6 Analysis Results and Discussions

The previous chapters outlined the motivation of work and an introduction to the various key variables involved in the study on effective recruitment and selection system for the IT software industry in India. The experimental methodology described in Chapters 4 and 5 are used in studying the effect of those variables on recruitment and selection system. The inputs were gathered from literature, company surveys and publicly available information on the internet from 50 companies and also from interview of HR Managers, Project managers and software professionals. Since the inputs range from quantitative data to qualitative data sets, different setups were used in the analysis for different hypothesis. For quantitative data sets, the inputs were then normalized on a scale of 1-5 to make them quantitative for the purposes of our model.

An example distribution of the intelligence variable X1 is shown below. The limits are from 1-5 with 1 being the least importance and 5 being the most importance given during the recruitment and selection system. The distribution has a mean of 3.96 which is above the median demonstrating that most companies’ value perceived intelligence as an important input variable for recruitment and selection system. The other parameters shown in the figure are upper and lower 95% values of the distribution indicating a very non-normal distribution. The standard error (std-error) to the mean represents the confidence with which one can determine the mean of the distribution. Similar distribution for all the input variables is listed in (Appendix C). An important facet of these distributions is that they are mostly skewed right or left depending on relative importance given by companies and are rarely normal across the entire company set. This is expected as the selection criterions for most companies are common
and most of them give importance to selection factors in a similar fashion. For qualitative data sets, the inputs are marked as Y/N and treated as nominal variables.

![Histogram of X1](image)

<table>
<thead>
<tr>
<th>Mean</th>
<th>3.96</th>
</tr>
</thead>
<tbody>
<tr>
<td>Std Dev</td>
<td>0.8320126</td>
</tr>
<tr>
<td>Std Err Mean</td>
<td>0.1176643</td>
</tr>
<tr>
<td>upper 95% Mean</td>
<td>4.1964554</td>
</tr>
<tr>
<td>lower 95% Mean</td>
<td>3.7235446</td>
</tr>
<tr>
<td>N</td>
<td>50</td>
</tr>
</tbody>
</table>

Figure 6.1: An Example Distribution of Input Variable X1: Intelligence
<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Input Variables</th>
<th>Name</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>H9-H12</td>
<td>INTELLIGENCE</td>
<td>X1</td>
<td>1-5</td>
</tr>
<tr>
<td></td>
<td>PROBLEM SOLVER</td>
<td>X2</td>
<td>1-5</td>
</tr>
<tr>
<td></td>
<td>CREATIVE</td>
<td>X3</td>
<td>1-5</td>
</tr>
<tr>
<td></td>
<td>FLEXIBLE</td>
<td>X4</td>
<td>1-5</td>
</tr>
<tr>
<td></td>
<td>QUICK TO LEARN</td>
<td>X5</td>
<td>1-5</td>
</tr>
<tr>
<td></td>
<td>PERSEVERING</td>
<td>X6</td>
<td>1-5</td>
</tr>
<tr>
<td></td>
<td>PASSION FOR TECHNOLOGY</td>
<td>X7</td>
<td>1-5</td>
</tr>
<tr>
<td></td>
<td>TEAM SPIRIT</td>
<td>X8</td>
<td>1-5</td>
</tr>
<tr>
<td></td>
<td>PRIORITIES</td>
<td>X9</td>
<td>1-5</td>
</tr>
<tr>
<td></td>
<td>RESULT ORIENTED</td>
<td>X10</td>
<td>1-5</td>
</tr>
<tr>
<td></td>
<td>DESIGN MAKER</td>
<td>X11</td>
<td>1-5</td>
</tr>
<tr>
<td></td>
<td>MOTIVATED</td>
<td>X12</td>
<td>1-5</td>
</tr>
<tr>
<td></td>
<td>DYNAMIC</td>
<td>X13</td>
<td>1-5</td>
</tr>
<tr>
<td></td>
<td>LONG TERM PLANNER</td>
<td>X14</td>
<td>1-5</td>
</tr>
<tr>
<td></td>
<td>ANALYTICAL SKILLS</td>
<td>X15</td>
<td>1-5</td>
</tr>
<tr>
<td></td>
<td>MAINTAIN FOCUS</td>
<td>X16</td>
<td>1-5</td>
</tr>
<tr>
<td>H1-H4</td>
<td>INTERVIEW</td>
<td>X17</td>
<td>Y/N</td>
</tr>
<tr>
<td></td>
<td>GROUP TEST</td>
<td>X18</td>
<td>Y/N</td>
</tr>
<tr>
<td></td>
<td>PSYCHOLOGICAL TEST</td>
<td>X19</td>
<td>Y/N</td>
</tr>
<tr>
<td></td>
<td>INTELLIGENCE TEST</td>
<td>X20</td>
<td>Y/N</td>
</tr>
<tr>
<td></td>
<td>TECHNICAL TEST</td>
<td>X21</td>
<td>Y/N</td>
</tr>
</tbody>
</table>
Table 6.1: Input Variables Relating to Hypothesis

Similar to the analysis done for the input variables, an exercise was performed for the output variables. In order to analyze the variables, data pertaining to the growth in sales, net margin of profit were gathered and the revenue/profit growth worked out to finally arrive at the average net profit per employee. The raw data gathered was now normally distributed. This is expected as company performances vary across the board. An example of growth in sales can be seen below. The growth in sales (%) ranges from -15% to 500%. As can also be seen, the distribution is more normal than the input variables indicating an effect of multiple factors. Besides a large tail towards the very high percentages, most of the company data is distributed normally. The other distributions are enclosed in (Appendix C).

A special note must be made here about Uncontrollable Factors. The blocking variables are size of the company in terms of number of employee’s and the size of the company in terms of its revenue. These are labeled as Z1 and Z2 respectively. The data is collected from public sites for Z1 and Z2 and their classification done based on criteria as decided as shown in Table 6.3.
Mean 58.906
Std Dev 81.391357
Std Err Mean 11.510476
upper 95% Mean 82.037168
lower 95% Mean 35.774832
N 50

Figure 6.2: Distribution of Output Variable Y1: Growth in Sales %

<table>
<thead>
<tr>
<th>Growth in Sales (%age)</th>
<th>Y1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Profit Margin</td>
<td>Y2</td>
</tr>
<tr>
<td>Revenue/Profit Growth</td>
<td>Y3</td>
</tr>
<tr>
<td>Average Net Profit/Employee</td>
<td>Y4</td>
</tr>
</tbody>
</table>

Table 6.2: Output Responses for All Hypotheses H1-H12
<table>
<thead>
<tr>
<th>Uncontrolled Factor</th>
<th>Name</th>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of company</td>
<td>Z1</td>
<td>1-4</td>
<td>1 is ( \leq 1000 ), 2, 1001-10000, 3 10001-25000 and 4 is &gt; 25000 employees</td>
</tr>
<tr>
<td>Turnover</td>
<td>Z2</td>
<td>1-2</td>
<td>1 less than and 2 &gt; Rs1500 crores</td>
</tr>
</tbody>
</table>

Table 6.3: Uncontrolled Factors Classification

### 6.1 Hypotheses Testing H1-H4

To recap briefly, the hypotheses setup were:

**H1.** Increased combination of interviews, psychological tests and intelligence tests taken at the time of recruitment and selection for the IT Software Companies in India does not improve the relationship of growth in sales of IT Software Companies.

**H2.** Increased combination of interviews, psychological tests and intelligence tests taken at the time of recruitment and selection for the IT Software Companies in India does not improve the relationship of net profit margin of IT Software Companies.

**H3.** Increased combination of interviews, psychological tests and intelligence tests taken at the time of recruitment and selection for the IT Software Companies in India does not improve the relationship of revenue/profit growth of IT Software Companies.
H4. Increased combination of interviews, psychological tests and intelligence tests taken at
the time of recruitment and selection for the IT Software Companies in India does not improve
the relationship of average net profit per employee, of IT Software Companies.

To test the null hypotheses 1 to 4, the response of the Companies to the question on the
number of tests conducted for recruitment and selection of candidates (Q3) classified them into
three categories:-

1. Group A - Companies which took at least 4/5 prescribed tests: i.e. Interview,
   Group Tests, Psychological Tests, Intelligence Tests, Technical Tests and Others.
2. Group B - Companies which took at least 3 out of the 5 above prescribed tests.
3. Group C - Companies which took less than 2 of the above prescribed tests or others.

Based on the above classification, companies were labeled into three groups A, B, and C and
each plotted against the output variables Y1-Y4.

Note that each output variable represents the corresponding hypothesis H1-H4. This was done
as follows in SPSS:

Go to Analyze → Non-parametric Tests → Independent Sample Test →

Choose the following settings-

Objective: Automatically compare distributions across groups

Fields: Use custom field assignments

Choose Y1-Y4 in the Test Fields tab by dragging. Note that in variable view in the original
sheet, Y1-Y4 are numeric and scale. Choose Group Q3 in the Groups column.

Click Run.
The following results were obtained for the independent Samples Kruskal-Wallis test.

Table 6.4: Hypotheses Summary H1-H4

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>Test</th>
<th>Sig.</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>The distribution of Y1 is the same across categories of Group Q3</td>
<td>Independent Sample Kruskal-Wallis Test</td>
<td>0.054</td>
<td>Accepted</td>
</tr>
<tr>
<td>The distribution of Y2 is the same across categories of Group Q3</td>
<td>Independent Sample Kruskal-Wallis Test</td>
<td>0.619</td>
<td>Accepted</td>
</tr>
<tr>
<td>The distribution of Y3 is the same across categories of Group Q3</td>
<td>Independent Sample Kruskal-Wallis Test</td>
<td>0.164</td>
<td>Accepted</td>
</tr>
<tr>
<td>The distribution of Y4 is the same across categories of Group Q3</td>
<td>Independent Sample Kruskal-Wallis Test</td>
<td>0.447</td>
<td>Accepted</td>
</tr>
</tbody>
</table>

The table above has four columns with the hypothesis in the first column and the test type, results and decision in the other columns. The significance value and its explanation can be found in Chapter 4. None of the categories in group above had any statistical significant difference. It did seem that the standard deviation of Group A (i.e. which took 4 or more of the tests) was much less than Group C (i.e. which took less than 2 tests). This is illustrated in the graphs below. Companies which undertook only 3 tests (Group B) were in between the two groups. Although the means are not statistically different, the result does imply much targeted hiring/retention in Group A, which could be due to the tests taken. This is a very strong
correlation for output variable Y1 (growth in sales) to number of tests undertaken during their interview.

The Independent Samples Kruskal-Wallis Test for the hypotheses H1 to H4 retained the null hypotheses for all the four output variables growth in sales, net margin of profit, revenue / profit growth and average net profit per employees of the IT Companies. The significance level being kept at .05, the asymptotic significance levels for the output variables were growth in sales (.054), net margin of profit (.619), revenue / profit growth (.164) and average net profit per employees (.447). It is evident that an impact on the first output variable growth rate of IT Company could have been recorded if the significance level was higher than .05.

These results are displayed in Figures 6.3 to 6.6. Besides the significance metric, the figures also display the total N (the total sample size of companies used), test statistic (a complex function of input variables that determines the significance value) and degrees of freedom (number of groups minus 1, i.e. a, b and c=3 -1 =2). This test assumes that the distributions of the various groups is similar and then uses the test statistic calculated among the various groups to get a P-value. This P-value is also known as the significance value which has been explained in Chapter 4.
Total N & 50 \\
Test Statistic & 5.829 \\
Degrees of Freedom & 2 \\
Asymptotic Significance (2 sided) & 0.054

Figure 6.3: Growth in Sales, Independent Samples Kruskal-Wallis Test
Figure 6.4: Net Profit Margin, Independent Samples Kruskal-Wallis Test
Figure 6.5: Revenue/Profit Growth, Independent Samples Kruskal-Wallis Test

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total N</td>
<td>50</td>
</tr>
<tr>
<td>Test Statistic</td>
<td>3.612</td>
</tr>
<tr>
<td>Degrees of Freedom</td>
<td>2</td>
</tr>
<tr>
<td>Asymptotic Significance (2 sided)</td>
<td>0.164</td>
</tr>
</tbody>
</table>
Figure 6.6: Average Net Profit/ Employee Independent Samples Kruskal-Wallis Test

### 6.2 Hypotheses Testing H5-H8

The next vital consideration was the preference given by IT Companies to the socio economic conditions, academic record, overall work experience and experience in the IT field while undertaking recruitment and selection in respective Companies.
H5. The academic record has no domination while overall work experience, experience in field and socio-economic conditions, have more effect on the recruitment and selection for the IT Software Companies in India that affects growth in sales of IT Software Companies.

H6. The academic record has no domination while overall work experience, experience in field and socio-economic conditions, have more effect on the recruitment and selection for the IT Software Companies in India that affects the net profit margin of IT Software Companies.

H7. The academic record has no domination while overall work experience, experience in field and socio-economic conditions, have more effect on the recruitment and selection for the IT Software Companies in India that affects the revenue/profit growth of IT Software Companies.

H8. The academic record has no domination while overall work experience, experience in field and socio-economic conditions, have more effect on the recruitment and selection for the IT Software Companies in India that affects the average net profit per employee, of IT Software Companies.

The IT Companies across the board did not give any weight age to socio-economic background of candidates so that is dropped from the hypothesis. To test the null hypotheses 5 to 8, the response of the Companies to the question of preference to the academic record, overall work experience and experience in the IT field was classified into two categories:

1. Group D -Companies which value academic record but do not value overall work experience and experience in the field.
2. Group E Companies which value overall work experience and experience in the field but do not value academic record as much.

Based on this classification, we plotted them against the output variables Y1-Y4. Repeating the analysis listed in Section 5.1 with the exception that in the group field choose Group D/E column. The results of the test are below.

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>Test</th>
<th>Sig.</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>The distribution of Y1 is the same across categories of Group Q4</td>
<td>Independent Samples Mann Whitney U Test</td>
<td>0.002</td>
<td>Failed to accept</td>
</tr>
<tr>
<td>The distribution of Y2 is the same across categories of Group Q4</td>
<td>Independent Samples Mann Whitney U Test</td>
<td>0.741</td>
<td>Accepted</td>
</tr>
<tr>
<td>The distribution of Y3 is the same across categories of Group Q4</td>
<td>Independent Samples Mann Whitney U Test</td>
<td>0.892</td>
<td>Accepted</td>
</tr>
<tr>
<td>The distribution of Y4 is the same across categories of Group Q4</td>
<td>Independent Samples Mann Whitney U Test</td>
<td>0.397</td>
<td>Accepted</td>
</tr>
</tbody>
</table>

Table 6.5: Hypotheses Test Summary H5-H8

Only the means for Y1 are different by group as can be seen in the subsequent graphs. That is to say that Group E companies which do not value academic record and socio-economic
conditions, have higher growth in sales numbers than Group D companies. This is highly likely that Group E outperforms Group D, as Group E companies hire people with more experience in the field than their academically superior counterparts. These experienced people have established contacts and real world knowledge which directly impacts sales. Furthermore, they have lesser mobility and rely on their sales commissions for career growth. These individuals tend to be more grounded in their jobs and are resistant to change, hence increasing the number of years each employee is retained and hence impact sales. In Group D’s case, a diverse set of highly qualified individuals will have the skills that need not necessarily translate to real world experience and hence may not see a marked improvement or growth in sales. Thus for H5, the alternate hypothesis Ha is proved to hold true.

In figures 6.7 to 6.10, the Mann-Whitney U Test is described along with the results of the hypothesis testing. This test is most common non-parametric test to assess whether two groups (D and E in our case) have equally large values.

The metrics of this test are as follows: N represents the total number of companies in each group with Total N implying the complete sample size. The test statistic, which is a complex function of input variables, is also called the Mann-Whitney U. This gives rise to the asymptotic two sided significance which is used to determine whether the two groups are similar or different in the hypothesis being tested. The software used for this thesis, SPSS 10, also provides other test statistics like the Wilcoxon W and standardized t-test metric for comparison. In the end all the test statistics are used by calculated tables in the software to determine the significance value.
Independent-Samples Mann-Whitney U Test

Group Q4

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total N</strong></td>
<td>50</td>
</tr>
<tr>
<td><strong>Mann-Whitney U</strong></td>
<td>470.000</td>
</tr>
<tr>
<td><strong>Wilcoxon W</strong></td>
<td>848.000</td>
</tr>
<tr>
<td><strong>Test Statistic</strong></td>
<td>470.000</td>
</tr>
<tr>
<td><strong>Standard Error</strong></td>
<td>51.372</td>
</tr>
<tr>
<td><strong>Standardized Test Statistic</strong></td>
<td>3.105</td>
</tr>
<tr>
<td><strong>Asymptotic Significance (2 sided)</strong></td>
<td>0.002</td>
</tr>
</tbody>
</table>

Figure 6.7: For Y1 Independent Samples Mann-Whitney U Test
Figure 6.8: For Y2 Independent Samples Mann-Whitney U Test
Figure 6.9: For Y3 Independent Samples Mann-Whitney U Test
The Independent Samples Mann Whitney Test for the hypotheses H5 rejected the null hypotheses for output variables growth in sales of the IT Companies. The significance level being kept at .05, the asymptotic significance levels for the output variable growth in sales was (.002). It is evident that there was an impact on the first output variable growth rate of IT Company. The Independent Samples Mann Whitney Test for the hypotheses H6 to H8 retained the null hypotheses for all the remaining three output variables net margin of profit, revenue /
profit growth and average net profit per employees of the IT Companies. The significance level being kept at .05, the asymptotic significance levels for the output variables were net margin of profit (.741), revenue / profit growth (.892) and average net profit per employees (.397). It is evident that except for an impact on the first output variable, growth rate of IT Company, no other output variable experienced any major affect.

6.3 Hypotheses Testing H9-H12

H9. The combination of various factors considered in the study at the time of recruitment and selection for the IT Software Companies in India affects growth in sales of IT Software Companies of all the factors considered for evaluation of the output variables of most factors did not affect the growth rate and revenue / profit growth.

H10. The combination of various factors considered in the study at the time of recruitment and selection for the IT Software Companies in India affects net profit margin of IT Software of all the factors considered for evaluation of output variables, factors and affect the net profit margin and net profit per employee of IT Companies.

H11. The combination of various factors considered in the study at the time of recruitment and selection for the IT Software Companies in India affects revenue/profit growth of IT Software Companies of all the factors considered for evaluation of the output variables of most factors did not affect the growth rate and revenue / profit growth.

H12. The combination of various factors considered in the study at the time of recruitment and selection for the IT Software Companies in India affects net profit margin of IT Software of all the factors considered for evaluation of output variables, factors and affect the net profit margin and net profit per employee of IT Companies.

To test the hypotheses H9 to H12, the approach used here is different from Sections 6.1 and 6.2. A linear effect model for all inputs from X1 to X16 was constructed and was fitted
using least squares method for the output response Y1-Y4. These were then fitted using least square method for the output variables growth in sales, net margin of profit, revenue / profit growth or average net profit per employees of the IT Companies. The results of any such model being dependent on the revenue, due consideration had to be given to the uncontrolled variables of turnover of IT Companies Z-1 and Z-2 and consequently Z-2 was blocked. As mentioned earlier, although data is collected for Z1, it is a limitation of this analysis that we are not using it as a blocking variable. Please note that the blocking variable is something which has the potential to skew the entire analysis and its data collection is either compromised or cannot be done within the scope of this study. Hence, the statistic analysis is folded over the blocking variable and independent analysis is done for all factors for the ordinal levels of the blocking variable. In this case the blocking variable is Z2, which is turnover in crores. Many companies in this analysis were private and hence did not share the turnover in the questionnaire and hence the study had to rely on outside sources. In the cases that they did, the actual turnover was a closely guarded secret, the data could have been inaccurate. Hence the study is using Z2 as a blocking variable so that it does not sway this analysis.

<table>
<thead>
<tr>
<th>Turnover &lt;&gt;</th>
<th>Z2</th>
<th>1-2</th>
<th>1 less than and 2 is more than</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rs1500 crores</td>
<td></td>
<td></td>
<td>Rs1500 crores</td>
</tr>
</tbody>
</table>

Table 6.6: A Linear Effect Model For All Inputs From X1 To X16

To do the analysis in SPSS, the process was to go to Analyze → General Linear Model → Multivariate and setup the analysis as shown below in Figure 6.11. The analysis results are shown below in the subsequent table.
The table below shows the results of our multi-variate analysis. The Dependent Variables are Y1-Y4, while the Independent variables are X1-X16 with the blocking variable Z2. The Df means degrees of freedom which are total variables -1. The sum of squares (Type III sum of squares in our case) is a quantity used to describe how well a model, represents the data being modeled. The Sums of Squares obtained by fitting each effect after all the other terms in the model, i.e. the Sums of Squares for each effect corrected for the other terms in the model. The marginal (Type III) Sums of Squares do not depend upon the order in which effects are specified in the model. The mean square is the total error in the model. F value and Significance metric are what determines whether a factor is important or not. The larger the F value, the smaller the significance metric and the more important the variable is to the model. For e.g., With respect to the dependent variable Y1, the independent variable X8 has a F value of 8.3 and a significance value of 0.007. Thus, for Y1 this metric is very important. These metrics are explained at depth in section 3.2.
<table>
<thead>
<tr>
<th>Source</th>
<th>Dependent Variable</th>
<th>Type III Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected</td>
<td>Y1</td>
<td>176247.822</td>
<td>17</td>
<td>10367.519</td>
<td>2.236</td>
<td>.024</td>
<td>.043</td>
</tr>
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<td></td>
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<tr>
<td>Model</td>
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<tr>
<td>Dimension1</td>
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</tr>
<tr>
<td></td>
<td>Y2</td>
<td>28734.599</td>
<td>17</td>
<td>1690.271</td>
<td>.744</td>
<td>.737</td>
<td>.283</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Y3</td>
<td>2395.622</td>
<td>17</td>
<td>140.919</td>
<td>.796</td>
<td>.685</td>
<td>.297</td>
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</tr>
<tr>
<td></td>
<td>Y4</td>
<td>8.765E6</td>
<td>17</td>
<td>515598.974</td>
<td>.729</td>
<td>.752</td>
<td>.279</td>
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<tr>
<td>Intercept</td>
<td>Y1</td>
<td>6860.134</td>
<td>1</td>
<td>6860.134</td>
<td>1.480</td>
<td>.233</td>
<td>.044</td>
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<tr>
<td>Dimension1</td>
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<tr>
<td></td>
<td>Y2</td>
<td>74.572</td>
<td>1</td>
<td>74.572</td>
<td>.033</td>
<td>.857</td>
<td>.001</td>
</tr>
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<tr>
<td></td>
<td>Y3</td>
<td>48.413</td>
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<td>Y4</td>
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</tbody>
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a. R Squared = .543 (Adjusted R Squared = .300)
b. R Squared = .283 (Adjusted R Squared = -.098)
c. R Squared = .297 (Adjusted R Squared = -.076)
d. R Squared = .279 (Adjusted R Squared = -.104)

Tests of Between-Subjects Effects

Table 6.7: A Tests of Between-Subjects Effects
For the overall model, the highest correlation is shown for Y1 with a significance of 0.024 which indicates >97% confidence in the model. All other factors show less correlation. Within the model, for the factors (X1-X16) where F is shown ∼ > 3 are considered significant. Thus, for the output variables Y1-Y4, the results for significant effects (with F-factors below) are:

Hypothesis 9 → Y1: X5 (3.3), X8 (8.3), X14 (3.18) and X16 (3.02)
Hypothesis 10 → Y2: X16 (2.6)
Hypothesis 11 → Y3: X15 (3.06), X7 (4.06)
Hypothesis 12 → Y4: X13 (2.96)

Thus, we can say that only for H9 and H11 the alternate hypothesis holds true. This is also corroborated by the result from Section 6.2 where say for example the growth in sales is correlated to hiring with real world experience rather than academic tests. For H10 and H12, the null hypothesis holds true. The model prediction vs actual are shown below in Figure 6.12 for Y1.

The graph below shows on both x and y axis, the observed, predicted and residual values of the variable Y1. This forms a matrix of 3x3 with the diagonal boxes of this matrix displaying the same variable against itself and thereby it is not shown in the graph as it will be a straight line with slope of 45 degrees. For examples, in the first row, we can see three boxes which display, observed vs observed; observed vs predicted and finally observed vs residual of the model. The second box should show a straight line to show correlation whereas the residual box should not show any correlation. For other Y2-Y4 variables the plots are shown in Appendix C.
Figure 6.12: Model of Standard, Residual, Predicted, Observed and Dependent Variable Y1

Model: Intercept + X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X11 + X12 + X13 + X14 + X15 + X16 + Z2