CHAPTER VII

HYPOTHESES TESTING
Chapter VII
Hypotheses Testing

7.0 Background:

Hypothesis is the guiding force for the research undertaken. A Hypothesis is an unproven statement or proposition about a factor or phenomenon that is of interest to the researcher (Malhotra 2004). Hypothesis consists either of a suggested explanation for an observable phenomena or of a reasoned proposal predicting a possible causal correlation among multiple phenomena. Hypotheses are declarative and can be tested empirically. Hypotheses are the statements which can be proved or disproved.

Hypotheses are an important part of the approach towards a problem. Problem is normally in form of a question which is an origin for the research. On the contrary, Hypothesis is a statement which entails what the researcher predicts/believes will be the outcome the research.

7.1 Formulation of Hypotheses:

For the purpose of this study the researcher had formulated four hypotheses on the basis of the problem identified. Since this study revolves around Formulation of Marketing Strategies on the basis of profitability Indicators of Organised Retail Outlets based in Pune, the hypotheses were formed to assess the profitability levels at Pune and the attitude of respondents towards the organized retail. The following were the Hypotheses for the study.

- Lease Rentals as a percentage of Sales Revenue in Pune is same as the national benchmark
- Conversions as a percentage of total Footfalls in Pune are more than the national Benchmark
Hypotheses Testing

- Recurring Expenses as a percentage of Sales Revenue in Pune are same as national benchmark.
- Seasonal sale is found beneficial by the consumers

7.2 Hypothesis 1:

Lease Rentals form a major portion of expense heads for organized retail. It is imperative to explore whether the lease rentals are within the allowable norms as per the national benchmark. The National Benchmark for the organized retail was taken as a base which is 4.5%. This was compared with the collective lease rentals as a percentage of sales which is 6.84%. Hence the variables can be defined as

This hypothesis is statistically stated as,

Lease Rentals as a percentage of Sales Revenue in Pune is same as the national benchmark

- \( H_0 \): There is no difference between Lease Rentals as a Percentage of Sales Revenue in Pune and National Benchmark for Lease Rentals as a percentage of Sales
- \( H_1 \): There is difference between Lease Rentals as a percentage of Sales Revenue in Pune and National Benchmark for Lease Rentals as a Percentage of sales.

Test Statistics:

Student’s “t” test for difference in mean for one sample

The following formula was used to arrive at calculated “t”.

\[
t_{\text{calculated}} = \frac{\bar{X} - \mu}{s/\sqrt{n}}
\]
Hypotheses Testing

As the sample size was 17 (less than 30) and the variable lease rental was measured on interval scale, “t” test was thought to be the most appropriate test.

\[ V_1 = 4.5\% \quad V_2 = 6.84\% \quad \text{Tabulated Value } \alpha = 0.05 \]

**Statistical Calculation:**

### One-Sample Statistics

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lease Rental to Revenue</td>
<td>17</td>
<td>6.8432860</td>
<td>6.18403229</td>
<td>1.49984814</td>
</tr>
</tbody>
</table>

### One-Sample Test

<table>
<thead>
<tr>
<th></th>
<th>t</th>
<th>Df</th>
<th>Sig. (2-tailed)</th>
<th>Mean Difference</th>
<th>95% Confidence Interval of the Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lease Rental to Revenue</td>
<td>1.562</td>
<td>16</td>
<td>0.138</td>
<td>2.34328597</td>
<td>-0.8362500 5.5228220</td>
</tr>
</tbody>
</table>

**Observation:**

\[ t = 1.562 \]

For \( \alpha = 0.05 \), with 16 df with p value 0.138.
Inference:
As p is greater than 0.05 we accept H0, there is no significant difference between % lease rental in Pune and National Benchmark of 4.5%.

Conclusion:
Hence it can be concluded that though the Lease Rentals at Pune are higher than the National Benchmark, they are not significantly high. Hence they do not affect the profitability of the store to a great extent. The lease rentals in Pune city are under control.

7.3 Hypothesis 2:

Since the success of any organized retail store depends upon the ratio of conversions from the footfalls, it was found important to explore whether conversions at organized retail outlets in Pune are significantly higher than the National benchmark. The National Benchmark for organized retail outlets is 55%. This was taken as a base for the analysis. The conversions as a percentage of total footfalls in Pune city are 61.29%. It was found necessary to test whether Conversions in Pune city are significantly high as compared to the national benchmark.

This hypothesis is statistically stated as,

Conversions as a percentage of total Footfalls in Pune are more than the national Benchmark

H0 : There is difference between Conversions as a percentage of total footfalls in Pune and National Benchmark
H1 : There is no difference between Conversions as a percentage of total footfalls in Pune and National Benchmark
Hypotheses Testing

Test Statistics:

**Student’s “t” test for difference in mean for one sample**
The following formula was used to arrive at calculated “t”.

\[ t \text{ calculated} = \frac{\bar{X} - \mu}{s/\sqrt{n}} \]

As the sample size was 17 (less than 30) and the variable % conversion was measured on interval scale, “t” test was thought to be most appropriate test.

\[ V_1 = 55\% \quad V_2 = 61.29\% \]

Tabulated Value \( \alpha = 0.05 \)

**Statistical Calculation:**

**One-Sample Statistics**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Conversions</td>
<td>17</td>
<td>61.2929226</td>
<td>20.01955910</td>
<td>4.85545628</td>
</tr>
</tbody>
</table>

**One-Sample Test**

<table>
<thead>
<tr>
<th></th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
<th>Mean Difference</th>
<th>95% Confidence Interval of the Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Conversions</td>
<td>1.296</td>
<td>16</td>
<td>0.213</td>
<td>6.29292261</td>
<td>-4.0001849 - 16.5860301</td>
</tr>
</tbody>
</table>
Observation:
\[ t = 1.296 \]
For \( \alpha = 0.05 \), with 16 df with p value 0.213

Inference:
As p is greater than 0.05 we accept H0. There is significant difference between conversions as a percentage of Total Footfalls in Pune and National Benchmark of 55%.

Conclusion:
Hence it can be concluded that the conversions as a percentage of Total Footfalls are not significantly higher than the National Benchmark. Pune based retail outlets will need consistent innovative strategies to attract customers and aim at better conversions.

7.4 Hypothesis 3:
Recurring expenses are also important expenses for affecting profitability of the retail outlets. Since these are recurring costs, it is important to keep them under control. Hence it was found essential to establish whether the recurring expenses as a percentage of sales revenue are significantly higher or significantly lower than the national Benchmark. The National Benchmark for recurring expenses as a percentage of sales revenue is 2.94%. Recurring Expenses as a percentage of sales revenue at organized retail outlets in Pune is observed to be 4.008%. Hence it was important to understand whether Recurring Expenses at Pune are drastically higher than the National Benchmark.
This hypothesis is statistically stated as ,

Recurring Expenses as a percentage of Sales Revenue in Pune are same as national benchmark.

**H0** : Recurring Expenses as a percentage of sales revenue in pune are same as National Benchmark  
**H1** : Recurring Expenses as a percentage of sales revenue in Pune are higher than the National Benchmark

**Test Statistics:**

**Student’s “t” test for difference in mean for one sample**

The following formula was used to arrive at calculated “t”.

\[ t \text{ calculated} = \frac{\bar{X} - \mu}{s/\sqrt{n}} \]

As the sample size was 17 (less than 30) and the variable recurring expenses was measured on interval scale, “t” test was thought to be most appropriate test.

\[ V_1 = 2.94\% \quad V_2 = 4.008\% \quad \text{Tabulated Value} \alpha = 0.05 \]

**Statistical Calculation:**

<table>
<thead>
<tr>
<th>One-Sample Statistics</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recurring Expenses</td>
<td>17</td>
<td>4.008235</td>
<td>1.34143991</td>
<td>.32534697</td>
</tr>
</tbody>
</table>

**One-Sample Test**
Observed t-value: 3.285

For α = 0.05, with 16 df, the p-value is 0.005.

Inference:
As p is less than 0.05, we reject H0. There is a significant difference between recurring expenses in Pune and the National Benchmark of 2.94%.

Conclusion:
From the above analysis, it is clear that recurring expenses at organized retail outlets in Pune are radically higher than the National Benchmark. This is primarily due to the electricity expenses being on the higher side contributed by frequent power failures in the city.
7.5 Hypthesis 4:

Shoppers at all the retail outlets selected for study were contacted to analyze the shopping behavior and attitude. The attitude towards Discount Sale was rated on a Likert Scale. The following statements were rated by the respondents on a five point rated scale indicating the degree of agreement or disagreement towards the statement.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>I visit this outlet only when the sale is announced</td>
<td>$V_1$</td>
</tr>
<tr>
<td>The prices of products are inflated and then discounted during the sale</td>
<td>$V_2$</td>
</tr>
</tbody>
</table>

As the variables, $V_1$ and $V_2$ are discrete variables measured on an ordinal scale, Spearman’s Rank Correlation Coefficient was thought to be the most appropriate statistical test.

This hypothesis is statistically stated as,

*Seasonal sale is found beneficial by the consumers*

H0 : There is positive correlation between $V_1$ and $V_2$

H1 : There is no correlation between $V_1$ and $V_2
Nonparametric Correlations

Spearman’s Correlation Coefficient:

| Agree that The prices of products are inflated and then discounted during the sale | Correlation Coefficient | 0.145(***)
|-----------------------------------------------|---------------------------|----------
| Agree that You get inferior quality products during the sale | Correlation Coefficient | 0.025
| Sig. (2-tailed) | 0.645
| N | 340

** Correlation is significant at the 0.01 level (2-tailed).

Observation:

Spearman’s Correlation Coefficient

Rho = 0.145 with p value 0.007

0.145 > 0.01

Inference:

There is positive correlation between V1 and V2. Hence H0 is accepted. It is inferred that consumers visit the outlet during sale in spite of knowing that prices of products are inflated and then discounted during the sale.
Conclusion:
This is an important observation from the point of view of organised retailers in Pune. Though discount sale is a good marketing tool to attract the footfalls, the consumers are well aware about the prices being inflated and then discounted during sale.

The retailers need to work on this image to remove the stigma about sale in consumer minds.

Positive aspect of this analysis is that in spite of knowing that most of the discount sale offers are attention grabbers, the consumers still visit the outlets during discount sale.