A Project Report On

"Inferential Statistical Analysis"

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INDEX

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INTRODUCTION OF LOREAL AND BODY SHOP.

Loreal is One of the biggest names in the beauty industry, especially when it comes to hair care.

A giant in the beauty world:

- Founded in 1909, L'Oréal is the world's largest cosmetics company, headquartered in France.
- They've got their fingers in many pies, not just shampoo. L'Oréal boasts over 500 brands across sectors like hair color, skincare, makeup, and fragrance.
- Some of their popular shampoo brands include L'Oréal Paris, Redken, Matrix, Kérastase, and Garnier Fructis.

A diverse portfolio:

- L'Oréal understands that beauty needs aren't one-size-fits-all. Their immense brand portfolio caters to various hair types, ethnicities, and budgets.
- They have luxury brands like Kérastase and affordable options like Garnier, ensuring everyone can find something within their reach.

Innovation and research:

- L'Oréal is a research powerhouse, constantly innovating and developing new formulas and technologies for their products.
- They have dedicated research centers worldwide and invest heavily in scientific advancements to stay ahead of the curve.

The Body Shop is known for more than just their delicious-smelling body butter, their shampoos have a dedicated fan base too. Here's what I found out:

Values-driven and ethical:

- Founded in 1976 by Anita Roddick, The Body Shop champions ethical practices and activism. They are against animal testing, support community trade, and advocate for environmental sustainability.
- This ethos extends to their haircare products. They offer a wide range of vegan and cruelty-free shampoos suitable for different hair types.

Natural ingredients:

- The Body Shop prioritizes natural ingredients in their formulations. They source many ingredients from Community Trade partners, supporting sustainable livelihoods and preserving traditional practices.
- This focus on natural goodness attracts customers seeking effective products with a cleaner conscience.

Diverse range:

- Whether you have dry, oily, color-treated, or curly hair, The Body Shop has a shampoo for you. Their lines include popular options like Shea Butter Richly Replenishing Shampoo, Banana Truly Nourishing Shampoo, and Ginger Anti-Dandruff Shampoo.
- Some even come in 2-in-1 formulations or solid bar shampoos for a more eco-friendly choice.

PRODUCT CATEGORIZATIONN WITH PRICES.

SL.NO	LOREAL SHAMPOO	PRICE		BODY SHOP & OTHER SHAMPOO	PRICE
1	Loreal Paris Shampoo	104		Moringa shine & protection shampoo	945
2	Loreal Infallible Shampoo	200		Tea Tree purifying & Balancing shampoo	945
3	Loreal Absolut Repair Shampoo	180		Ginger anti-dandruff shampoo	895
4	Loreal Hyaluron Moisture Shampoo	251		Banana Truly Nourishing shampoo	945
5	Loreal Xtenso Care Shampoo	125		Shea Intense Repair shampoo	895
6	Loreal Metal Dx anti metal cleansing cream Shampoo	128		Coconut oil Briliantly Nourishing Pre-shampoo	279
7	Loreal paris total repair 5 repairing shampoo	246		Mamaearth hair all control onion shampoo	314
8	Loreal Unisex fall repair 3x anti hair fall shampoo	145		Plum coconut milk and peptides shampoo	313
9	Loreal Instant clear piroctone olamine anti dandruff shampoo	860		Mamaearth tea tree anti dandruff shampoo	180
10	Loreal paris extraordinary oil nourshing shampoo	152		B&T arnica shampoo	379
11	Loreal Paris women dream length restoring shampoo	152		Bare anatomy anti hair fall shampoo	500
12	Loreal serie expert resveratrol vitamino color shampoo	745		Streax Professional Canvoline shampoo	313
13	Loreal Inforcer strengthening shampoo	745		Mamaearth henna shampoo	418
14	Loreal Paris fall resist 3x argining anti hair fall shampoo	299		Bare anatomy Ultra smoothing shampoo	310
15	Loreal mythic oil shampoo	520		Mamaearth lemon anti dandruff shampoo	419

Analysis on the data (prices) of Loreal and Body shop:
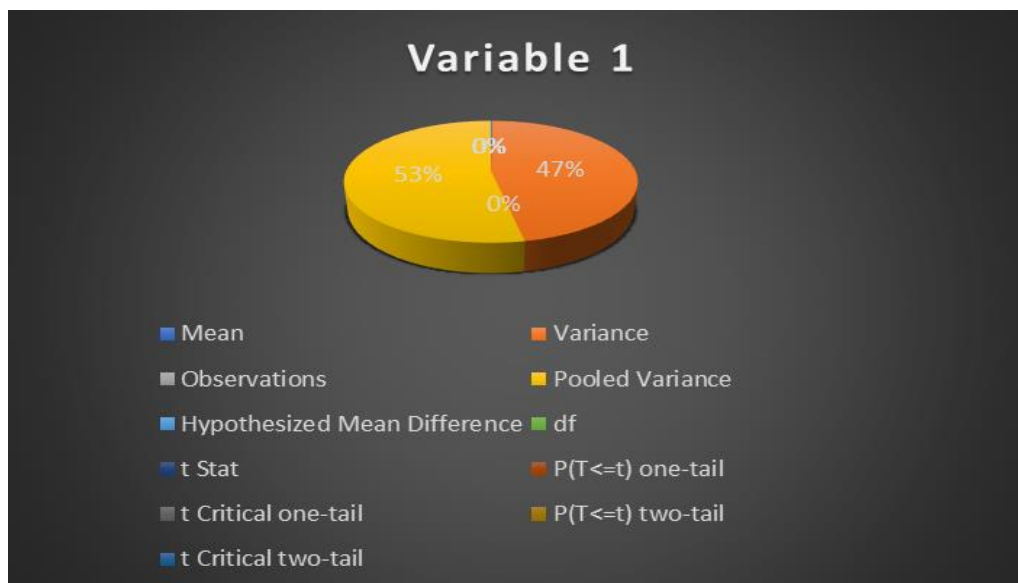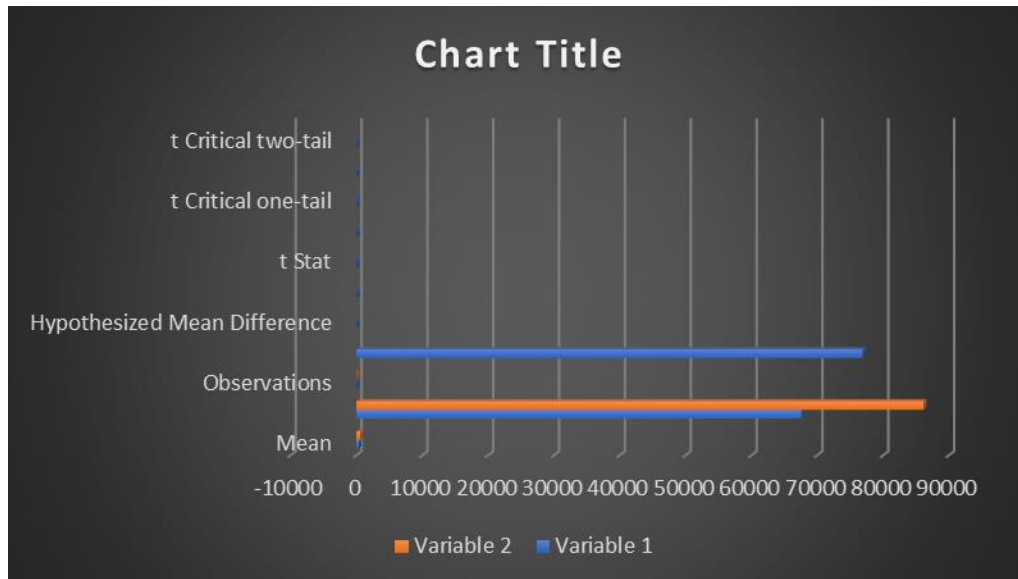
FINDING AND CONCLUSION

The t-test is a statistical test that is used to compare the means of two groups. In this case, the two groups are "Variable 1" and "Variable 2". The null hypothesis is that the means of the two groups are equal, and the alternative hypothesis is that the means are not equal.

The p-value is the probability of observing a t-statistic as extreme as the one that was calculated, or more extreme, assuming that the null hypothesis is true. In this case, the p-value is 0.044 for a two-tailed test. This means that there is a 4.4% chance of observing a t-statistic as extreme as the one that was calculated, or more extreme, if the means of the two groups are actually equal.

Since the p-value is less than 0.05, we reject the null hypothesis and conclude that the means of the two groups are not equal. In other words, there is a statistically significant difference between the means of Variable 1 and Variable 2.

The t-statistic is -2.106. This means that the mean of Variable 1 is 2.106 standard deviations lower than the mean of Variable 2.

In conclusion, the t-test provides evidence that the means of Variable 1 and Variable 2 are not equal. The mean of Variable 1 is lower than the mean of Variable 2.

Test

t-Test: Two-Sample Assuming Equal Variances

	Loreal Price	Body Shop price
Mean	323.4666667	536.6666667
Variance	67568.98095	86125.66667
Observations	15	15
Pooled Variance	76847.32381	
Hypothesized Mean Difference	0	
df	28	
t Stat	-2.10621867	
P(T<=t) one-tail	0.022138429	
t Critical one-tail	1.701130934	
P(T<=t) two-tail	0.044276857	
t Critical two-tail	2.048407142	

Analysis

Ho : Price of shampoo of Loreal is equal to the price of shampoo of Body shop.

H1 : Price of shampoo of Loreal is not equal to the price of shampoo of Body shop.

- As the sample size is 15 we will perform T-test.

- The alpha is 0.01 so we'll reject the null hypothesis if the p-value is less than 0.01.

- The case is two tailed T-test and with 38degree of freedom and level of significance is 0.01 the critical value is +-2.71.

- The value of t is -2.1.

- The p-value of t is 0.04.

- Since the p-value is greater than alpha we fail to reject the null hypothesis.

Conclusion

Based on the analysis with alpha at 1%, there is not enough evidence to conclude that there is a significant difference between the prices of two brands.

Excel File – [Click here](#)