

CHAPTER IV

RESEARCH RESULTS

This chapter presents the results of the analysis of the primary data collected through the questionnaires distributed. In each case, the purpose of the analysis is first stated with a brief explanation of the statistical procedures used, followed by the results obtained and comments thereon. In total, nine principal analyses were carried out:-

- i) analysis of respondents' personal characteristics;
- ii) analysis of respondents' perceived job satisfaction levels;
- iii) analysis of respondents' job behaviour;
- iv) analysis of respondents' satisfaction with job factors;
- v) analysis of ranking of job factors;
- vi) bivariate analysis of respondents' personal characteristics and their satisfaction with job factors;
- vii) bivariate analysis of respondents' personal characteristics and their job satisfaction levels;
- viii) bivariate analysis of job satisfaction levels and job behaviour; and
- ix) multivariate analysis of job satisfaction and job factors.

1. Analysis of Respondents' Personal Characteristics

Of the 400 questionnaires distributed, 177 were returned with valid responses. These represent 10% of all engineers listed in the sample frame: see Appendix A. After the data were edited, coded and input into the computer, the SPSS+ programme was used to analyse the respondents' characteristics. The purpose of the analysis was to assess how well the sample represents the target population so that inferences can be drawn about the population.

Distribution by Gender

The engineering profession was, as expected, dominated by males (see Table 4.1). There were 155 (87.6%) male engineers and only 22 (12.4%) female engineers.

TABLE 4.1

DISTRIBUTION OF RESPONDENTS BY GENDER

| GENDER | FREQUENCY | PERCENTAGE |
|---------|-----------|------------|
| Males | 155 | 87.6 |
| Females | 22 | 12.4 |
| TOTAL : | 177 | 100 |

Source: Survey Data (Appendix C)

Distribution by Grade of Membership in the IEM

The respondents were separated by their grade of membership in the IEM (see Table 4.2). Fellows and corporate members made up 25.4% of the

respondents, while graduate members and affiliates made up 58.8% of the respondents. 15.8% of the respondents were not members of the IEM.

TABLE 4.2
DISTRIBUTION OF RESPONDENTS BY GRADE OF
MEMBERSHIP IN THE IEM

| GRADE | FREQUENCY | PERCENTAGE |
|------------------|-----------|------------|
| Fellow | 5 | 2.8 |
| Corporate Member | 40 | 22.6 |
| Graduate Member | 100 | 56.5 |
| Affiliate | 4 | 2.3 |
| Non-Member | 28 | 15.8 |
| TOTAL : | 177 | 100 |

Source: Survey Data (Appendix C)

Distribution by Qualifications Obtained

In the profession, the recognised qualifications are usually a first degree - Bachelor of Engineering or Bachelor of Science in Engineering. A masters and doctorate may be taken in specialised fields of engineering, such as geotechnic, structural analysis, fluid mechanics, etc. Alternatively, a person may have obtained a Diploma in Engineering (or its equivalent) and have passed the professional examinations conducted by the IEM which qualifies him to be registered as an engineer with the Board of Engineers Malaysia (this is what is meant by “Others” in Table 4.3).

TABLE 4.3

DISTRIBUTION OF RESPONDENTS BY QUALIFICATIONS OBTAINED

| Qualifications Obtained | Frequency | Percentage |
|-------------------------|------------|------------|
| First Degree | 146 | 82.5 |
| Master Degree | 23 | 13.0 |
| Ph.D. | 2 | 1.1 |
| Others | 6 | 3.4 |
| TOTAL : | 177 | 100 |

Source: Survey Data (Appendix C)

Distribution by Engineering Discipline

The respondents were categorised according to engineering discipline (see Table 4.4). 65% of the respondents were civil engineers while 32.2% were electrical and mechanical engineers.

TABLE 4.4

DISTRIBUTION OF RESPONDENTS BY ENGINEERING DISCIPLINE

| Engineering Discipline | Frequency | Percentage |
|------------------------|------------|------------|
| Civil | 115 | 65.0 |
| Electrical | 33 | 18.6 |
| Mechanical | 24 | 13.6 |
| Others | 5 | 2.8 |
| TOTAL : | 177 | 100 |

Source: Survey Data (Appendix C)

Distribution by Years of Working Experience

The number of years of working experience ranged from one year to 35 years as shown in Table 4.5 and Table 4.6. The respondents were mainly younger engineers with 10 years or less of working experience (76.1% of the total). One respondent did not indicate his/her years of working experience.

TABLE 4.5

DISTRIBUTION OF RESPONDENTS BY YEARS OF WORKING EXPERIENCE

| Years of Working Experience | Frequency | Percentage |
|-----------------------------|-----------|------------|
| 1 | 17 | 9.6 |
| 2 | 15 | 8.5 |
| 3 | 25 | 14.1 |
| 4 | 17 | 9.6 |
| 5 | 20 | 11.3 |
| 6 | 11 | 6.2 |
| 7 | 11 | 6.2 |
| 8 | 7 | 4.0 |
| 9 | 6 | 3.4 |
| 10 | 5 | 2.8 |
| 11 | 5 | 2.8 |
| 12 | 5 | 2.8 |
| 14 | 5 | 2.8 |
| 15 | 4 | 2.3 |
| 16 | 1 | 0.6 |
| 17 | 1 | 0.6 |
| 18 | 1 | 0.6 |
| 19 | 1 | 0.6 |

TABLE 4.5 (Continued)

| Years of Working Experience | Frequency | Percentage |
|-----------------------------|-----------|------------|
| 20 | 6 | 3.4 |
| 22 | 4 | 2.3 |
| 23 | 1 | 0.6 |
| 27 | 1 | 0.6 |
| 28 | 2 | 1.1 |
| 30 | 2 | 1.1 |
| 32 | 1 | 0.6 |
| 34 | 1 | 0.6 |
| 35 | 1 | 0.6 |
| MISSING VALUE | 1 | 0.6 |
| TOTAL : | 177 | 100 |

Source: Survey Data (Appendix C)

TABLE 4.6

**SUMMARISED DISTRIBUTION OF RESPONDENTS BY
YEARS OF WORKING EXPERIENCE**

| Years of Working Experience | Frequency | Percentage |
|-----------------------------|-----------|------------|
| 1-5 | 94 | 53.4 |
| 6-10 | 40 | 22.7 |
| 11-15 | 19 | 10.7 |
| 16-20 | 10 | 5.8 |
| 21-25 | 5 | 2.8 |
| 26-30 | 5 | 2.8 |
| 31-35 | 3 | 1.8 |
| MISSING VALUE | 1 | 0.6 |
| TOTAL : | 177 | 100 |

Source: Survey Data (Appendix C)

Distribution by Job Designation

Table 4.7 below shows the distribution of the respondents by job designation.

TABLE 4.7
DISTRIBUTION OF RESPONDENTS BY JOB DESIGNATION

| Job Designation | Frequency | Percentage |
|------------------|-----------|------------|
| Engineer | 114 | 64.4 |
| Senior Engineer | 30 | 16.9 |
| Manager | 9 | 5.1 |
| Associate | 11 | 6.2 |
| Director/Partner | 9 | 5.1 |
| Others | 4 | 2.3 |
| TOTAL : | 177 | 100 |

Source: Survey Data (Appendix C)

The younger engineers were mostly designated as “Engineer” (64.4%) in their firms. There were 30 (16.9%) Senior Engineers and 9 (5.1%) Managers (i.e., Project Managers, Engineering Managers or Department Managers). There were also 11 (6.2%) Associates and 9 (5.1%) Directors/Partners.

Distribution by Gross Annual Income

In the study, gross annual income was defined as annual income inclusive of salary, bonus, employees provident fund contributions, benefits in kind, etc., but exclusive of any income not derived from the work in engineering consulting firms (see Table 4.8).

TABLE 4.8

DISTRIBUTION OF RESPONDENTS BY GROSS ANNUAL INCOME

| Gross Annual Income (RM) ^a | Frequency | Percentage |
|---------------------------------------|-----------|------------|
| Up to 20,000 | 14 | 7.9 |
| 20,001-30,000 | 47 | 26.6 |
| 30,001-42,000 | 47 | 26.6 |
| 42,001-54,000 | 23 | 13.0 |
| 54,001-66,000 | 13 | 7.3 |
| 66,001-78,000 | 8 | 4.5 |
| 78,001-100,000 | 14 | 7.9 |
| 100,001-150,000 | 9 | 5.1 |
| MISSING VALUE | 2 | 1.1 |
| TOTAL : | 177 | 100 |

^a The class range of the "Gross Annual Income" begins from the starting salaries of engineers (below RM20,000); followed by increments of RM12,000 up to RM78,000; with the higher income groups being assigned bigger ranges.

Source: Survey Data (Appendix C)

As can be seen from Table 4.8, the majority of the respondents (53.2%) were within the income group of RM 20,001-RM 42,000.

Distribution by Firm Size

Table 4.9 shows the distribution of the respondents by size of the firms they worked in. In this case, the size of firm was defined by the number of engineers in the firm, excluding sub-professional and other administrative staff.

TABLE 4.9

DISTRIBUTION OF RESPONDENTS BY FIRM SIZE

| Firm Size | Frequency | Percentage |
|----------------|------------|------------|
| 1-20 | 27 | 15.25 |
| 21-50 | 53 | 29.95 |
| 51-100 | 52 | 29.38 |
| 101-200 | 45 | 25.42 |
| TOTAL : | 177 | 100 |

Source: Survey Data (Appendix C)

2. Analysis of Respondents' Perceived Job Satisfaction Levels

In the questionnaire, the respondents were asked to indicate their perceived level of job satisfaction (see Table 4.10).

TABLE 4.10

RESPONDENTS' PERCEIVED LEVEL OF JOB SATISFACTION

| | Frequency | Percentage | Cumulative Percentage |
|-------------------|------------|------------|-----------------------|
| Very satisfied | 19 | 10.7 | 10.7 |
| Satisfied | 101 | 57.1 | 67.8 |
| Neutral | 51 | 28.8 | 96.6 |
| Dissatisfied | 4 | 2.3 | 98.9 |
| Very dissatisfied | 2 | 1.1 | 100 |
| TOTAL | 177 | 100 | |

Source: Survey Data (Appendix C)

10.7% of the respondents were very satisfied and 57.1% were satisfied with their job. On the other hand, 2.3% were dissatisfied and 1.1% were very dissatisfied with their job. Since the engineering profession is a specialised one wherein

engineers should derive a minimum level of job satisfaction, the 28.8% neutral group was considered as not satisfied with their job.

The high percentage of respondents (67.8%) who were satisfied with their jobs indicated that the level of satisfaction in the profession was high. However, later analyses would show that such a high percentage was not obtained when the respondents were asked about their satisfaction with each job factor. Furthermore, in the analysis of job behaviour, more than half of the respondents expressed thoughts of resigning.

3. Analysis of Respondents’ Job Behaviour

Two types of job behaviour were specified in the questionnaire: the urge to resign and the attitude towards work. Table 4.11 shows the former and 4.12 the latter.

TABLE 4.11

RESPONDENTS’ URGE TO RESIGN

| Level of Urge to Resign | Frequency | Percentage | Cumulative Percentage |
|---------------------------|-----------|------------|-----------------------|
| Resign immediately | 12 | 6.8 | 6.8 |
| Resign very soon | 14 | 7.9 | 14.7 |
| Resign in a few years | 40 | 22.6 | 37.3 |
| Think about resigning | 33 | 18.6 | 55.9 |
| Hardly think of resigning | 61 | 34.5 | 90.4 |
| Never think of resigning | 15 | 8.5 | 98.9 |
| MISSING VALUE | 2 | 1.1 | 100 |
| TOTAL | 177 | 100 | |

Source: Survey Data (Appendix C)

From Table 4.11, 55.9% of the respondents had felt the urge to resign from their present firms: 6.8% would resign immediately, 7.9% would resign very soon, 22.6% would resign in a few years and 18.6% were considering resigning. On the other hand, only 44.1% stated that they were not likely to resign. This outcome confirmed the research problem of a high turnover of engineers in consulting firms, with more than half of the engineers surveyed seriously considering resigning.

TABLE 4.12
RESPONDENTS' JOB ATTITUDE

| Job Attitude | Frequency | Percentage | Cumulative Percentage |
|-----------------------------|-----------|------------|-----------------------|
| Couldn't care less | 0 | 0 | 0 |
| Do minimum work | 3 | 1.7 | 1.7 |
| Do normal work | 8 | 4.5 | 6.2 |
| Work as usual | 49 | 27.7 | 33.9 |
| Work to the best of ability | 116 | 65.5 | 99.4 |
| Missing value | 1 | 0.6 | 100 |
| TOTAL : | 177 | 100 | |

Source: Survey data (Appendix C)

Despite the high urge to resign, Table 4.12 shows that the majority of the respondents still possess a positive attitude towards their work, with 65.5% stating that they would work to the best of their ability; another 27.7% would work as usual and 4.5% would do normal work. Only 1.7% stated that they would do only the minimum work required, and none had a "couldn't care less" attitude. This seems to auger well for the nation's modernisation and industrialisation process.

4. Analysis of Respondents' Satisfaction with Job Factors

In the study, the job factors used as determinants of job satisfaction were:-

- i) relationship with the job;
- ii) superior-subordinate relationship;
- iii) relationship with peers;
- iv) economic rewards;
- v) organisational climate; and
- vi) off-the-job rewards.

The purpose of this analysis was to determine the respondents' satisfaction on each of these six job factors. For each factor, six statements were listed and the respondents were required to indicate their agreement or otherwise on a seven-point Likert Scale ranging from strongly disagree (1) to strongly agree (7). As the split-ballot method was incorporated in the statements, the scores for the statements concerned were reversed during data editing before analysis.

The mean of the scores on each statement was first obtained, then the overall mean of the six statements under each job factor was obtained to determine the respondents' job satisfaction with that particular job factor. Scores of one to three denote dissatisfaction, with one being strongly dissatisfied, two being dissatisfied and three being slightly dissatisfied. Similarly, scores of five to seven denote satisfaction, with five being slightly satisfied, six being satisfied and seven being strongly satisfied. A score of four denotes neutrality or indifference. A summary of the scale used in this analysis is as follows:

- 1 to 1.49 - very dissatisfied
- 1.5 to 2.49 - dissatisfied
- 2.5 to 3.49 - low dissatisfaction
- 3.5 to 4.49 - neutral or indifferent
- 4.5 to 5.49 - low satisfaction
- 5.5 to 6.49 - satisfied
- 6.5 to 7 - very satisfied

Reliability of the Measurement Scales

To measure the reliability of the scale adopted, Cronbach Coefficient Alpha internal consistency tests were carried out with the survey data (see Appendix D). The coefficient alpha, which refers to the mean reliability coefficient for all possible ways of splitting the data in halves, is tabulated in Table 4.13.

TABLE 4.13

RELIABILITY MEASUREMENT USING CRONBACH COEFFICIENT ALPHA

| | Job Factor | Coefficient Alpha |
|-----|-----------------------------------|-------------------|
| i | Relationship with job | 0.6377 |
| ii | Superior-subordinate relationship | 0.7472 |
| iii | Relationship with peers | 0.7855 |
| iv | Economic rewards | 0.7252 |
| v | Organisational climate | 0.7078 |
| vi | Off-the-job rewards | 0.5668 |

Source: Survey Data (Appendix D)

As shown in Appendix D, to improve the Coefficient Alpha for “organisational climate” from 0.4382 to 0.7078, statement “E1” of the questionnaire was dropped from all further analysis. This factor therefore consisted of only five statements for subsequent analysis. No other statement for any of the job factor was dropped. Overall, the measurement scale used was found to be reliable as shown in the above table where all coefficients were greater than 0.5. The relatively lower value of alpha for “off-the-job reward” can be attributed to the non-homogeneity of this factor over the population. Unlike the other factors, expectation of “off-the-job reward” vary greatly among engineers.

Relationship With the Job

The six statements asked under this factor relate to the job content and how it provides the respondents with a sense of achievement, credit for a job well done, a chance to use their skills and knowledge, opportunities for self-development, a challenging job and preference for the profession (see Table 4.14).

TABLE 4.14
RELATIONSHIP WITH THE JOB

| Job Facet | Mean | Standard Deviation |
|--|-------|--------------------|
| i Sense of Achievement | 5.571 | 1.111 |
| ii Credit for job well done | 4.407 | 1.513 |
| iii Chance to use skills and knowledge | 5.616 | 1.039 |
| iv Opportunities for self-development | 4.898 | 1.686 |
| v Challenging job | 5.266 | 1.586 |
| vi Preference for the profession | 4.994 | 1.704 |
| OVERALL | 5.125 | 0.873 |

Source: Survey Data (Appendix E)

The respondents were slightly satisfied with the sense of achievement (5.571), chance to use skills and knowledge (5.616), and challenging job (5.266). They showed low satisfaction with preference for the profession (4.994) and opportunities for self-development (4.898). And they were indifferent to credit for job well done (4.407). Overall, they were slightly satisfied on this job factor (5.125).

Superior-subordinate Relationship

This factor looked at how the respondents perceived their superiors in terms of understanding their problems and constraints, fair and just quality in work distribution, quality in decision making, approachability, participative decision making and leadership qualities (see Table 4.15).

TABLE 4.15
SUPERIOR-SUBORDINATE RELATIONSHIP

| | Job Facet | Mean | Standard Deviation |
|-----|-------------------------------|-------|--------------------|
| i | Understanding superior | 5.073 | 1.365 |
| ii | Fair work distribution | 4.650 | 1.571 |
| iii | Quality decision making | 4.333 | 1.425 |
| iv | Approachable superior | 5.209 | 1.506 |
| v | Participative decision making | 4.554 | 1.559 |
| vi | Leadership qualities | 5.198 | 1.275 |
| | OVERALL | 4.836 | 0.966 |

Source: Survey Data (Appendix E)

The mean scores of three of the variables were above four but were below five: fair work distribution (4.65), quality decision making (4.333) and participative decision making (4.554), indicating that the satisfaction of the

respondents was low on these job facets. For the other three variables, the respondents showed slight satisfaction with understanding (5.073), approachability (5.209) and leadership qualities (5.198) of the superiors. Overall, there was only low satisfaction on this job factor (4.836).

Relationship with Peers

This factor looked at the extent the engineers interacted with each other in the work place and how well they worked as a team (see Table 4.16).

TABLE 4.16
RELATIONSHIP WITH PEERS

| | Job Facet | Mean | Standard Deviation |
|-----|-------------------------------|-------|--------------------|
| i | Ability to discuss | 5.537 | 1.206 |
| ii | Ability to confide | 5.232 | 1.343 |
| iii | Team work | 4.559 | 1.685 |
| iv | Cooperative and friendly | 5.582 | 1.111 |
| v | Have things in common | 5.243 | 1.320 |
| vi | Enjoy working with colleagues | 5.751 | 0.986 |
| | OVERALL | 5.317 | 0.899 |

Source: Survey Data (Appendix E)

The respondents were slightly satisfied with their ability to discuss with (5.537) and confide in (5.232) their peers. They also showed slight satisfaction with cooperation and friendliness of peers (5.582), having things in common (5.243) and enjoyment of working together (5.751). However, very low satisfaction was shown for teamwork (4.559) which may be explained by the way engineers work: most are

assigned different projects and there is little interaction in terms of teamwork. Overall, there was slight satisfaction on this job factor (5.317).

Economic Rewards

Under this job factor, the respondents’ reactions to their pay, fringe benefits, promotional chances, and opportunities for skill upgrading were recorded. They were also asked to state whether they considered pay less important than the satisfaction they found in the job, and whether they would leave the firms for higher pay elsewhere (see Table 4.17).

TABLE 4.17
ECONOMIC REWARDS

| | Job Facet | Mean | Standard Deviation |
|-----|-----------------------|-------|--------------------|
| i | Well paid | 3.740 | 1.610 |
| ii | Fringe benefits | 3.475 | 1.768 |
| iii | Promotion | 4.655 | 1.585 |
| iv | Training | 4.751 | 1.412 |
| v | Pay less important | 4.073 | 1.803 |
| vi | Resign for higher pay | 4.034 | 1.745 |
| | OVERALL | 4.121 | 1.077 |

Source: Survey Data (Appendix E)

There was a general lack of satisfaction with economic rewards. The respondents were dissatisfied with pay (3.740) and fringe benefits (3.475) and were indifferent on promotion (4.655) and training (4.751) opportunities. The score for the importance of pay (4.073) indicated a split in the respondents’ perception, which was supported by the survey data where 48% of the respondents agreed that pay was not as

important as job satisfaction, 41.8% disagreed and 10.2% were undecided. Similarly, the score for the desire to resign for higher pay elsewhere (4.034) also indicated a split in the respondents' perception, where 37.9% of the respondents would not leave for higher pay elsewhere, 36.7% would do so and 25.4% were undecided. Overall, these figures suggested that the respondents were generally indifferent to this job factor (4.121).

Organisational Climate

This factor looked at the physical working conditions, the organisation's decision making mechanisms and the overall work policies and goals of the organisation (see Table 4.18).

TABLE 4.18
ORGANISATION CLIMATE

| | Job Facet | Mean | Standard Deviation |
|-----|--------------------------|-------|--------------------|
| i | Administrative style | 3.542 | 1.559 |
| ii | Place of work | 5.124 | 1.200 |
| iii | Organisational goals | 3.977 | 1.469 |
| iv | Organisational policies | 4.215 | 1.503 |
| v | Efficiency of management | 4.203 | 1.539 |
| | OVERALL | 4.212 | 0.991 |

Source: Survey Data (Appendix F)

The respondents displayed slight satisfaction with the place of work (5.124). They were indifferent about organisational policies (4.215) and efficiency of management (4.203) and slightly dissatisfied with administrative style (3.542) and organisational goals (3.977). The results suggested that the respondents felt a lack of

participation in decision making concerning their company policies, goals and management. Overall, they were indifferent to this job factor (4.212).

Off-The-Job Rewards

Job satisfaction is also linked to off-the-job rewards, such as more leisure time, respect shown to the profession, social status and ability to contribute to community and nation. The respondents were also asked whether they felt satisfied with themselves and with what they had achieved (see Table 4.19).

TABLE 4.19
OFF-THE-JOB REWARDS

| | Job Facet | Mean | Standard Deviation |
|-----|-------------------------|-------|--------------------|
| i | Respect | 3.881 | 1.772 |
| ii | Leisure time | 3.616 | 1.702 |
| iii | Community work | 4.266 | 1.531 |
| iv | Contribution to society | 5.492 | 1.163 |
| v | Contribution to nation | 5.853 | 1.012 |
| vi | Contentment with self | 4.424 | 1.691 |
| | OVERALL | 4.589 | 0.847 |

Source: Survey Data (Appendix E)

The results showed that the respondents were slightly satisfied with their contribution to society (5.492) and nation (5.853); they were dissatisfied with the public respect accorded to them (3.881) and the lack of leisure time (3.616); they were indifferent to community work (4.266) as well as self-contentment (4.424). Overall, they showed very low satisfaction on this job factor (4.589).

5. Analysis of Ranking of Job Factors

Section II of the Questionnaire (Appendix B) asked the respondents to rank, in order of importance, the job factors which contributed most to their job satisfaction. While the instructions given were clear, 42 (23.7%) of the respondents misunderstood the requirement and gave responses which did not rank the six job factors in the order of one to six. These responses were excluded from the analysis.

For every factor, the rankings received from the valid responses were averaged. The lower the average ranking, the more important would be the factor and thus the overall ranking of all six job factors was achieved (see Table 4.20).

TABLE 4.20
RANKING OF JOB FACTORS

| Job Factor | Average Rank | Overall Ranking |
|-----------------------------------|--------------|-----------------|
| Relationship with job | 1.822 | 1 |
| Superior-subordinate relationship | 3.437 | 3 |
| Relation with peers | 4.030 | 5 |
| Economic Rewards | 3.030 | 2 |
| Organisational climate | 3.659 | 4 |
| Off-the-job rewards | 5.052 | 6 |

Source: Survey Data (Appendix F)

Table 4.20 shows that the most important job factor was relationship with the job, followed by economic rewards, superior-subordinate relationship, organisation climate, relationship with peers and off-the-job rewards. This outcome seems to support Herzberg's Motivation-Hygiene Theory as the respondents have rated the motivators (e.g. relationship with the job) as the most important factors

contributing to job satisfaction. Survey data (Appendix F) shows that 54.8% of the valid responses ranked this factor as the most important, and an overwhelming 91.9% ranked it within the three most important factors.

6. Bivariate Analysis of Respondents' Personal Characteristics and Their Satisfaction With Job Factors

The purpose of this analysis was to determine whether there was any significant relationship between the respondents' satisfaction with the various job factors and their personal characteristics. With the nominal-scale data on personal characteristics, the techniques used were chi-square tests and cross-tabulated contingency tables. Through iterative computer analysis, categories for personal characteristics were recoded to form few categories, and the responses based on the seven-point Likert Scale were reduced to two categories. Scores of one to 4.5 were considered "dissatisfied" and scores of 4.6 to seven were considered "satisfied". These procedures were necessary so that the expected frequencies of the cross-tabulated cells were not less than five for the chi-square test to be meaningful. Significance of relationships was considered at 0.05 level.

Relationship Between Gender and the Job Factors

Table 4.21 summarises the test of significance between gender and the six job factors. The only significant relationship was between gender and relationship with peers. The cross-tabulation of this relationship is shown in Table 4.22.

TABLE 4.21

RELATIONSHIP BETWEEN GENDER AND THE JOB FACTORS

| Job Factors | chi-square | Degree of Freedom | Significance | Relationship |
|-----------------------------------|------------|-------------------|--------------|-----------------|
| Relationship with job | 0.5748 | 1 | 0.4483 | Not significant |
| Superior-subordinate relationship | 0.9202 | 1 | 0.3374 | Not significant |
| Relationship with peers | 4.3916 | 1 | 0.0361 | Significant |
| Economic rewards | 0.2927 | 1 | 0.5885 | Not significant |
| Organisational climate | 3.2993 | 1 | 0.0693 | Not significant |
| Off-the-job rewards | 2.2803 | 1 | 0.1310 | Not significant |

Source: Survey Data (Appendix G)

TABLE 4.22

CONTINGENCY TABLE SHOWING GENDER AND
RELATIONSHIP WITH PEERS

| Gender | Dissatisfied | Satisfied | Row Total |
|--------------|--------------|------------|-----------|
| Male | 29 (18.7) | 126 (81.3) | 155 |
| Female | 9 (40.9) | 13 (59.1) | 22 |
| Column total | 38 (21.5) | 139 (78.5) | 177 |

Note: Figures in brackets show row percentages.

Source: Survey data (Appendix G)

The above table shows that there was a higher percentage of male respondents (81.3%) satisfied with the relationship with peers than female respondents (59.1%). A probable reason may be due to the dominance of males in this profession.

Relationship Between Grade of Membership
in the IEM and the Job Factors

Table 4.23 summarises the test of significance between the grade of IEM membership and the six job factors.

TABLE 4.23
RELATIONSHIP BETWEEN GRADE OF MEMBERSHIP
IN THE IEM AND THE JOB FACTORS

| Job Factor | chi-square | Degree of Freedom | Significance | Relationship |
|-----------------------------------|------------|-------------------|--------------|-----------------|
| Relationship with job | 0.5621 | 2 | 0.7550 | Not significant |
| Superior-subordinate relationship | 0.3717 | 2 | 0.8304 | Not significant |
| Relationship with peers | 0.0313 | 2 | 0.9845 | Not significant |
| Economic rewards | 4.1232 | 2 | 0.1272 | Not significant |
| Organisational climate | 7.7638 | 2 | 0.0206 | Significant |
| Off-the-job rewards | 0.1314 | 2 | 0.9364 | Not significant |

Source: Survey Data (Appendix G)

The only significant relationship was between grades of IEM membership and organisational climate. The cross-tabulation of this relationship is shown in Table 4.24.

Table 4.24 shows that 60% of the respondents with grades of Fellow or Member were satisfied with the organisational climate, whereas only 39% of Graduate and only 31.3% of Affiliates were satisfied on the same factor. Since respondents with grades of Member or Fellow can sign and submit design drawings to local authorities, they may be accorded better treatment in terms of organisational climate.

TABLE 4.24

**CONTINGENCY TABLE SHOWING GRADE OF IEM MEMBERSHIP AND
ORGANISATIONAL CLIMATE**

| Grade of IEM Membership | Dissatisfied | Satisfied | Row Total |
|-------------------------|--------------|-----------|-----------|
| Fellow/Member | 18 (40) | 27 (60) | 45 |
| Graduate | 61 (61) | 39(39) | 100 |
| Affiliate | 22 (68.8) | 10 (31.3) | 32 |
| Column Total | 101 (57.1) | 76 (42.9) | 177 |

Source: Survey Data (Appendix G)

Relationship Between Qualifications Obtained

and the Job Factors

Table 4.25 summarises the test of significance between qualifications obtained and the six job factors. No significant relationship was obtained.

TABLE 4.25

**RELATIONSHIP BETWEEN QUALIFICATIONS OBTAINED
AND THE JOB FACTORS**

| Job Factors | chi-square | Degree of Freedom | Significance | Relationship |
|-----------------------------------|------------|-------------------|--------------|-----------------|
| Relationship with job | 0.0221 | 1 | 0.8817 | Not significant |
| Superior-subordinate relationship | 0.0021 | 1 | 0.9630 | Not significant |
| Relationship with peers | 0.9632 | 1 | 0.3264 | Not significant |
| Economic rewards | 0.0000 | 1 | 0.9947 | Not significant |
| Organisational climate | 0.1114 | 1 | 0.7385 | Not significant |
| Off-the-job rewards | 0.1158 | 1 | 0.7337 | Not significant |

Source: Survey Data (Appendix G)

Relationship Between Engineering Discipline and the Job Factors

Table 4.26 summarises the test of significance between engineering discipline and the six job factors. There were significant relationships between engineering discipline and relationship with the job, economic rewards and off-the-job rewards respectively. The respective cross-tabulations are shown in Tables 4.27, 4.28, and 4.29.

TABLE 4.26
RELATIONSHIP BETWEEN ENGINEERING DISCIPLINE
AND THE JOB FACTORS

| Job Factor | chi-square | Degree of Freedom | Significance | Relationship |
|-----------------------------------|------------|-------------------|--------------|-----------------|
| Relationship with job | 6.5359 | 2 | 0.0381 | Significant |
| Superior-subordinate relationship | 3.2023 | 2 | 0.2017 | Not significant |
| Relationship with peers | 0.4246 | 2 | 0.8087 | Not significant |
| Economic rewards | 6.8026 | 2 | 0.0333 | Significant |
| Organisational climate | 3.6040 | 2 | 0.1650 | Not significant |
| Off-the-job rewards | 7.1683 | 2 | 0.0278 | Significant |

Source: Survey Data (Appendix G)

TABLE 4.27
CONTINGENCY TABLE SHOWING ENGINEERING DISCIPLINE AND
RELATIONSHIP WITH THE JOB

| Engineering Discipline | Dissatisfied | Satisfied | Row Total |
|------------------------|--------------|------------|-----------|
| Civil | 30(20.1) | 85 (73.9) | 115 |
| Electrical | 2 (6.1) | 31 (93.9) | 33 |
| Mechanical | 7 (29.2) | 17 (70.8) | 24 |
| Column Total | 39 (22.7) | 133 (77.3) | 172 |

Source: Survey Data (Appendix G)

TABLE 4.28

**CONTINGENCY TABLE SHOWING ENGINEERING DISCIPLINE AND
ECONOMIC REWARDS**

| Engineering Discipline | Dissatisfied | Satisfied | Row Total |
|------------------------|--------------|-----------|-----------|
| Civil | 84 (73) | 31 (27) | 115 |
| Electrical | 17(51.5) | 16 (48.5) | 33 |
| Mechanical | 19 (79.2) | 5 (20.8) | 24 |
| Column Total | 120 (69.8) | 52 (30.2) | 172 |

Source: Survey Data (Appendix G)

TABLE 4.29

**CONTINGENCY TABLE SHOWING ENGINEERING DISCIPLINE
AND OFF-THE-JOB REWARDS**

| Engineering Discipline | Dissatisfied | Satisfied | Row Total |
|------------------------|--------------|-----------|-----------|
| Civil | 64 (55.7) | 51 (44.3) | 115 |
| Electrical | 10 (30.3) | 23 (69.7) | 33 |
| Mechanical | 14 (58.3) | 10 (41.7) | 24 |
| Column Total | 88 (51.2) | 84 (48.8) | 172 |

Source: Survey Data (Appendix G)

The tables show that electrical engineers, when compared to civil and mechanical engineers, were more satisfied with their job (93.9%), economic rewards (48.5%) and off-the-job rewards (69.7%). Probable reasons for these differences may be due to the relevance of their study to their work, and the rapid growth of the electrical and electronic industries recently.

Relationship Between Years of Working Experience and the Job Factors

Table 4.30 summarises the test of significance between years of working experience and the six job factors.

TABLE 4.30
RELATIONSHIP BETWEEN YEARS OF WORKING EXPERIENCE AND
THE JOB FACTORS

| Job Factor | chi-square | Degree of Freedom | Significance | Relationship |
|-----------------------------------|------------|-------------------|--------------|-----------------|
| Relationship with job | 5.9484 | 2 | 0.0511 | Significant |
| Superior-subordinate relationship | 0.4238 | 2 | 0.8090 | Not significant |
| Relationship with peers | 3.1766 | 2 | 0.2043 | Not significant |
| Economic rewards | 2.8290 | 2 | 0.2431 | Not significant |
| Organisational climate | 3.3120 | 2 | 0.1909 | Not significant |
| Off-the-job rewards | 2.0204 | 2 | 0.3641 | Not significant |

Source: Survey Data (Appendix G)

The only significant relationship was between years of working experience and relationship with the job. The cross-tabulation of this relationship is shown in Table 4.31.

TABLE 4.31
CONTINGENCY TABLE SHOWING YEARS OF WORKING
EXPERIENCE AND RELATIONSHIP WITH THE JOB

| Years of working experience | Dissatisfied | Satisfied | Row Total |
|-----------------------------|--------------|------------|-----------|
| 1-3 | 15 (26.3) | 42 (73.7) | 57 |
| 4-10 | 22 (28.6) | 55 (71.4) | 77 |
| >10 | 4 (9.5) | 38 (90.5) | 42 |
| Column Total | 41 (23.3) | 135 (76.7) | 176 |

Source: Survey Data (Appendix G)

Table 4.31 shows that respondents with more than ten years of working experience expressed greater satisfaction (90.5%), compared to 73.7% and 71.4% for those with one to three years and four to ten years respectively. This difference may be attributed to the specialised nature of the work itself: as the respondents become more experienced, they also become more involved in their job and find it to be more rewarding.

Relationship Between Job Designation and the Job Factors

Table 4.32 summarises the tests of significance between job designation and the six job factors.

TABLE 4.32

RELATIONSHIP BETWEEN JOB DESIGNATION AND THE JOB FACTORS

| Job Factors | chi-square | Degree of Freedom | Significance | Relationship |
|-----------------------------------|------------|-------------------|--------------|-----------------|
| Relationship with job | 3.1289 | 2 | 0.2092 | Not Significant |
| Superior-subordinate relationship | 3.5538 | 2 | 0.1692 | Not significant |
| Relationship with peers | 3.1209 | 2 | 0.2100 | Not significant |
| Economic rewards | 16.1530 | 2 | 0.0003 | Significant |
| Organisational climate | 10.6562 | 2 | 0.0066 | Significant |
| Off-the-job rewards | 2.0572 | 2 | 0.3576 | Not significant |

Source: Survey Data (Appendix G)

There were significant relationships between job designation and economic rewards as well as organisational climate. The cross-tabulation of these relationships are shown in Table 4.33 and 4.34.

TABLE 4.33

**CONTINGENCY TABLE SHOWING JOB DESIGNATION AND
ECONOMIC REWARDS**

| Job Designation | Dissatisfied | Satisfied | Row Total |
|-----------------|--------------|-----------|-----------|
| Engineer | 91 (79.8) | 23 (20.2) | 114 |
| Senior Engineer | 18 (60) | 12 (40) | 30 |
| Higher Posts | 15 (45.5) | 18 (54.5) | 33 |
| Column Total | 124 (70.1) | 53 (29.9) | 177 |

Source: Survey Data (Appendix G)

TABLE 4.34

**CONTINGENCY TABLE SHOWING JOB DESIGNATION AND
ORGANISATIONAL CLIMATE**

| Job Designation | Dissatisfied | Satisfied | Row Total |
|-----------------|--------------|-----------|-----------|
| Engineer | 75 (65.8) | 39 (34.2) | 114 |
| Senior Engineer | 13 (43.3) | 17 (56.7) | 30 |
| Higher Posts | 13 (39.4) | 20 (60.6) | 33 |
| Column Total | 101 (57.1) | 76 (42.9) | 177 |

Source: Survey Data (Appendix G)

Table 4.33 shows that satisfaction with economic rewards increases from lower to higher designation - Engineer: 20.2%, Senior Engineer: 40% and Higher Posts: 54.5%. This trend is probably because the higher positions demand higher salaries and better fringe benefits.

Table 4.34 shows that 65.8% of those designated as Engineers were dissatisfied with organisational climate. This is a higher percentage when compared with respondents with higher designation - Senior Engineer: 43.3% and Higher Posts:

39.4%. Again, this is probably because the higher positions demand better treatment in terms of organisational climate.

Relationship Between Gross Annual Income and the Job Factors

Table 4.35 summarises the tests of significance between gross annual income and the six job factors.

TABLE 4.35
RELATIONSHIP BETWEEN GROSS ANNUAL INCOME AND
THE JOB FACTORS

| Job Factor | chi-square | Degree of Freedom | Significance | Relationship |
|-----------------------------------|------------|-------------------|--------------|-----------------|
| Relationship with job | 4.0446 | 2 | 0.1324 | Not Significant |
| Superior-subordinate relationship | 0.4437 | 2 | 0.8010 | Not significant |
| Relationship with peers | 1.1611 | 2 | 0.5596 | Not significant |
| Economic rewards | 6.1235 | 2 | 0.0468 | Significant |
| Organisational climate | 4.7426 | 2 | 0.0934 | Not significant |
| Off-the-job rewards | 0.3881 | 2 | 0.8236 | Not significant |

Source: Survey Data (Appendix G)

As expected, the relationship between gross annual income and economic rewards was found to be significant. The cross-tabulation is in Table 4.36.

Table 4.36 shows that 70.5% of the respondents with gross annual income of less than RM 30,000 were dissatisfied with the economic reward factor, 78.6% of those with gross annual income between RM 30,000 to RM 54,000 were dissatisfied, and 56.8% of those with gross annual income higher than RM 54,000 were dissatisfied. The higher the respondent's income, the less dissatisfied he was with economic reward.

TABLE 4.36

**CONTINGENCY TABLE SHOWING GROSS ANNUAL
INCOME AND ECONOMIC REWARDS**

| Gross Annual Income | Dissatisfied | Satisfied | Row Total |
|---------------------|--------------|-----------|-----------|
| Less than 30,000 | 43 (70.5) | 18 (29.5) | 61 |
| 30,000-54,000 | 55 (78.6) | 15 (21.4) | 70 |
| More than 54,000 | 25 (56.8) | 19 (43.2) | 44 |
| Column Total | 123 (70.3) | 52 (29.7) | 175 |

Source: Survey Data (Appendix G)

Relationship Between Size of Firms and the Job Factors

Table 4.37 summarises the test of significance between the size of firm and the six job factors.

TABLE 4.37

RELATIONSHIP BETWEEN SIZE OF FIRMS AND THE JOB FACTORS

| Job Factor | chi-square | Degree of Freedom | Significance | Relationship |
|-----------------------------------|------------|-------------------|--------------|-----------------|
| Relationship with job | 3.5363 | 3 | 0.3161 | Not Significant |
| Superior-subordinate relationship | 2.3630 | 3 | 0.5006 | Not significant |
| Relationship with peers | 6.0038 | 3 | 0.1114 | Not significant |
| Economic rewards | 9.0040 | 3 | 0.0292 | Significant |
| Organisational climate | 6.6017 | 3 | 0.0857 | Not significant |
| Off-the-job rewards | 3.4225 | 3 | 0.3310 | Not significant |

Source: Survey Data (Appendix G)

There was a significant relationship between the size of firm and economic reward. The cross tabulation of the relationship is in Table 4.38.

TABLE 4.38

**CONTINGENCY TABLE SHOWING SIZE OF FIRMS
AND ECONOMIC REWARD**

| Size of Firm | Dissatisfied | Satisfied | Row Total |
|--------------|--------------|-----------|-----------|
| 1-20 | 16 (59.3) | 11 (40.7) | 27 |
| 21-50 | 31 (58.5) | 22 (41.5) | 53 |
| 51-100 | 42 (80.8) | 10 (19.2) | 52 |
| 101-200 | 35 (77.8) | 10 (22.2) | 45 |
| Column Total | 124 (70.1) | 53 (29.9) | 177 |

Source: Survey Data (Appendix G)

Interestingly, the above table shows that as far as economic rewards were concerned, more respondents working in smaller firms were satisfied (40.7% and 41.5%) compared with those working in bigger firms (19.2% and 22.2%). This is probably because the smaller firms, due to lower overhead costs, offer better economic rewards to their engineers.

**7. Bivariate Analysis of Respondents' Personal Characteristics
and Their Job Satisfaction Levels**

Here, the perceptions of the respondents towards their job satisfaction level was cross-tabulated with their characteristics for the purpose of identifying any significant relationships between the two. The same techniques were used as in the previous analysis. Again, through the iterative process, categories for personal characteristics were recoded to form fewer categories, and the responses on job satisfaction levels were classified in two categories: "satisfied" for 75% and 100% satisfaction, and "dissatisfied" for 50% or less satisfaction. Again, these procedures were carried out so that the expected frequencies of the cross-tabulated cells were not

less than five for the chi-square tests to be meaningful. Significance of relationships was considered at 0.05 level (see Table 4.39).

TABLE 4.39
RELATIONSHIP BETWEEN PERSONAL CHARACTERISTICS
AND JOB SATISFACTION LEVEL

| Personal Characteristics | chi-square | Degree of Freedom | Significance | Relationship |
|-----------------------------|------------|-------------------|--------------|-----------------|
| Gender | 1.3869 | 1 | 0.2389 | Not Significant |
| Grade of Membership in IEM | 1.6733 | 2 | 0.4332 | Not Significant |
| Qualifications obtained | 0.4480 | 1 | 0.5033 | Not Significant |
| Engineering discipline | 5.4073 | 2 | 0.0670 | Not Significant |
| Years of working experience | 4.0177 | 2 | 0.1341 | Not Significant |
| Job designation | 8.6107 | 2 | 0.0135 | Significant |
| Gross Annual Income | 5.1752 | 2 | 0.0752 | Not Significant |
| Size of Firm | 8.1131 | 3 | 0.0437 | Significant |

Source: Survey data (Appendix H)

The above table shows that the relationships between job designation and size of firm respectively with the respondents' job satisfaction were significant. Table 4.40 and 4.41 show the cross-tabulation of the relationships.

Table 4.40 shows that job satisfaction was lower at "Engineer" level (60.5%) compared with 86.7% for "Senior Engineer" and 75.8% for "Higher Posts". Table 4.41 shows that more respondents working in smaller firms were satisfied (77.8% and 77.4%) than those working in bigger firms (53.8% and 66.7%).

TABLE 4.40

**CONTINGENCY TABLE SHOWING JOB DESIGNATION AND JOB
SATISFACTION LEVEL**

| Job Designation | Dissatisfied | Satisfied | Row Total |
|-----------------|--------------|------------|-----------|
| Engineer | 45 (39.5) | 69 (60.5) | 114 |
| Senior Engineer | 4 (13.3) | 26 (86.7) | 30 |
| Higher Posts | 8 (24.2) | 25 (75.8) | 33 |
| Column Total | 57 (32.2) | 120 (67.8) | 177 |

Source: Survey Data (Appendix H)

TABLE 4.41

**CONTINGENCY TABLE SHOWING SIZE OF FIRM AND JOB
SATISFACTION LEVEL**

| Size in Firm | Dissatisfied | Satisfied | Row Total |
|--------------|--------------|-----------|-----------|
| 1-20 | 6 (22.2) | 21 (77.8) | 27 |
| 21-50 | 12 (22.6) | 41(77.4) | 53 |
| 51-100 | 24 (46.2) | 28 (53.8) | 52 |
| 101-200 | 15 (33.3) | 30 (66.7) | 45 |
| Column Total | 57 | 120 | 177 |

Source: Survey Data (Appendix H)

8. Bivariate Analysis Of Job Satisfaction Levels

And Job Behaviour

This analysis was carried out to determine whether there was any significant relationship between the job satisfaction level and the two job behaviour - the urge to resign and work attitude. Chi-square tests and cross-tabulation were carried out as shown in the following tables. Significance was considered at 0.05 level and both relationships were found to be significant.

TABLE 4.42

**RELATIONSHIP BETWEEN JOB SATISFACTION LEVEL
AND JOB BEHAVIOUR**

| Job Behaviour | chi-square | Degree of Freedom | Significance | Relationship |
|----------------|------------|-------------------|--------------|--------------|
| Urge to resign | 26.3217 | 2 | 0.0000 | Significant |
| Work attitude | 14.4295 | 1 | 0.0001 | Significant |

Source: Survey Data (Appendix I)

TABLE 4.43

**CONTINGENCY TABLE SHOWING JOB SATISFACTION
AND URGE TO RESIGN**

| Job Satisfaction | High Urge | Medium Urge | Low Urge | Row Total |
|------------------|-----------|-------------|-----------|-----------|
| Satisfied | 13 (11.0) | 38 (32.2) | 67 (56.8) | 118 |
| Dissatisfied | 13 (22.8) | 35 (61.4) | 9 (15.8) | 57 |
| Column Total | 26 (14.9) | 73 (41.7) | 76 (43.4) | 175 |

Source: Survey Data (Appendix I)

TABLE 4.44

**CONTINGENCY TABLE SHOWING JOB SATISFACTION
AND WORK ATTITUDE**

| Job Satisfaction | Do minimum or usual work | Do to the best of ability | Row Total |
|------------------|--------------------------|---------------------------|-----------|
| Satisfied | 29 (24.2) | 91 (75.8) | 120 |
| Dissatisfied | 31 (54.4) | 26 (45.6) | 57 |
| Column Total | 60 (33.9) | 117 (66.1) | 177 |

Source: Survey Data (Appendix I)

Table 4.43 shows that of those in the satisfied group, only 11% said that they would resign immediately or seriously considering resigning, 32.2% had a medium urge to resign, and 56.8% hardly thought of resigning or did not ever think

about it. Among those in the dissatisfied group, 22.8% possessed a high urge to resign, 61.4% a medium urge and only 15.8% would not resign. The link was obvious that those who were satisfied were least prone to resign, and vice versa.

Table 4.44 shows that 75.8% of the satisfied group would work to the best of their abilities whereas only 45.6% of the dissatisfied group would do likewise. Also, only 24.2% of the satisfied group would do minimum or usual work whereas 54.4% of the dissatisfied group would do likewise.

9. Multivariate Analysis of Job satisfaction

and Job Factors

The focus of this analysis was to determine if there was any relationship between the job satisfaction level (the dependent variable) and the six job factors (the independent variables). Specifically, the objective was to find out which job factors collectively helped explain variations in the job satisfaction level and the extent to which such variables collectively influenced the job satisfaction level.

The statistical technique used was stepwise multiple regression where the predictor variables were entered into the equation one by one. The first predictor variable to be entered was the one most highly correlated with the criterion variable. The next predictor variable to be entered was selected in such a way that it should explain a significant portion of the remaining variations in the criterion variable as well as explain the largest portion of the remaining variation among all the other predictor variables not in the equation. The process was repeated until all the predictor variables which explained a significant variation in the criterion variable had been included. Table 4.45 shows the summary of the analysis.

TABLE 4.45

**STEPWISE MULTIPLE REGRESSION BETWEEN JOB SATISFACTION
AND JOB FACTORS**

| Variable | R | R ² | F | Significance level of F | B | Beta |
|------------------------|--------|----------------|--------|-------------------------|--------|--------|
| Economic rewards | 0.5089 | 0.2590 | 61.174 | 0.0000 | 0.2282 | 0.2265 |
| Organisational climate | 0.5525 | 0.3052 | 38.225 | 0.0000 | 0.2327 | 0.2127 |
| Relationship with Job | 0.5765 | 0.3323 | 28.700 | 0.0000 | 0.2008 | 0.1616 |
| Off-the-job rewards | 0.5918 | 0.3502 | 23.177 | 0.0000 | 0.1984 | 0.1549 |
| (Constant) | | | | | 1.2498 | |

Note: R : Partial correlation coefficient
R² : Coefficient of determination
F : F test for the additional contribution of a variable above the contributions of those variables already in the equation.
B : Regression Coefficient
Beta : Standardised regression coefficient

Source: Survey Data (Appendix J)

The table shows that economic rewards ($R^2=0.2590$) alone explained 25.9% of the variation in job satisfaction. The next variable, organisational climate ($R^2=0.3052$) explained 30.52% of the variation in job satisfaction together with economic rewards. Similarly, these two variable together with the third variable, relationship with the job, explained 33.23% of the variation in job satisfaction. Finally, these three variables together with the fourth variable, off-the-job rewards, explained 35.02% of the variation in job satisfaction. This relationship was found to be significant at the 0.000 level.

The outcome of the stepwise multiple regression analysis showed that four of the six predictor variables could enter the equation. The other two variables, superior-subordinate relationship and relationship with peers, could not enter the

equation because their contributions over and above those variables already in the equation were not significant as they were highly correlated with the other four variables.

The regression equation obtained was :

$$\text{Job Satisfaction} = 1.2498 + 0.2282 (\text{ER}) + 0.2327 (\text{OC}) + 0.2008 (\text{RJ}) + 0.1984 (\text{OJR})$$

where : ER = economic rewards

OC = organisational climate

RJ = relationship with the job

OJR = off-the-job rewards

This equation implies that one unit change of ER would bring about a 0.2282 unit change in job satisfaction provided that the other variables in the equation were held constant. A similar conclusion applies to the other three variables in the equation.

The Beta values refer to the standardisation of the raw data of all variables into new measurement variables with a mean of zero and standard deviation of one. This process allows the comparison of the relative effect on the dependent variables of each independent variable measured in different units. By comparing the Beta values of the four variables, it was found that in terms of the relative importance to changes in job satisfaction, economic rewards was the most important, followed by organisational climate, relationship with the job and off-the-job rewards. For the purpose of comparison, Table 4.46 lists the job factors in the order of importance from this analysis and from the earlier ranking analysis. Three of the six job factors (economic rewards, organisational climate and relationship with the job) appear to be of greater importance to the respondents than the other three factors.

TABLE 4.46

COMPARISON OF JOB FACTORS ORDER OF IMPORTANCE

| From multiple regression analysis | From ranking analysis |
|-----------------------------------|-----------------------------------|
| Economic rewards | Relationship with the job |
| Organisational Climate | Economic rewards |
| Relationship with the job | Superior-subordinate relationship |
| Off-the-job rewards | Organisational climate |
| | Relationship with peers |
| | Off-the-job rewards |

Finally, the analysis shows that the four job factors in the equation explained 35.02% ($R^2=0.3502$) of the variance in job satisfaction for the particular regression model developed. Together with the analysis of ranking of job factors, this model helps to identify the three major factors affecting the job satisfaction of the respondents.