

Objective 1: To measure the consumer perception of Indian liquor brands.

H0: The mean of Brand Perception (BP) is same across different brands of liquor.

The brands of liquor may be assumed to be independent and the impact of their change is analyzed on brand perception scores.

As we have got many brands, for which we have to find the impact on BP, we applied ANOVA to check if there the difference in scores of BP is significant for different brands.

The p value came out to be lesser than 0.05 threshold value. This indicates that there isn't significant evidence available to prove our NULL hypothesis

Hence the NULL hypothesis was rejected in favor of alternate hypothesis which means that the score of Brand perception is significantly different for different liquor brands.

Objective 2: To identify the impact of brand perception on purchase intentions.

H0: Brand Perception (BP) doesn't have any significant impact on Purchase Intentions (PI) of consumers.

The relationship between BP and PI was analyzed using linear regression method. PI was considered as dependent variable while BP was considered as independent variable. The prerequisites for linear regression were checked.

Linear relation between two variables could be observed by scatter plot diagram. Correlation was only 0.51 but this correlation was significant at 0.05 threshold value of p.

Linear regression model provided the coefficient values as follows

| (Intercept) | BP |
|-------------|--------|
| 18.1035 | 0.5895 |

In our case, both of these p-Values (Coefficients for Intercept and BP) are well below the 0.05 threshold, so we can conclude our model is indeed statistically significant. The more the stars beside the variable's p-Value, the more significant the variable.

The adjusted R square value was 0.2622 which means that BP accounts for almost 26% variance in PI.

$$PI=18.1035 + 0.5895*BP$$

When we use P Value, there is a null and alternative hypothesis associated with it. In Linear Regression, the Null Hypothesis is that the coefficients associated with the variables are equal to zero. The alternate hypothesis is that the coefficients are not equal to zero (i.e. there exists a relationship between the independent variable in question and the dependent variable). Hence, in this case, the null hypothesis is rejected in favor of alternate hypothesis.

Objective 4: To explore the relationship of liquor brand perception with loyalty

Brand Perception (BP) is independent variable and its impact was analyzed on Loyalty which was a binary categorical variable, with Yes and NO as the acceptable values.

In this case, logistic regression model was created which will estimate the probability of a consumer being Loyal (Yes) based on the value of Brand Perception.

The model resulted in following equation.

$$\text{Log}(\pi/1-\pi) = 0.05802\text{BP} - 0.0904$$

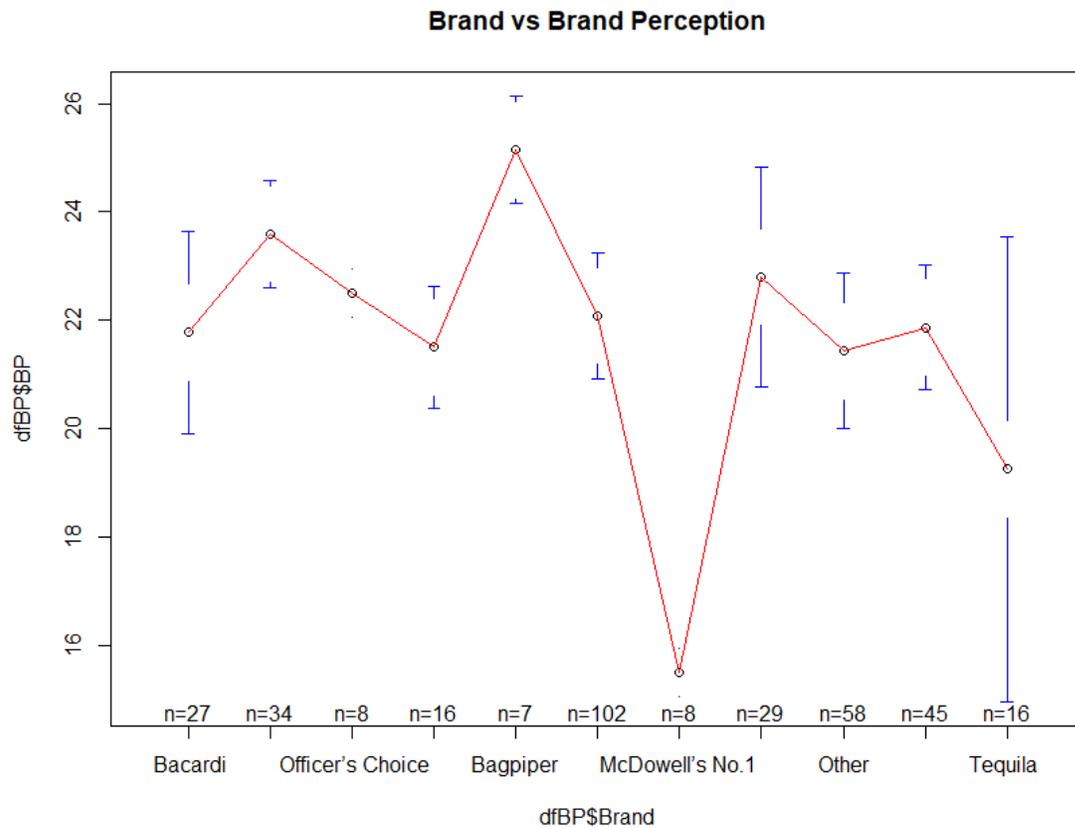
π is the probability that consumer is loyal

P value for coefficient of BP was significant at .05 threshold value while p value for coefficient of intercept is significant at 0.1 alpha level.

This model has an accuracy of over 61% which is better than the base model which could only predict with accuracy of 58.8%.

APPENDIX –

OBJECTIVE 1



```
> summary(aov_cont)
```

| Df | Sum | Sq | Mean | Sq | F value | Pr(>F) |
|-----------|-------|------|-------|-------|---------|------------|
| dfBP\$ | Brand | 10 | 656 | 65.56 | 2.618 | 0.00445 ** |
| Residuals | 339 | 8488 | 25.04 | | | |

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

OBJECTIVE 2

COORELATION MATRIX (PI & BP)

PI BP

PI 1.00 0.51

BP 0.51 1.00

R OUTPUT for Correlation

Pearson's product-moment correlation

data: dflr\$PI and dflr\$BP

t = 11.181, df = 348, p-value < 2.2e-16

alternative hypothesis: true correlation is not equal to 0

95 percent confidence interval:

0.4325786 0.5872757

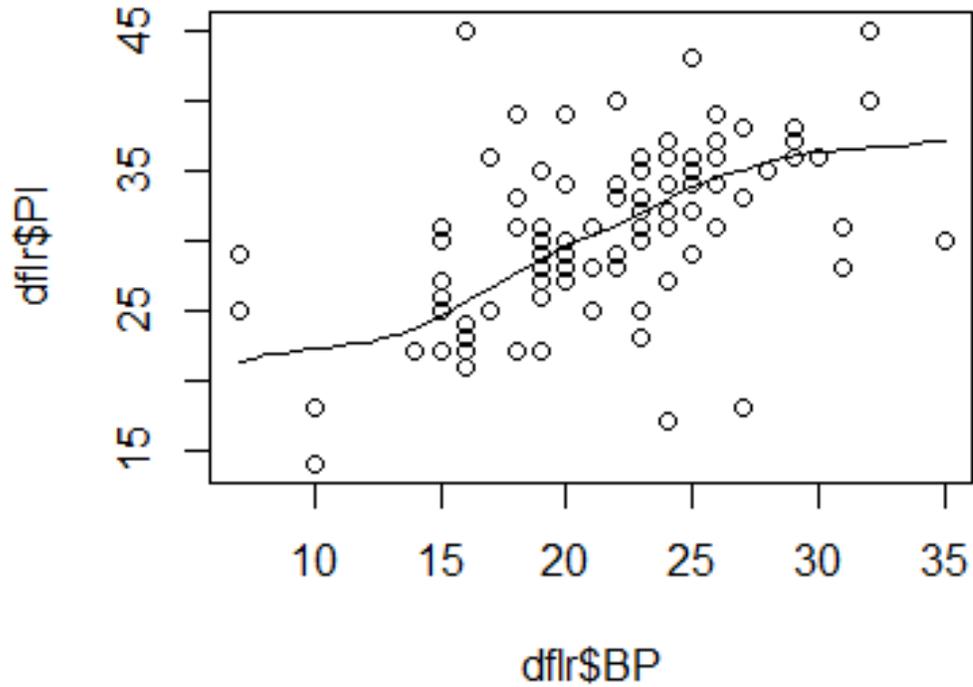
sample estimates:

cor

0.5140956

Scatter Diagram

PI ~ BP



Linear Regression Model Output

Call:

```
lm(formula = PI ~ BP, data = dflr)
```

Residuals:

| Min | 1Q | Median | 3Q | Max |
|----------|---------|--------|--------|---------|
| -16.0201 | -3.1119 | 0.3904 | 3.0324 | 17.4644 |

Coefficients:

| Estimate | Std. Error | t value | Pr(> t) |
|----------|------------|---------|----------|
|----------|------------|---------|----------|

| | | | |
|-------------|----------|---------|------------------|
| (Intercept) | 18.10355 | 1.18523 | 15.27 <2e-16 *** |
|-------------|----------|---------|------------------|

| | | | |
|----|---------|---------|------------------|
| BP | 0.58950 | 0.05272 | 11.18 <2e-16 *** |
|----|---------|---------|------------------|

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 5.042 on 348 degrees of freedom
Multiple R-squared: 0.2643, Adjusted R-squared: 0.2622
F-statistic: 125 on 1 and 348 DF, p-value: < 2.2e-16

OBJECTIVE 4

Logistic Regression Output

Deviance Residuals:

| Min | 1Q | Median | 3Q | Max |
|---------|---------|--------|--------|--------|
| -1.5728 | -1.2625 | 0.9339 | 1.0241 | 1.3179 |

Coefficients:

Estimate Std. Error z value Pr(>|z|)

(Intercept) -0.90462 0.53416 -1.694 0.0904 .

BP 0.05802 0.02401 2.416 0.0157 *

Signif. codes: 0 '****' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 355.09 on 261 degrees of freedom

Residual deviance: 349.06 on 260 degrees of freedom

AIC: 353.06

Number of Fisher Scoring iterations: 4