**Assignment 2 – BE 602**

**Problem 1:**

Brand X – The Brand Commitment and Likelihood to Recommend, Pearson correlation is significant for Brand X with r = -0.705 with p < 0.01, So we reject the null hypothesis can say that there is highly negative correlation.

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Kohl’s - The Brand Commitment and Likelihood to Recommend, Pearson correlation is significant for Kohl’s with r = -0.730 with p < 0.01, So we reject the null hypothesis can say that there is highly negative correlation.

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TJ Max - The Brand Commitment and Likelihood to Recommend, Pearson correlation is significant for TJ Max with r = -0.713 with p < 0.01, So we reject the null hypothesis can say that there is highly negative correlation.

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JC Penny - The Brand Commitment and Likelihood to Recommend, Pearson correlation is significant for JC Penny with r = -0.673 with p < 0.01, So we reject the null hypothesis can say that there is moderately negative correlation.

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Amazon - The Brand Commitment and Likelihood to Recommend, Pearson correlation is significant for Amazon with r = -0.497 with p < 0.01, So we reject the null hypothesis can say that there is low negative correlation.

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Nordstrom - The Brand Commitment and Likelihood to Recommend, Pearson correlation is significant for Nordstrom with r = -0.691 with p < 0.01, So we reject the null hypothesis can say that there is moderately negative correlation.

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**Problem 2:**

In this problem, Satisfaction with their reward program is the **dependent variable** and Gender (S1) and Household income (S8) is the **independent variables.**

Since we have two independent and one dependent variables, we will be doing the **Two-way ANOVA test,**

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From the results of ANOVA test, we can see that the **interaction effect (S1\*S8) is not significant** with since p = 0.200 (i.e p > 0.01) and hence we consider only the overall effect with p = 0.044 (i.e p<0.05) which is significant.

Furthermore, we can see that **S1 (Gender) is significant** since p = 0.031 (i.e p<0.05) whereas **S8 (Household income) is not significant** since p = 0.194 (p>0.05)

We can say that independent variables have no interaction between them but they affect the dependent variable separately, and the amongst the independent variables, Gender significantly affects the dependent variable and Household income has no significant effect on the dependent variable.

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When analysed the trend of Household income vs satisfaction for Male and Female population, and we found the **Female population is generally more satisfied than the Male population.** Since, Labels in satisfaction level for Amazon price (q21a\_3) label 1 is very satisfied and label 5 is very dissatisfied.

**Problem 3:**

Here, The annual household income (S8) is ratio (continuous data) while the likelihood to purchase (q12x23 for Amazon, q12x2 for JC Penny) is Ordinal data, we are going to use the Spearman correlation test

H0 (Null hypothesis) = There is no correlation between annual household income and the respective Likelihood to Purchase (time frame)

H1 (Alternate Hypothesis) = There exists a correlation between annual household income and the respective Likelihood to Purchase (time frame)

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The Spearman’s Correlation of annual household income and the respective Likelihood to Purchase (time frame) correlation for Amazon is significant with r = -0.059 with p = 0.018 (i.e p<0.05), So we **reject the null hypothesis** can say that there is **negative correlation, but it is very low**.

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Description automatically generatedThe Spearman’s Correlation of annual household income and the respective Likelihood to Purchase (time frame) correlation for JC Penny is not significant with r = 0.038 with p = 0.713 (i.e p>0.05), So we **fail to reject the null hypothesis** can say that there is no correlation.

**Problem 4:**

We set the value 6 of perceptions of Brand Love, “6: Don’t know enough about brand” as a missing value, because a person who doesn't know enough about the brand has no impact on the likelihood of recommendation.

We will be doing the Linear Regression analysis. Independent variable is perceptions of Brand Love (q6\_14) and dependent variable is Likelihood of Recommendation (q13\_1\_2).

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From the coeff table above, we can write equation for:

Predicted Likelihood to Recommendation for JC Penny = 10.982 {constant} + Brand Love for JC Penny(-1.766) {slope}

The estimated value of coefficient is -1.766, so there is a negative association between perceptions of Brand Love and Likelihood to Recommend for JC Penney with intercept of 10.982

From the above, we can say that the R of the model is 0.633, so perceptions of Brand Love for JCPenney can impact the Likelihood of Recommendation.

R square of the model is 0.401, which means 40.1% of variability in Likelihood to Recommend measurements can be explained by perceptions of Brand Love with JC Penney.

The model p < 0.01, which means a statistically significant proportion of the variability in Likelihood to Recommend for JC Penney can be attributed to the regression model. And the p < 0.01 for both the coefficient and constant, so these two estimated values have accounted for a significant proportion of the variation of the response variable.