Chapter 5

Overall satisfaction and SEM models

Chapter overview:

The first section deals with the effect of demographic variables on overall satisfaction levels. This was done using one way analysis of variance (one way ANOVA) and independent sample T tests. The section analyses the impact of service quality attributes on overall satisfaction and vis a vis from both patients and their attendant’s perspective in private and public sector healthcare services. Totally four Structural Equation Models (SEM) were created with the help of Amos 16.0. Each model specifies the impact of service quality on overall satisfaction levels.

Hypotheses H04, H05, H06 and H07 were dealt in next section using Structural Equation Modelling (SEM) techniques.

5.1 Bi-variate analysis:

Hypothesis examined:

- H08a: There is no significant difference between Gender and overall satisfaction in private sector healthcare services.
- H08b: There is no significant difference between Gender and overall satisfaction in public sector healthcare services.

The fourth set of hypothesis deals with the difference between male and female respondents with respect to customer satisfaction. In order to test the first set of hypothesis and the fourth set of hypothesis Independent sample T test was used.

5.1.1 Independent sample T-tests:

The table 5.1 shows the independent sample t test results in both private and public sector healthcare services. For private sector healthcare services both the hypotheses H7a and H1a for identifying difference between gender and respondent’s type with respect to customer satisfaction were rejected.
Table 5.1: Table showing Independent sample T-tests results in private and public sector healthcare services.

<table>
<thead>
<tr>
<th>Sector</th>
<th>Hypothesis</th>
<th>Grouping variable</th>
<th>P value</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Private sector</strong></td>
<td>H07a</td>
<td>Gender (Male, Female)</td>
<td>0.13</td>
<td>Null Rejected</td>
</tr>
<tr>
<td></td>
<td>H01a</td>
<td>Respondents (Patients, Attendants)</td>
<td>0.03</td>
<td>Null Rejected</td>
</tr>
<tr>
<td><strong>Public sector</strong></td>
<td>H07b</td>
<td>Gender (Male, Female)</td>
<td>0.000</td>
<td>Null Rejected</td>
</tr>
<tr>
<td></td>
<td>H01b</td>
<td>Respondents (Patients, Attendants)</td>
<td>0.017</td>
<td>Null Rejected</td>
</tr>
</tbody>
</table>

Source: Primary data

This shows that there is significant difference between gender type (male/female) and respondent’s type (patient/attendant) with respect to customer satisfaction.

For public sector healthcare services both the hypotheses H07b and H01b stating that there is significant difference between gender type (male/female) and respondent’s type (patient/attendant) with respect to customer satisfaction were rejected.

In order to find out the difference in satisfaction levels among the male and female respondents the means values of both groups were compared.
5.1.1.1 Private sector healthcare services:

Table 5.2: Table showing mean values of male and female (with respect to satisfaction) in private sector healthcare services

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>179</td>
<td>4.25</td>
</tr>
<tr>
<td>Female</td>
<td>161</td>
<td>4.37</td>
</tr>
</tbody>
</table>

Source: Primary data

5.1.1.2 Public sector healthcare services:

Table 5.3: Table showing mean values of male and female (with respect to satisfaction) in public sector healthcare services

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>135</td>
<td>3.06</td>
</tr>
<tr>
<td>Female</td>
<td>195</td>
<td>3.57</td>
</tr>
</tbody>
</table>

Source: Primary data

The tables 5.2 and 5.3 show the mean values of both male and female respondents in private and public sector healthcare services. In private sector healthcare services the mean value for female (4.37) is higher than the mean value for male respondents (4.25). In public sector healthcare services the mean value for female respondents (3.57) is higher than the mean value for male respondents (3.06).

This shows that in both private and public sector healthcare services the female respondents were more satisfied than the male counterparts. This is because the male respondents always expect higher service and are often let down by the actual service they receive.
Difference between demographic groups with respect to customer satisfaction:

Hypothesis:

- \(H_{0a}\): There is no significant difference between different income groups and overall satisfaction in private sector healthcare services.
- \(H_{0b}\): There is no significant difference between different income groups and overall satisfaction in public sector healthcare services.
- \(H_{10a}\): There is no significant difference between number of previous visits and overall satisfaction in private sector healthcare services.
- \(H_{10b}\): There is no significant difference between number of previous visits and overall satisfaction in public sector healthcare services.
- \(H_{11a}\): There is no significant difference between district where the respondent belongs and overall satisfaction in private sector healthcare services.
- \(H_{11b}\): There is no significant difference between district where the respondent belongs and overall satisfaction in public sector healthcare services.

In order to test the above stated hypothesis one way analysis of variance (one way ANOVA) was used. ANOVA helps to identify whether there is any significant difference between the groups in case of three or more groups in a demographic variable. As the variables such as respondent’s income level, the number of previous visits to the hospital and the district where the respondents belongs have more than three groups one way ANOVA was used to identify the differences between the groups.

5.1.2 One way analysis of variance:

Table 5.4 shows the results of one way ANOVA in both private and public sector healthcare services. In private sector healthcare services the respondent’s income level and the number of previous visits to the hospital have p values less than .05 (at 5% level of significance).

Hence the hypotheses \(H_{09a}\) and \(H_{010a}\) were rejected stating that there is significant difference between the groups with respect to customer satisfaction. The p
value for district where the respondents belongs was greater than .05 (.510) stating that there is no significant difference between the groups with respect to customer satisfaction.

Table 5.4: Table showing results from one way analysis of variance in private and public sector healthcare services.

<table>
<thead>
<tr>
<th>Sector</th>
<th>Hypothesis</th>
<th>Grouping variable</th>
<th>P value</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private sector</td>
<td>H09a</td>
<td>Respondent’s income level</td>
<td>.002</td>
<td>Null Rejected</td>
</tr>
<tr>
<td></td>
<td>H10a</td>
<td>No of previous visits</td>
<td>.000</td>
<td>Null Rejected</td>
</tr>
<tr>
<td></td>
<td>H10a</td>
<td>District they belong</td>
<td>.510</td>
<td>Null Accepted</td>
</tr>
<tr>
<td>Public sector</td>
<td>H09b</td>
<td>Respondent’s income level</td>
<td>.001</td>
<td>Null Rejected</td>
</tr>
<tr>
<td></td>
<td>H10b</td>
<td>No of previous visits</td>
<td>.000</td>
<td>Null Rejected</td>
</tr>
<tr>
<td></td>
<td>H11b</td>
<td>District they belong</td>
<td>.000</td>
<td>Null Rejected</td>
</tr>
</tbody>
</table>

Source: Primary data

In public sector healthcare services all the three demographic variables respondent’s income level, the number of previous visits to the hospital and the district where the respondents belongs have p values less than .05 (at 5% level of significance) stating that there is no significant difference between the groups with respect to customer satisfaction.
5.2 Structural Equation Modeling (SEM):

Structural equation Modeling is a statistical model that explains the relationship among multiple variables. It is a combination of multiple, multiple regression and factor analysis methods. SEM methods are extremely useful to establish structural relationship between variables and the latent factors. SEM model is unique in its ability to represent unobserved concepts and explains the entire set of relationships between all the variables and the latent factors. SEM draws its foundation from theory and helps to identify how much the actual data represents the theoretical framework. Structural Equation modeling (SEM) enables a researcher to analyze factors which cannot be measured directly but by a combination of variables.

5.2.1 Terminologies used:

1. Causation:

   It is the method by which the cause and effect relationship is established between variables. It shows that one variable causes the other variable (i.e.) the changes in the dependent variable is solely because of the presence of independent variable.

2. Exogenous constructs:

   These are latent variables similar to independent variables. They are determined by factors outside the model hence they are independent of any effect in the model.

3. Endogenous constructs:

   These are latent variables similar to dependent variables. They depend upon the other constructs (or) factors in the given model.

4. Latent construct/factor:

   A latent construct/factor is one which is not measured directly but by a group of variables termed as indicators. Even though they cannot be measured precisely the variables/indicators helps to give a reasonably accurate measure.

5. Spurious relationship:
A relationship which is false or misleading is termed as spurious relationship. Here the relationship between the original two constructs becomes less significant by adding an omitted construct.

5.2.2 Private sector healthcare services:

5.2.2.1 Patient’s perspective:

Hypotheses examined:

- \( H_0^{4a} \): There is no significant relationship between tangibility and service quality in private sector healthcare services from patient’s perspective.
- \( H_0^{4b} \): There is no significant relationship between reliability and service quality in private sector healthcare services from patient’s perspective.
- \( H_0^{4c} \): There is no significant relationship between responsiveness and service quality in private sector healthcare services from patient’s perspective.
- \( H_0^{4d} \): There is no significant relationship between empathy and service quality in private sector healthcare services from patient’s perspective.
- \( H_0^{4e} \): There is no significant relationship between assurance and service quality in private sector healthcare services from patient’s perspective.
- \( H_0^{4f} \): There is no significant relationship between service quality and overall satisfaction in private sector healthcare services from patient’s perspective.

The figure 5.1 shows the hypothesized model containing all the five factors of service quality and overall satisfaction in private sector healthcare services from patient’s perspective. Here all the five factors of service quality and overall satisfaction were taken as latent factors.

A latent factor is one which is not measured directly but measured with the help of two or more variables summated together. Service quality is taken as a second order latent factor which is not measured directly but by all the five factors of service quality put together.
**Structural theory:**

Figure 5.1: Theoretical model of service quality and overall satisfaction in private sector healthcare services from patient’s perspective.

![Diagram of service quality model](image)

**Note:** Based on SERVPERF model

**Structural model:**

The figure 5.2 shows the structural model depicting relationship between service quality and customer satisfaction from patient’s perspective in private sector healthcare services. Table 5.5 shows the factor loadings of service quality on its five attributes (tangibility, reliability, responsiveness, empathy and assurance) and overall satisfaction. Hypotheses $H_0^{4a}$, $H_0^{4b}$, $H_0^{4c}$, $H_0^{4d}$, $H_0^{4e}$ and $H_0^{4f}$ were tested. From table 5.5 it’s clear that all the factor loadings are significant at 1% level of significance (p values less than .01).

Hence the null hypotheses $H_0^{4a}$, $H_0^{4b}$, $H_0^{4c}$, $H_0^{4d}$, $H_0^{4e}$ and $H_0^{4f}$ were rejected (table 5.5). This states that the relationship between the service quality and its five attributes and with overall satisfaction is statistically significant.

Table 5.5 also provides the factor scores of service quality on its attributes and overall satisfaction. Here the impact of service quality on overall satisfaction is .33. This
states that 33% of variance in overall satisfaction is explained by service quality. A minimum of 40% of variance in all the service quality attributes is explained by service quality except tangibility attribute where the variance explained is just under 40% (37%).

Figure 5.2: Structural model of service quality and overall satisfaction in private sector healthcare services from patient’s perspective.
Table 5.5: Table showing estimates and significance values in private sector healthcare services from patient’s perspective.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Estimate</th>
<th>P value</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tangibility - Service quality (H0_{4a})</td>
<td>.37</td>
<td>.001</td>
<td>H0_{4a} Rejected</td>
</tr>
<tr>
<td>Reliability - Service quality (H0_{4b})</td>
<td>.79</td>
<td>.000</td>
<td>H0_{4b} Rejected</td>
</tr>
<tr>
<td>Responsiveness - Service quality (H0_{4c})</td>
<td>.57</td>
<td>.000</td>
<td>H0_{4c} Rejected</td>
</tr>
<tr>
<td>Empathy - Service quality (H0_{4d})</td>
<td>.48</td>
<td>.000</td>
<td>H0_{4d} Rejected</td>
</tr>
<tr>
<td>Assurance – Service quality (H0_{4e})</td>
<td>.46</td>
<td>.000</td>
<td>H0_{4e} Rejected</td>
</tr>
<tr>
<td>Service quality – Overall satisfaction (H0_{4f})</td>
<td>.33</td>
<td>.000</td>
<td>H0_{4f} Rejected</td>
</tr>
</tbody>
</table>

Source: Primary data

The table 5.6 portrays the model fit indices in the case of private sector healthcare services from patient’s perspective. The Pmin/df which is the net value of chi-square value divided by degrees of freedom, is 1.561. This is well within the range of less than 3 (Hair, J. F., Tatham, R. L., Anderson, R. E., & Black, W., 2006).

The probability value is .000 which is less than the minimum limit of .05. In case of large samples it is not always expected that the probability value exceeds .05. The Goodness of fit index is .910. In case of Root Mean Square Error Approximation (RMSEA) is .065, which is below the minimum accepted value of .09 indicating that there is very low level of unexplained variance in the overall model. Both the Normed Fit Index (NFI) and the Comparative Fit Index (CFI) which measures the Incremental fit are just under the 0.90 mark (.887 and .890 respectively). The parsimony Goodness of Fit index (PGFI) which measures about the compactness of the model is above the threshold level of .8 (Hair, J. F., Tatham, R. L., Anderson, R. E., & Black, W., 2006).
Table: 5.6: Table showing model fit indices in private sector healthcare services from patient’s perspective.

<table>
<thead>
<tr>
<th><strong>GOF Index – Absolute measures</strong></th>
<th>Actual values</th>
<th>Recommended values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-square</td>
<td>504.18</td>
<td></td>
</tr>
<tr>
<td>Degrees of freedom</td>
<td>323</td>
<td></td>
</tr>
<tr>
<td>Probability</td>
<td>.000</td>
<td>.05</td>
</tr>
<tr>
<td>Pmin/df</td>
<td>1.561</td>
<td>Less than 3</td>
</tr>
<tr>
<td>GFI</td>
<td>.910</td>
<td>Greater than .90</td>
</tr>
<tr>
<td>RMSEA</td>
<td>.065</td>
<td>Less than .09</td>
</tr>
</tbody>
</table>

| **Increment fit measures**       |               |                    |
| NFI                              | .887          | Greater than .90   |
| CFI                              | .890          | Greater than .90   |

| **Parsimony Measures**           |               |                    |
| AGFI                             | .810          | Greater than .80   |

Source: Primary data

5.2.2.2 Attendant’s perspective:

Hypotheses examined:

- **H0₅ₐ**: There is no significant relationship between tangibility and service quality in private sector healthcare services from attendant’s perspective.
- **H0₅₆**: There is no significant relationship between reliability and service quality in private sector healthcare services from attendant’s perspective.
- **H0₅₇**: There is no significant relationship between responsiveness and service quality in private sector healthcare services from attendant’s perspective.
- **H0₅₈**: There is no significant relationship between empathy and service quality in private sector healthcare services from attendant’s perspective.
- **H0₅₉**: There is no significant relationship between assurance and service quality in private sector healthcare services from attendant’s perspective.
• **H0sf**: There is no significant relationship between service quality and overall satisfaction in private sector healthcare services from attendant’s perspective.

**Structural theory:**

Figure 5.3: Theoretical model of service quality and overall satisfaction in private sector healthcare services from attendant’s perspective.

![Theoretical model](image)

Note: Based on SERVPERF model

The figure 5.3 shows the hypothesized model containing all the five factors of service quality and customer satisfaction in private sector healthcare services from attendant’s perspective. Here all the five factors of service quality and overall satisfaction were taken as latent factors.

The figure 5.4 shows the structural model depicting relationship between service quality and customer satisfaction from attendant’s perspective in private sector healthcare services. Table 5.7 shows the factor loadings of service quality on its five attributes (tangibility, reliability, responsiveness, empathy and assurance) and overall satisfaction. Hypotheses H0sa, H0sb, H0sc, H0sd, H0se and H0sf were tested. From table 5.7 it’s clear that all the factor loadings are significant at 1% level of significance (p values less than .01).
Structural model:

Figure 5.4: Structural model of service quality and overall satisfaction in private sector healthcare services from attendant’s perspective.

Hence the null hypotheses H0sa, H0sb, H0sc, H0sd, H0se and H0sf were rejected (table 5.7). This states that the relationship between the service quality and its five attributes and with overall satisfaction is statistically significant.

Table 5.7 also provides the factor scores of service quality on its attributes and overall satisfaction. Here the impact of service quality on overall satisfaction is .36. This states that 36% of variance in overall satisfaction is explained by service quality. A minimum of 40% of variance in all the service quality attributes is explained by service quality.
Table: 5.7: Table showing estimates and significance values in private sector healthcare services from attendant’s perspective.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Estimate</th>
<th>P value</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tangibility - Service quality (H05a)</td>
<td>.45</td>
<td>.001</td>
<td>H05a Rejected</td>
</tr>
<tr>
<td>Reliability - Service quality (H05b)</td>
<td>.68</td>
<td>.000</td>
<td>H05b Rejected</td>
</tr>
<tr>
<td>Responsiveness - Service quality (H05c)</td>
<td>.75</td>
<td>.000</td>
<td>H05c Rejected</td>
</tr>
<tr>
<td>Empathy - Service quality (H05d)</td>
<td>.65</td>
<td>.000</td>
<td>H05d Rejected</td>
</tr>
<tr>
<td>Assurance – Service quality (H05e)</td>
<td>.75</td>
<td>.000</td>
<td>H05e Rejected</td>
</tr>
<tr>
<td>Service quality – Customer satisfaction (H05f)</td>
<td>.36</td>
<td>.000</td>
<td>H05f Rejected</td>
</tr>
</tbody>
</table>

Source: Primary data

The table 5.8 portrays the model fit indices in the case of private sector healthcare services from attendant’s perspective. The Pmin/df which is the net value of chi-square value divided by degrees of freedom is 1.690. This is well within the range of less than 3 (Hair, J. F., Tatham, R. L., Anderson, R. E., & Black, W., 2006).

The probability value is .000 which is less than the minimum limit of .05. In case of large samples it is not always expected that the probability value exceeds .05. The Goodness of fit index is .878. In case of Root Mean Square Error Approximation (RMSEA) is .069, it is below the minimum accepted value of .09 indicating that there is very low level of unexplained variance in the overall model.
Table: 5.8: Table showing model fit indices in private sector healthcare services from patient’s perspective.

<table>
<thead>
<tr>
<th>GOF Index – Absolute measures</th>
<th>Actual values</th>
<th>Recommended values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-square</td>
<td>545.76</td>
<td></td>
</tr>
<tr>
<td>Degrees of freedom</td>
<td>323</td>
<td></td>
</tr>
<tr>
<td>Probability</td>
<td>.000</td>
<td>Greater than .05</td>
</tr>
<tr>
<td>Pmin/df</td>
<td>1.690</td>
<td>Less than 3</td>
</tr>
<tr>
<td>GFI</td>
<td>.878</td>
<td>Greater than 0.90</td>
</tr>
<tr>
<td>RMSEA</td>
<td>.069</td>
<td>Less than 0.09</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Increment fit measures</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NFI</td>
<td>.870</td>
<td>Greater than .90</td>
</tr>
<tr>
<td>CFI</td>
<td>.862</td>
<td>Greater than .90</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parsimony Measures</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AGFI</td>
<td>.805</td>
<td>Greater than 0.80</td>
</tr>
</tbody>
</table>

Source: Primary data

Both the Normed Fit Index (NFI) and the Comparative Fit Index (CFI) which measures the Incremental fit are .870 and .862 respectively. The parsimony Goodness of Fit index (PGFI) which measures about the compactness of the model is above the threshold level of 0.8.

5.2.3 Public sector healthcare services:

5.2.3.1 Patient’s perspective:

Hypotheses examined:

- $H_{0a}$: There is no significant relationship between tangibility and service quality in public sector healthcare services from patient’s perspective.
- $H_{0b}$: There is no significant relationship between reliability and service quality in public sector healthcare services from patient’s perspective.
- H06a: There is no significant relationship between responsiveness and service quality in public sector healthcare services from patient’s perspective.
- H06b: There is no significant relationship between empathy and service quality in public sector healthcare services from patient’s perspective.
- H06c: There is no significant relationship between assurance and service quality in public sector healthcare services from patient’s perspective.
- H06d: There is no significant relationship between service quality and overall satisfaction in public sector healthcare services from patient’s perspective.

The figure 5.5 shows the hypothesized model containing all the five factors of service quality and customer satisfaction in public sector healthcare services from patient’s perspective. Here all the five factors of service quality and overall satisfaction were taken as latent factors.

**Structural theory:**

Figure 5.5: Theoretical model of service quality and overall satisfaction in public sector healthcare services from patient’s perspective.
The figure 5.5 shows the structural model depicting relationship between service quality and customer satisfaction from patients perspective in public sector healthcare services. Table 5.9 shows the factor loadings of service quality on its five attributes (tangibility, reliability, responsiveness, empathy and assurance) and overall satisfaction. Hypotheses H0_a, H0_b, H0_c, H0_d, H0_e and H0_f were tested. From table 5.9 it’s clear that all the factor loadings are significant at 1% level of significance (p values less than .01).

Hence the null hypotheses H0_a, H0_b, H0_c, H0_d, H0_e and H0_f were rejected (table 5.9). This states that the relationship between the service quality and its five attributes and with overall satisfaction is statistically significant.

The figure 5.6 shows the structural model depicting relationship between service quality and customer satisfaction from patient’s perspective in public sector healthcare services. Table 5.9 shows the factor loadings of service quality on its five attributes (tangibility, reliability, responsiveness, empathy and assurance) and overall satisfaction. Hypotheses H0_a, H0_b, H0_c, H0_d, H0_e and H0_f were tested. From table 5.9 it’s clear that all the factor loadings are significant at 1% level of significance (p values less than .01).

Table 5.9 also provides the factor scores of service quality on its attributes and overall satisfaction. Here the impact of service quality on overall satisfaction is 0.35. This states that 35% of variance in overall satisfaction is explained by service quality.

Unlike in private sector healthcare services, the variance explained by service quality on its attributes are lower. This may be due to the reduced perception of service quality among the respondents which has contributed towards low variance explained.

**Structural model:**

Figure 5.6: Structural model of service quality and overall satisfaction in public sector healthcare services from patient’s perspective.
The table 5.10 portrays the model fit indices in the case of public sector healthcare services from patient’s perspective. The Pmin/df which is the net value of chi-square value divided by degrees of freedom is 3.226 which is just above the limit of 3 (J. F., Tatham, R. L., Anderson, R. E., & Black, W., 2006).

The probability value is .000 which is less than the minimum limit of .05. In case of large samples it is not always expected that the probability value exceeds .05.

The Goodness of fit index is .860 which is less than 0.90 level. In case of Root Mean Square Error Approximation (RMSEA), it is below the minimum accepted value of .09 indicating that there is low level of unexplained variance in the overall model. Both the Normed Fit Index (NFI) and the Comparative Fit Index (CFI) which measures the Incremental fit are in the grange of 0.86. The parsimony Goodness of Fit index (PGFI) which measures about the compactness of the model is just below the threshold level of 0.8.
Table 5.9: Table showing estimates and significance values in public sector healthcare services from patient’s perspective.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Estimate</th>
<th>P value</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tangibility - Service quality (H0\textsubscript{6a})</td>
<td>.22</td>
<td>.001</td>
<td>H0\textsubscript{6a} Rejected</td>
</tr>
<tr>
<td>Reliability - Service quality (H0\textsubscript{6b})</td>
<td>.29</td>
<td>.000</td>
<td>H0\textsubscript{6b} Rejected</td>
</tr>
<tr>
<td>Responsiveness - Service quality (H0\textsubscript{6c})</td>
<td>.23</td>
<td>.000</td>
<td>H0\textsubscript{6c} Rejected</td>
</tr>
<tr>
<td>Empathy - Service quality (H0\textsubscript{6d})</td>
<td>.24</td>
<td>.000</td>
<td>H0\textsubscript{6d} Rejected</td>
</tr>
<tr>
<td>Assurance – Service quality (H0\textsubscript{6e})</td>
<td>.33</td>
<td>.000</td>
<td>H0\textsubscript{6e} Rejected</td>
</tr>
<tr>
<td>Service quality – Customer satisfaction (H0\textsubscript{6f})</td>
<td>.35</td>
<td>.000</td>
<td>H0\textsubscript{6f} Rejected</td>
</tr>
</tbody>
</table>

Source: Primary data

Table 5.10: Table showing model fit indices in public sector healthcare services from patient’s perspective.

<table>
<thead>
<tr>
<th>GOF Index – Absolute measures</th>
<th>Actual values</th>
<th>Recommended values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-square</td>
<td>1042.137</td>
<td></td>
</tr>
<tr>
<td>Degrees of freedom</td>
<td>323</td>
<td></td>
</tr>
<tr>
<td>Probability</td>
<td>.000</td>
<td>.05</td>
</tr>
<tr>
<td>Pmin/df</td>
<td>3.226</td>
<td>Less than 3</td>
</tr>
<tr>
<td>GFI</td>
<td>.860</td>
<td>Greater than 0.90</td>
</tr>
<tr>
<td>RMSEA</td>
<td>.081</td>
<td>Less than 0.09</td>
</tr>
<tr>
<td><strong>Increment fit measures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NFI</td>
<td>.865</td>
<td>Greater than 0.90</td>
</tr>
<tr>
<td>CFI</td>
<td>.856</td>
<td>Greater than 0.90</td>
</tr>
<tr>
<td><strong>Parsimony Measures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AGFI</td>
<td>.788</td>
<td>Greater than 0.80</td>
</tr>
</tbody>
</table>

Source: Primary data
5.2.3.2 Attendant’s perspective:

Structural theory:

Figure 5.7: Theoretical model of service quality and overall satisfaction in public sector healthcare services from attendant’s perspective.

![Diagram showing the theoretical model of service quality and overall satisfaction in public sector healthcare services from attendant’s perspective.]

Note: Based on SERVPERF model

Hypotheses examined:

- $H_{07a}$: There is no significant relationship between tangibility and service quality in public sector healthcare services from attendant’s perspective.
- $H_{07b}$: There is no significant relationship between reliability and service quality in public sector healthcare services from attendant’s perspective.
- $H_{07c}$: There is no significant relationship between responsiveness and service quality in public sector healthcare services from attendant’s perspective.
- $H_{07d}$: There is no significant relationship between empathy and service quality in public sector healthcare services from attendant’s perspective.
- $H_{07e}$: There is no significant relationship between assurance and service quality in public sector healthcare services from attendant’s perspective.
The figure 5.7 shows the hypothesized model containing all the five factors of service quality and customer satisfaction in public sector healthcare services from attendant’s perspective. Here all the five factors of service quality and overall satisfaction were taken as latent factors.

The figure 5.8 shows the structural model depicting relationship between service quality and customer satisfaction from attendant’s perspective in public sector healthcare services. Table 5.11 shows the factor loadings of service quality on its five attributes (tangibility, reliability, responsiveness, empathy and assurance) and overall satisfaction. Hypotheses H07a, H07b, H07c, H07d, H07e and H07f were tested. From table 5.11 it’s clear that all the factor loadings are significant at 1% level of significance (p values less than .01).

Table 5.11: Table showing estimates and significance values in public sector healthcare services from attendant’s perspective.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Estimate</th>
<th>P value</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tan-SQ (H07a)</td>
<td>.20</td>
<td>.001</td>
<td>H07a Rejected</td>
</tr>
<tr>
<td>Rel-SQ (H07b)</td>
<td>.28</td>
<td>.000</td>
<td>H07b Rejected</td>
</tr>
<tr>
<td>Resp –SQ (H07c)</td>
<td>.23</td>
<td>.000</td>
<td>H07c Rejected</td>
</tr>
<tr>
<td>Emp – SQ (H07d)</td>
<td>.25</td>
<td>.000</td>
<td>H07d Rejected</td>
</tr>
<tr>
<td>Ass – SQ (H07e)</td>
<td>.24</td>
<td>.000</td>
<td>H07e Rejected</td>
</tr>
<tr>
<td>SQ- CS (H07f)</td>
<td>.24</td>
<td>.000</td>
<td>H07f Rejected</td>
</tr>
</tbody>
</table>

Source: Primary data

Hence the null hypotheses H07a, H07b, H07c, H07d, H07e and H07f were rejected (table 5.11). This states that the relationship between the service quality and its five attributes and with overall satisfaction is statistically significant.
Structural model:

Figure 5.8: Structural model of service quality and overall satisfaction in public sector healthcare services from attendant’s perspective.

Table 5.11 also provides the factor scores of service quality on its attributes and overall satisfaction. Here the impact of service quality on overall satisfaction is .24. This states that 24% of variance in overall satisfaction is explained by service quality. Unlike in private sector healthcare services, the variance explained by service quality on its attributes are lower. This may be due to the reduced perception of service quality among the respondents which has contributed towards low variance explained.

The table 5.12 portrays the model fit indices in the case of public sector healthcare services from attendant’s perspective. The Pmin/df which is the net value of
chi-square value divided by degrees of freedom is 3.350 which is just above the limit of 3 (J. F., Tatham, R. L., Anderson, R. E., & Black, W., 2006).

Table 5.12: Table showing model fit indices in public sector healthcare services from attendant’s perspective.

<table>
<thead>
<tr>
<th>GOF Index – Absolute measures</th>
<th>Actual values</th>
<th>Recommended values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-square</td>
<td>1082.16</td>
<td></td>
</tr>
<tr>
<td>Degrees of freedom</td>
<td>323</td>
<td></td>
</tr>
<tr>
<td>Probability</td>
<td>.000</td>
<td>.05</td>
</tr>
<tr>
<td>Pmin/df</td>
<td>3.350</td>
<td>Less than 3</td>
</tr>
<tr>
<td>GFI</td>
<td>.853</td>
<td>Greater than 0.90</td>
</tr>
<tr>
<td>RMSEA</td>
<td>.083</td>
<td>Less than 0.09</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Increment fit measures</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NFI</td>
<td>.860</td>
<td>Greater than .90</td>
</tr>
<tr>
<td>CFI</td>
<td>.851</td>
<td>Greater than .90</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parsimony Measures</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AGFI</td>
<td>.781</td>
<td>Greater than 0.80</td>
</tr>
</tbody>
</table>

Source: Primary data

The probability value is .000 which is less than the minimum limit of .05. In case of large samples it is not always expected that the probability value exceeds .05. The Goodness of fit index is 0.853 which is less than 0.90 level. In case of Root Mean Square Error Approximation (RMSEA), it is below the minimum accepted value of .09 indicating that there is low level of unexplained variance in the overall model.

Both the Normed Fit Index (NFI) and the Comparative Fit Index (CFI) which measures the Incremental fit are in the grange of 0.85. The parsimony Goodness of Fit index (PGFI) which measures about the compactness of the model is just below the threshold level of 0.8.

In public sector healthcare services the model fit has increased error variance (higher RMSEA values). This is one of the reasons why the variance explained
by service quality on its determinants is lower (compared to private sector healthcare services). The increased error variance is probably due to external factors affecting service quality which were not taken for the study.

5.2.4 Discussion:

The main reason behind coming up with four different models of service quality is to identify the amount of impact; service quality has on overall satisfaction. Cronin and Taylor (1992) stated service quality as an antecedent to customer satisfaction. Service quality is a long term attitude whereas customer satisfaction is transaction specific (Babakus & Mangold, 1992).

Customer satisfaction is an overall feeling a customer has about a service immediately after a service encounter (Ladhari, 2009). Hence the relationship between service quality and customer satisfaction is of paramount importance in order to have long term satisfied customers. In this research overall satisfaction was used in the place of customer satisfaction as satisfaction levels were measured from both patients and their attendant’s perspective.

Table 5.13: Table showing overall satisfaction in private and public sector healthcare services

<table>
<thead>
<tr>
<th>Sector</th>
<th>Patient’s perspective</th>
<th>Attendant’s perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private sector</td>
<td>.33</td>
<td>.36</td>
</tr>
<tr>
<td>Public sector</td>
<td>.35</td>
<td>.24</td>
</tr>
</tbody>
</table>

Source: Primary data

The table 5.13 shows the impact, service quality has on overall satisfaction from both patients and their attendant’s perspective in private and public sector healthcare services. The multiple regression results in chapter 4 (section 4.5.3) stated that in private sector healthcare services the type of respondent has a positive impact on
overall satisfaction where as in public sector healthcare services it has a negative impact. The same is confirmed by Structural Equation Modeling (SEM) results.

In private sector healthcare services the impact of service quality on overall satisfaction increases while moving from patients to attendants where as in public sector healthcare services it decreases while moving from patients to attendant’s perspective. This shows that the impact of service quality not only differs with the two sectors (private and public) but also with the type of respondents (patients and their attendants). Hence it is imperative for the hospital administration to accommodate attendant’s perspective of service quality while framing out strategies to enhance overall satisfaction levels. Studies in the past have found different levels of impact of service quality on satisfaction.

One possible explanation for the decrease in overall satisfaction in attendant’s side in public sector healthcare services is that they are the one who have direct interaction with the hospital support staff (nurses, attenders and pharmacists). They don’t have separate beds or enough space to rest, have to run nook and corner in order to get medicines and test results. All this may have contributed towards reduced impact of service quality on overall satisfaction.

The table 5.14 shows the impact of service quality on customer satisfaction in 10 various national and international studies. The impact of service quality on customer satisfaction were high in overseas studies except a study in Portugal where it was just 0.36 (Raposo, Alves, & Duarte, 2008). In Indian studies it ranged from 0.20 to 0.75 (from table 5.9). while in healthcare studies concerning India the impact of service quality on customer satisfaction was low in the range of 0.20 to 0.40 (Padma, Rajendran, & Lokachari, 2010), which is significantly different from overseas studies. The present study also has the impact in the range of 0.24 to 0.36. The main reason for the low impact may be due to factors such as cost of treatment, respondent’s preference towards a particular hospital etc.
Table 5.14: Table showing compilation of various studies on service quality and customer satisfaction.

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Country</th>
<th>SQ-CS relation</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olorunniwo, Hsu, &amp; Udo</td>
<td>USA</td>
<td>0.72</td>
<td>4 dimensions of service quality</td>
</tr>
<tr>
<td>Tsoukatos &amp; Rand</td>
<td>Greece</td>
<td>0.75</td>
<td>SERVQUAL scale</td>
</tr>
<tr>
<td>Lee, Lee, &amp; Yoo</td>
<td>China</td>
<td>0.50</td>
<td>SERVPERF scale</td>
</tr>
<tr>
<td>Sureshchandar, Rajendran, &amp;</td>
<td>India</td>
<td>0.56 – 0.75</td>
<td>Took different levels of service</td>
</tr>
<tr>
<td>Anantharaman</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jain &amp; Gupta</td>
<td>India</td>
<td>0.55</td>
<td>SERVPERF scale</td>
</tr>
<tr>
<td>Baalbaki, Ahmed, Pashtenko, &amp;</td>
<td>Lebanon</td>
<td>0.70</td>
<td>7 dimensions of service quality</td>
</tr>
<tr>
<td>Makarem</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Padma, Rajendran, &amp; Lokachari</td>
<td>India</td>
<td>0.20 to 0.40</td>
<td>For individual service quality attributes</td>
</tr>
<tr>
<td>Ramez</td>
<td>Bahrain</td>
<td>0.77</td>
<td>SERVQUAL scale</td>
</tr>
<tr>
<td>Brady, Cronin, &amp; Brand</td>
<td>USA</td>
<td>0.48-0.66</td>
<td>For five different service sectors</td>
</tr>
<tr>
<td>Raposo, Alves, &amp; Duarte</td>
<td>Portugal</td>
<td>0.36</td>
<td>4 dimensions of service quality</td>
</tr>
</tbody>
</table>

Source: Primary data

In table 5.14 SQ stands for service quality and CS stands for Customer Satisfaction.

5.3 Chapter conclusion:

The effect of service quality on customer satisfaction differs between sectors and also between types of respondents. The magnitude of impact is low in Indian healthcare context when compared with other international studies. This shows that service quality may not be a sufficient condition to alter satisfaction levels but a necessary condition to develop positive levels of satisfaction. People with poor perception of service quality have poor satisfaction levels.