Category 2	whole foods diet and vegan badge
Sample size 1	69
Sample size 2	45
Sample mean 1	8.17
Sample mean 2	9.50
Sample mean difference (1 minus 2)	(1.33)
Sample std dev 1	6.88
Sample std dev 2	21.86
Pooled std dev	22.02
Standard error of diff	3.36
Test statistic (t-value)	(0.40)
Degrees of freedom	50.00
p-value	0.65
	p-value more than 10% accept null hypothesis
Test for equal variances	
Ratio of sample variances	0.10
p-value	0%

References

Anonymous. (2019, January 3). *Whole Foods Develops Tool for Shoppers with Dietary Preferences*. The Produce News. Retrieved from https://theproducenews.com/whole-foods-develops-tool-shoppers-dietary-preferences

Anonymous. (2019, June 18). *A Beginner's Guide to a Whole Food Diet*. Wholebody Solutions. Retrieved from https://shop.wholebodysolutions.org/blogs/our-wellness-blog/a-beginner-s-guide-to-a-whole-food-diet#:~:text=A%20whole%20food%20diet%20is%20one%20that%20consists,foods%20have%20little%20to%20no%20preservatives%20or%20additives.

Dolson, L. (2021, June 30). *What is Whole Foods Diet?* Verywellfit, Retrieved from https://www.verywellfit.com/what-is-a-whole-foods-diet-2241974\

Kim, H. (2022, May 13). *Is Veganism Becoming More Popular? Using Data to Track the Growing Trend*. Sentient Media. Retrieved from https://sentientmedia.org/increase-in-veganism/

McRae, L. (2019, June 26). *Vegan, Vegetarian, Pescatarian, Flexitarian and Macrobiotic Diets – What's the Difference?* NorthShore University Healthsystem. Retrieved from https://www.northshore.org/healthy-you/vegan-flexitarian-vegetarian-pescatarian-and-macrobiotic-diets--whats-the-difference/

Taylor, N. (2019, January 3). *Whole Foods Refreshes Online Product Category for Dietary Preferences. Winsight Grocery Business.* Retrieved from https://www.winsightgrocerybusiness.com/wellness/whole-foods-refreshes-online-product-catalog-dietary-preferences.