Chapter 3
RESEARCH METHODOLOGY

The primary purpose of this study was to investigate job satisfaction of employees specifically the employees from IT organisations with and without ISO 9000 in Klang Valley. Though several instruments could be employed to measure job satisfaction, the Job Descriptive Index (JDI) developed by Smith, Kendall and Hulin (1975) was selected for dimensional measures and Overall Job Satisfaction Index (OJS) developed by Brayfield and Rothe (1951) was selected for global measures. Other than their reliability, validity, low-language level, and the ease of administration, the main reason for using JDI and OJS were that these instruments were specifically designed to measure job satisfaction.

Selection of Respondents

In view of this study which is exploratory in nature and due to cost, time and labour constraint, a convenience sampling approach was utilised so as to obtain a large number of completed questionnaires quickly and economically.

The subjects of this study were employees in IT organisations with and without ISO 9000 in the Klang Valley. Hence, to ensure that IT organisations with and without ISO 9000 certification were being represented accordingly, a list of IT organisations with ISO 9000 certification was obtained from the Directory of Certified Products and Companies 2001 by SIRIM QAS. From this list, only organisations in Klang Valley were selected for this study. There were 17 IT companies listed out of which 6 were conveniently selected based on the researcher's contacts availability, 3 of small & medium sized and 3 of large sized. As for IT organisations without ISO 9000, 11 companies were approached through the contacts of the researcher with 8 companies of small
medium sized and 3 companies of large sized. Random sampling was not possible due to unavailability of national data on the number of IT companies and IT employees in Malaysia, specifically Klang Valley.

Measuring Instrument

Job Descriptive Index (JDI)
The Job Descriptive Index (JDI), developed by Smith, Kendall and Hulin (1975), was selected for this study because it is known for its reliability and its impressive array of validation evidence behind it. It was also designed to measure job satisfaction and not the broader concept of life satisfactions. JDI possessed several desirable characteristics as follows: (1) it can be used to measure several kinds of worker satisfactions, (2) it is directed toward specific areas of job satisfaction, rather than global satisfaction, (3) the verbal level required to answer the JDI is quite low, (4) the JDI does not directly ask the respondent how satisfied he or she is with his/her job, and (5) the JDI has a high reliability and validity (Smith, Kendall and Hulin, 1979).

The areas of job satisfaction measured by JDI are work, pay, promotion, supervision and coworkers. For each area there is a list of adjectives or short phrases, and the respondent is instructed to indicate whether each adjective or phrase applies in relation to a particular dimension of his job. If, for example, a phrase applied to his promotion, he is asked to write “Y” (for Yes) beside the phrase and if the phrase does not apply to his promotion, he/she is asked to write “N” (for No) beside the phrase. If he cannot decide, he is asked to write a question mark (?) beside the phrase.

The JDI consists of scales for work (eighteen items), supervision (eighteen items), coworkers (eighteen items), pay (nine items), and promotion (nine items). These scales have been balanced as nearly as possible between favourable and unfavourable items. The nine-item equivalence of total points and range. For direct scoring of the JDI, Smith revised the weights as per Table 3.1.
Table 3.1: Revised Weights for Scoring of the JDI

<table>
<thead>
<tr>
<th>Responses</th>
<th>Revised Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes to a positive item</td>
<td>3</td>
</tr>
<tr>
<td>No to a negative item</td>
<td>3</td>
</tr>
<tr>
<td>? to any item</td>
<td>1</td>
</tr>
<tr>
<td>Yes to a negative item</td>
<td>0</td>
</tr>
<tr>
<td>No to a positive item</td>
<td>0</td>
</tr>
</tbody>
</table>

*Source: Table 4.7 in Smith, Kendall, and Hulin (1975:79)*

To describe JDI scores more clearly, information concerning expected JDI scores under several assumptions is given in Table 2. The maximum score, the indifference score, the response set, the balance-attitude score, and the equated neutral point for each scale are shown in Table 2.

Table 3.2: JDI Expected Scores under Various Assumptions

<table>
<thead>
<tr>
<th>Job Dimension</th>
<th>Maximum Score</th>
<th>Expected Scores under Assumption of</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Indifference</td>
<td>Yes</td>
<td>No</td>
<td>Balanced Attitude</td>
</tr>
<tr>
<td>Work</td>
<td>54</td>
<td>18</td>
<td>30</td>
<td>24</td>
<td>27</td>
</tr>
<tr>
<td>Supervision</td>
<td>54</td>
<td>18</td>
<td>30</td>
<td>24</td>
<td>27</td>
</tr>
<tr>
<td>Coworker</td>
<td>54</td>
<td>18</td>
<td>24</td>
<td>30</td>
<td>27</td>
</tr>
<tr>
<td>Pay</td>
<td>27</td>
<td>9</td>
<td>12</td>
<td>15</td>
<td>13</td>
</tr>
<tr>
<td>Promotion</td>
<td>27</td>
<td>9</td>
<td>15</td>
<td>12</td>
<td>13</td>
</tr>
</tbody>
</table>

*Source: Smith, Kendall, and Hulin (1975:81)*

Validity of the JDI

To validate the Job Descriptive Index (JDI), Smith, Kendall, and Hulin (1975) administered the final version of the JDI to eighty-one male employees from two plants of a large electronics manufacturer. The "face" rating scales for each of these areas were administered immediately after the JDI. Furthermore, for each JDI scale approximately equal numbers of favourable and unfavourable phrased items were scored separately by the direct method. These positive and negative JDI scores and the "face" ratings then were intercorrelated for all job aspects. The matrix was factored by the principal
component method, and five factors were rotated with the varimax criterion. Smith and her colleagues assessed convergent and discriminant validity extensively by means of a multitrait-multimethod matrix. The results show consistent convergent and discriminant validity.

Kinicki et al. too have done a study of the construct validity of the JDI. Five major organizational journals were examined from 1975 to October 1995 to locate empirical studies of satisfaction using the JDI; 143 appropriate studies, containing 254 samples, were located for the meta-analysis. The idea was to see if the findings in these 143 studies concerning the determinants, correlates, and consequences of satisfaction were consistent with explanations proposed by Smith et al. and other major explanations in the field. Overall, the results from the meta-analysis were consistent with predictions from Smith et al. and from other major explanations in the field, thus supporting the construct validity of the JDI.

**Reliability of the JDI**

According to Smith, Kendall, and Hulin (1975), the estimated Spearman Brown internal consistencies for the final revised Job Descriptive Index (JDI) scales, using a sample of sixty male employees from two electronic plants were 0.85 for work, 0.86 for pay, 0.84 for promotion, 0.88 for supervision, and 0.81 for people or co-workers. By using different methods, Smith obtained numerous correlations above 0.7 and obtained 0.8 between the JDI measure and other measures of job satisfaction.

**Overall Job Satisfaction (OJS) Index**

Overall Job Satisfaction (OJS) index was developed in 1951 by Brayfield-Rothe. It was designed to collect data on the measurement of overall job satisfaction rather than specific aspects of job satisfaction. This instrument is an attitude scale with 18 questions which refer to “how people feel about different jobs”; expression of feeling toward a subject and permits qualification of the expression of feeling. A 5-point Likert scale was used for each of the eighteen (18) statement from strongly agree to strongly disagree to indicate the degree of agreement and disagreement with each of a series of
statements. A score of 1 to 5 is assigned to responses corresponding to strongly disagree – strongly agree for positive statements whereas a score of 5 to 1 corresponds to negative statements. The scores for the 18 items were summed; the larger the score, the higher the satisfaction. The scores range from 18 (low satisfaction) to 90 (high satisfaction). It has the significance of providing an index which make comparing job satisfaction level between companies, industries or even over time possible and enables comparison of job satisfaction index on a consistent basis. A variety of data pertinent to validity and reliability of OJS were reviewed by Cook and his colleagues and their studies have shown that scale in OJS have adequate validity and reliability (Cook et al).

Collection of Data

The source of data for this research was the responses by participants on the survey questionnaire consisting of a standardised set of Job Descriptive Index (JDI), Overall Job Satisfaction (OJS) and the demographic questions included gender, age, education level and tenure. The self-administered questionnaire was tested in a pilot exercise to ensure clarity.

In total 180 of the questionnaires were distributed to the employees of the 17 stratifically & conveniently selected IT companies either directly by hand or electronically via e-mail through contacts of the researcher. Since the target group is the IT industry, e-mail is found to be the the more effective method of distribution as people opening their e-mails are generally prepared to interact and more responsive. To ensure high response rate, a follow-up e-mail was sent to non-respondents of the initial mailing. Out of the 180 questionnaires that were sent out, 113 responded of which 8 were unusable because they only had been partially answered. The usable questionnaires represented a response of 58.3%.
Statistical Analysis

The data is first checked for ambiguous and missing values. They are then coded and analysed using Statistical Package for the Social Sciences (SPSS) program. All data was tested at $p = 0.05$ level of significance.

The statistical methods utilized to analyse the data were as follows:

1. T-test was used to analyse job satisfaction differences in the ISO and non-ISO IT organisations (Hypothesis 1).

2. T-test was used to analyse job satisfaction differences in the two categories of organisation size i.e. small & medium sized (organisations with no. of employees less than 200) and large sized (organisations with no. of employees 200 and above) (Hypothesis 2).

3. T-test was used to determine the effects of demographic factors such as gender and marital status.

4. Analysis of variance (ANOVA) was used to determined the effects of demographics factors such as age, race, level of qualification, length of service and number of organisations the respondents have worked with prior to the current organisation.

5. Both the 18 statements in Brayfield-Rothe Index and the 5 dimensions in the JDI were subjected to reliability and correlation tests in order to measure the consistency of the subjects' responses to all the attitude statements. Following this, a stepwise-regression was used to determine the relationship between JDI and OJS.

6. The internal reliability of the JDI and OJS index were also tested using the Cronbach coefficient of alpha. This measurement in effect produces the mean of all possible split-half coefficients resulting from different splitting of the measuring instrument and hence results in a better estimate of reliability.