7 Summary, Conclusions, Implications, Limitations and Directions for Future Research

This chapter summarizes the research, draws conclusions, explains the implications of the findings, lists the limitations of the study and suggests directions for future research.

7.1 Summary

The research purpose was to determine the key variables in formulating a model for an effective recruitment and selection system for the IT Software Industry in India. In order to achieve this purpose, a pilot survey was conducted by sending the pilot questionnaire to all 204 IT Companies identified as part of quota sampling. The purpose of the pilot survey was to elicit responses that would assist in evolving the final instrument and also seek response to the hypotheses that had been formulated. A set of open questions was posed to elicit response to the qualities that companies were looking for in the potential software professionals and the weight-ages that was being given in the selection and recruitment process. To seek further clarity in the process of recruitment and selection system being undertaken, companies were specifically asked the nature of tests being conducted by them, which were the criteria considered by them and the weight-ages, if any, given by them for the research variables, such as Interviews, Group Tests, Psychological tests, Intelligence Tests, Technical Tests and others. The next response pertained to the preference given by the Companies to the Academic Record, Overall Work Experience, Experience In The Field, Socio-Economic Background and others, while undertaking recruitment and selection in the software industry and which were identified as variables for the study. The Companies were also asked response to the minimum qualification that would be acceptable for seeking employment in terms of Certificate of Secondary Education (10+2), graduate from any stream, engineering graduate or non-graduate
but diploma holder. The Companies were asked to give out their assessment for the employment scenario in vogue and if the current system needed any change to be able to meet the challenges for the next 5 years. The Companies were asked if a system of selection, based on a specific criterion, evolved by NASSCOM or any other centralized government agency would help improve output of IT software companies.

Due to the variety of respondents in terms of their turnover, number of employees, diversity in services provided and the nature of their organizational structures, collection of data was unstructured. The professionals who were interviewed/questionnaires administered comprised Project Managers, HR Managers, Industry experts and software professionals at grass root level. The questionnaires were non-disguised and structured with approximately 12-18 questions. From the size of the population available, the objective was to have a sample, which represented at least a population sample with about 95 percent confidence level.

The response from the Companies to Pilot Instrument was encouraging. There was general commonality in the traits that were identified by the companies but these were responded differently in words. This was resolved by identifying attributes common to the response from companies and thereafter compiled as the list of qualities, which the IT Companies were employing to evaluate while selecting the IT professionals. The response assisted in the evolution of the instrument for the final questionnaire as given in Appendix B.

The data gathered from the online questionnaire were entered into a computer database and then analyzed using Statistical Package for Social Sciences (SPSS.10). The data analysis consisted of factor analysis, multivariate analysis, multiple regression and descriptive statistics including multiple means. Frequencies and percentiles, Independent samples Kruskal-Wallis tests and Independent samples Mann-Whitney ‘U test. Based on the research hypothesis, 12 corresponding null hypothesis were tested for relationship between the variables. Each
statistical test has been described as conducted. The level of significance for rejecting null hypothesis was kept at .05. to achieve 95% confidence level in testing. The summary of the results of the hypothesis as tested is presented below.

Table 7.1: Hypothesized Relationships and Summary of the Results

<table>
<thead>
<tr>
<th>Hypothesized Relationship</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>Accepted</td>
</tr>
<tr>
<td>H2. Increased combination of interviews, psychological tests, intelligence tests, technical tests and others 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.</td>
<td>Accepted</td>
</tr>
<tr>
<td>H3. Increased combination of interviews, psychological tests, intelligence tests, technical tests and others 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.</td>
<td>Accepted</td>
</tr>
<tr>
<td>H4. Increased combination of interviews, psychological tests, intelligence tests, technical tests and others 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.</td>
<td>Accepted</td>
</tr>
<tr>
<td>H5.</td>
<td>The academic record has no domination while overall work experience, experience in field and socio-economic conditions, have less effect on the recruitment and selection for the IT Software Companies in India that affects growth in sales of IT Software Companies.</td>
</tr>
<tr>
<td>H6.</td>
<td>The academic record, socio-economic conditions, overall work experience and experience in field have no domination during the recruitment and selection for the IT Software Companies in India that affects the net profit margin of IT Software Companies.</td>
</tr>
<tr>
<td>H7.</td>
<td>The academic record, socio-economic conditions, overall work experience and experience in field have no domination during the recruitment and selection for the IT Software Companies in India that affects the revenue/profit growth of IT Software Companies.</td>
</tr>
<tr>
<td>H8.</td>
<td>The academic record, socio-economic conditions, overall work experience and experience in field have no domination during the recruitment and selection for the IT Software Companies in India that affects the average net profit per employee of IT Software Companies.</td>
</tr>
<tr>
<td>H9.</td>
<td>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.</td>
</tr>
</tbody>
</table>
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.

7.2 Conclusion

Indian Software Industry has acquired a household name the world over. It has transformed a populous nation striving for economic growth into an informational super power of the century. This revolutionary change has met the ever growing demand for employment, the social aspirations of the people and given the young populace a direction for the future. All this has also seen the Government helping in providing assistance to the industry in terms of a coordinating agency like NASSCOM, helping formulate policies that will foster growth and
also giving necessary incentive for the industry to truly become an economy driver for India. The coming years will witness an increasing demand for IT Software development, the world over (Ronald et al, 2001). In this era of intense competition, it would be necessary to meet the challenges to acquire new business and maintain the edge over others. Such challenges would not only be from IT Software industry of other countries but would also emerge from the Governmental policies of nations formulated out of global politics, macro study of economics and vision for the human resource of the nations (D.Farrell, and A.J.Grant, 2005). For a nation like India that is striving to seek its position in the global affairs, its gradual but steady progress in having IT Software industry as an economy driver stands out. Not only has this industry provided the country with an image of dignity, it has employed a vast talent of young enterprising populace that is prepared to strive hard for success. Increasing demand of IT Software professionals combined with higher degree of global competitiveness will find IT Software companies carrying out selection of their resource provider with a scientific analysis of economic payouts. Retaining its class coupled with a strategic vision to shape the industry to meet challenges of the future should be axiomatic to the Indian IT Software industry and the country (John Riberio, 2007).

This leap into growth and development may have been more than a coincidence but it has shaken several powers and developed nations, some out of their slumber of sleep. It is therefore, imperative that the IT Software Industry be seen as an entity that has to be given a considered attention to shape it for the future; the destiny of the nation being linked with it. It is in this context that the research dealt with the topic of an effective recruitment and selection system for the IT Software industries in India. The current system has met the global demand in terms of quality and cost but whether the system currently in vogue would be able to meet future challenges too has been the purpose this research study has been undertaken.
Several countries are gradually catching up with the IT Software Industry in India and the toughest challenge is likely to emerge from China (Hongli Hu, Zhangxi Lin and William Foster, 2003); a country that is the only one that can match India in population, number of potential Software professionals that it can train and last but not the least earnestly shape the IT Software Industry to their requirement. It therefore becomes imperative that the recruitment and selection system be reviewed so as to effectively manage the requirements of the IT Software Industry in India to meet the competition from others and face the challenges of the future.

The study has found that the system currently prevailing for recruitment and selection to the IT Software Industry in India requires a scientific analysis in reviewing several systems and subsystems. These include the testing of potential candidates by IT Software companies, in terms of the nature of tests administered including possible employment of psychometric testing, in terms of the traits/qualities the IT Software companies are assessing, the weight ages if any that are being given to the trials or tests in the overall recruitment and selection of potential IT Software Professionals. As part of the study, the IT Software Companies were also researched for the weightings in terms of preference they gave to the academic record, socio-economic background, overall work experience and experience in the field, for the effectiveness of the recruitment and selection system being followed.

To scientifically assess the effectiveness of the response of the research, these aspects given above were considered as input variables. The varying nature of jobs involved in software development had an equally varying nature of quantum of manpower and turnover in IT software companies. These factors were therefore also combined as input variables and considered as controlled variables.

To arrive at an effective recruitment and selection system, all these variables were scientifically tested to measure their effectiveness against output variables such as growth in
sales, net profit margin, revenue/profit growth and lastly average profit per employee. The research hypotheses were formulated with respect to the input variables, controlled variables and output variables referred above. To assess whether system being followed vis a vis system being considered would be effective, a thorough research was undertaken.

The results of the research have been summarized above. In essence, the results of the present research lead to the conclusion that while there are attributes, considered as input variables, significant increase in number of tests, during the selection process does not yield a major advantage for a better recruitment and selection system for the IT Software Companies. Also, while socio-economic conditions do not have any major impact on the selection system, some impact is experienced in the growth rate of companies while considering academic record. Considering the attributes for aptitude, identified by the IT companies, the research has identified certain input factors that could be utilized for evolving a model that can give better growth in sales, margin of profit, revenue / profit growth and finally average net profit per employee. Thus by utilizing the model evolved by employing input, controlled and output variables used in this research, companies have a feasible model for an effective recruitment and selection system for the IT Software Industry in India.

In its quest to meet future requirement, for an ever growing IT Software Industry, the current system has been undertaking recruitment and selection based on the policies and vision of individual IT Software companies. The results of this study are significant as these would help identify the model, IT Software Companies require, to make the recruitment and selection system effective.

7.3 Implications

The research objectives as defined in Section 1.3 were as follows:
To evaluate the various recruitment and selection techniques that IT software companies in India employ. These include interviews, group tests, psychological tests, intelligence tests, technical tests and others.

To determine key employee skill gauges, like academic record, socio-economic conditions, overall work experience, experience in a specific field etc.

To determine key company performance metrics, like growth in sales, net profit margin, revenue/profit growth and average net profit per employee etc.

To determine the relationship between key company performance metrics to selection techniques, thereby obtaining key variables in an effective recruitment and selection.

Based on this study, one can conclude that the objectives were met through a combination of survey’s, statistical analysis and hypothesis testing. Many common beliefs were challenged by testing several metrics. A few of the implications of the study are:-

- Most IT software companies that were surveyed employ conventional job search methods that have either been instated due to legacy processes or picked up from other professions. A systematic study of recruitment models has been lacking and this study will hopefully prove to be an example of quantitative analysis for recruitment.

- Increasing the length of the selection process and strengthening up the screening criterion doesn’t necessarily always return in obtaining a pool of candidates that affect the company’s bottom line. This is clear from hypothesis H1-H4 testing.

- For key parameters like Growth in Sales, relying on antiquated academic screening criterions doesn’t help, but actually hurts the company bottom line. It is thus imperative that each selection team be very clear on their organizational objective and thereby can tailor the selection criterion while recruitment for maximum efficiency. Hypothesis H5-H8 reflects that most aptly.
One can envision a multiple parameter correlation study being conducted similar to hypothesis H9-H12 testing where once a model has been built that correlates the input variable (like X1-X16) to the output variables (Y1-Y4), the company can do targeted selections based on their needs. For example, in the present study, growth in revenue is most linked to candidates “Passion for Technology”. Once the company is in a growth phase, it can hire candidates from schools which have a strong research and development wing that attracts people with a passion for technology.

The conclusion arrived to from the analysis presented above can change significantly if either the sample size for the study or the variable set used is different. A very good example to showcase this effect is the blocking variable. In our study, the turnover for a company is used to segregate the data/structure differences between the two datasets and is used as a blocking variable. If not used, the data from small turnover companies will corrupt the analysis for the large turnover companies.

The sample size of 50 companies derived using Power Analysis in Chapter 4 can be challenged depending on acceptable level of risk that can be undertaken in the study which has the potential to change some of the results.

A control group should be used so that one can understand the variance/stdev of the data sets collected so far. In most cases, we have compared between the groups allowing for a good relative comparison between their performances. However, for a true quantitative and absolute measure, a control group can be utilized for a comparison against what typically is expected.

A selection strategy would combine elements of various hypotheses depending upon the output variable that would need to be maximized. The implications listed above also highlight the need for future study on this vast topic which is covered after limitations.
7.4 Limitations
- Although the sample for this study is unstructured, quota sampling method was used, which is one of probability sampling techniques and it is possible to have “response bias,” from respondents.

- The 16 attributes identified as factors and taken for this study are based on responses from the software companies. It does not mean that other factors would not have contributed. For the purpose of this study these attributes were taken based on the response from majority of the companies.

- The sample has only companies that answered the questionnaire fully.

- The blocking factors of number of employee’s and turnover used in this study is mostly for data collection purposes. It was discovered during the course of the study and through the Pilot questionnaire, that the company strategies changed both input and output variables depending on the growth stage of the company. The study uses the turnover greater than Rs1500 crores in a particular Hypothesis testing but the study of work force strength is beyond the scope of this thesis.

7.5 Suggestions for Future Study

Based on the results and the limitations of this study, the following suggestions for further research are proposed.

7.5.1 Extending Input Variable Correlation

Indeed, IT Software professionals’ perceptions regarding HR practices may differ from a more objective assessment of these practices obtained via interviews/ other tests conducted by executives and/or HR professionals. Future investigations shall attempt to assess the extent of congruity between management’s vision of how IT professionals Software are managed and the IT Software professionals’ perception of management’s vision. The exclusion of actual
turnover should also be taken into account in future research efforts. The sample is IT Software companies, which are having less than Rs 1500 Crores turnover. Other IT Software companies may have different perceptions about some of the input variables considered for the research study. Future research should be undertaken to include study of the input variables that affect the output variables. Future research for this study is recommended.

7.5.2 Demographic Analysis

This study did not investigate the differences between the measured variables with respect to the respondents’ demographic characteristics and sex ratios (male vs female) of employees. IT Software Companies who have different demographic characteristics and sex ratios of employees may have different results. Further analysis of measured variables with respect to demographic characteristics and sex ratios of employees is recommended.

7.5.3 Predictive Modeling

Longitudinal studies are needed in order to validate the predictive dimension of the model as has been worked out. The intent would be as follows. A recruiter from some software IT company would get a request from the hiring manager that a star person is required to be part of a sales team. This person would need to quickly increase revenues for the company. The recruiter would take this input from the hiring manager and go to a predictive model. The model would suggest that for such a job, a work experience of 5 years and education from a particular Ivy league university like Harvard, is required. The recruiter would then target just candidates which have 5 years and education from Harvard to short list candidates for the hiring manager. This way, a targeted recruiting approach can be accomplished.