CHAPTER III

METHODOLOGY

The hypotheses formulated for the purpose of this study were to be tested by collecting relevant data. This chapter describes the steps taken in this direction. There are: the purpose of the investigation, the variables involved, the sample studied, the sample selection, data collection, data screening, sample description, tools employed, description of the tools, the procedure in which the study on Role Stress, Achievement Motivation, and Job Involvement was carried out, and statistical treatment of data.

PURPOSE OF THE INVESTIGATION

The major purpose of the study is to investigate into the job role stress in relation to achievement motivation and job involvement among managers and supervisors in engineering industries at Bangkok City, Thailand. The study further aimed at finding out the difference between managers and supervisors on each of these variables, and to explore the relationship among demographic variables such as job position, age, sex, length of service, educational qualification, marital status, number of children, income, stockholdership, birth order, brothers/sisters, and job role stress, achievement motivation and job involvement.
**VARIABLES**

The dependent variables involved in the present investigation are:

1. Job role stress under which there are role ambiguity and role conflict,
2. Achievement motivation, and

Age, sex, length of service, educational qualification, marital status, number of children, monthly income, stockholdership, birth order, brothers/sisters are ten independent variables.

**SAMPLE**

The sample using in this study comprising of 655 subjects of 331 managers and 324 supervisors. The subjects was drawn from engineering industries at Bangkok City, Thailand. The subject's age range was between 20-58 years. To avoid inter-organizational difference in climate and environment it was decided to take the sample from 63 engineering industries.

**SAMPLE SELECTION**

Large, middle and small size engineering industries have been chosen. The investigator approached authorities of concerned industries with a request for permission to collect data. After getting permission from the industries, the simple random sampling technique has been used to select subjects from each industry separately. The industries consist of managers and supervisors around 20, 50 and 80 respectively. In each industry there are various departments under specialization. Sample was not restrictive to
managers and supervisors in particular department. It was not restrictive to any particular sex, age, class, level of managers or supervisors, or any specific educational qualification. All items of managers and supervisors in each industry are numbered on separate slips of paper. A blindfold selection is then made of the number of slips required to constitute the desired sample size. Around 60-70% of managers and supervisors were selected out of each industry.

**DATA COLLECTION**

Three questionnaires, the Role Stress Questionnaire by Tracy and Johnson (1983), Achievement Motivation Questionnaire by Richard Lynn (1969), and Job Involvement questionnaire by Lodhal and Kejner (1966) were made into a form of booklets. Demographic data which included initial, job position, age sex, length of service, educational qualification, marital status, number of children, brothers/sisters, berth order, monthly income, being stockholder, was also collected. The investigator contacted the subjects individually or in small groups. In the beginning, the investigator established the rapport with the subjects. After requesting the subject to extend their cooperation, printed copies of the booklets were distributed to them. The instructions were given to subject. The investigator clarified if they has any doubt or difficulty. Then they were requested to record their answers. The total time taken to administer the questionnaires was about 15-25 minutes per subject. The booklets were collected from the subjects after they had checked all the items. After the collection of the questionnaires they were scored as per the instructions.
DATA SCREENING

Accuracy of Input: Checked twice till no error was detected.

Missing Values: Initially we had a sample of 655 cases, 324 supervisors and 311 managers. Case No. 21 had missing data on brothers/sisters and birth order, case No. 42 had missing data on length of service and case No.281 and a questionable score on need for achievement. Moreover case No.281 turned out to be a multivariate outlier even after excluding n-achievement score. Hence these three cases, all of which belonging to managers, were excluded, thus having a final sample of 342 supervisors, 328 managers (total = 652).

Normality Assumptions: The distribution of scores for RA,RC, ACH, and JI was examined separately for the sample of supervisors and managers and also for entire sample by employing normal probability plot and detrended normal probability plot. The normality assumptions were also evaluated in MANOVAs, t-tests, and multiple regressions by carrying out the examination of residuals through normal probability plots and detrended normal probability plots. There were no problems posed in respect of marginal normality of the dependent variables. Multivariate normality has been assumed on the basis of marginal normality of the variables. Moreover, the sample sizes in each group in MANOVAs, t-tests and multiple regressions were, most of the time, quite large to claim the robustness of these techniques from the point of view of normality departures on the basis of central limit theorem. The other assumptions underlying different statistical models were also checked while analysing the data and the brief comments in this regard are offered at appropriate places.
SAMPLE DESCRIPTION

Total N = 652

Job position (JP):

Supervisors = 324; 49.7%

Managers = 328; 50.3%

Sexwise Distribution:

<table>
<thead>
<tr>
<th>Job position</th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisors</td>
<td>166 (51.2%)</td>
<td>158 (48.8%)</td>
<td>324</td>
</tr>
<tr>
<td>Managers</td>
<td>174 (53.0%)</td>
<td>154 (47.0%)</td>
<td>328</td>
</tr>
<tr>
<td>Entire Sample</td>
<td>340 (52.1%)</td>
<td>312 (47.9%)</td>
<td>652</td>
</tr>
</tbody>
</table>

Stockholdership:

<table>
<thead>
<tr>
<th>Job position</th>
<th>Non-stockholder</th>
<th>Stockholder</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisors</td>
<td>299 (92.3%)</td>
<td>25 (7.7%)</td>
<td>324</td>
</tr>
<tr>
<td>Managers</td>
<td>259 (79.0%)</td>
<td>69 (21.0%)</td>
<td>328</td>
</tr>
<tr>
<td>Entire Sample</td>
<td>558 (85.6%)</td>
<td>94 (14.4%)</td>
<td>652</td>
</tr>
</tbody>
</table>

Education:

<table>
<thead>
<tr>
<th>Job position</th>
<th>Undergraduates</th>
<th>Graduates</th>
<th>Postgraduates</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisors</td>
<td>48 (14.8%)</td>
<td>230 (71.0%)</td>
<td>46 (14.2%)</td>
<td>324</td>
</tr>
<tr>
<td>Managers</td>
<td>66 (20.1%)</td>
<td>206 (62.8%)</td>
<td>56 (17.1%)</td>
<td>328</td>
</tr>
<tr>
<td>Entire Sample</td>
<td>144 (17.5%)</td>
<td>436 (66.9%)</td>
<td>102 (15.6%)</td>
<td>652</td>
</tr>
</tbody>
</table>

Marital Status:

<table>
<thead>
<tr>
<th>Job position</th>
<th>Unmarried</th>
<th>Married</th>
<th>Divorcee</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisors</td>
<td>189 (58.3%)</td>
<td>129 (39.8%)</td>
<td>6 (1.9%)</td>
<td>324</td>
</tr>
<tr>
<td>Managers</td>
<td>134 (40.9%)</td>
<td>184 (56.1%)</td>
<td>10 (3.0%)</td>
<td>328</td>
</tr>
<tr>
<td>Entire Sample</td>
<td>323 (49.5%)</td>
<td>313 (48.0%)</td>
<td>16 (2.5%)</td>
<td>652</td>
</tr>
</tbody>
</table>

Monthly Income:

<table>
<thead>
<tr>
<th>Job position</th>
<th>Low Income</th>
<th>Middle Income</th>
<th>High Income</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisors</td>
<td>253 (78.1%)</td>
<td>68 (21.0%)</td>
<td>3 (0.9%)</td>
<td>324</td>
</tr>
<tr>
<td>Managers</td>
<td>137 (41.8%)</td>
<td>135 (41.2%)</td>
<td>56 (17.1%)</td>
<td>328</td>
</tr>
<tr>
<td>Entire Sample</td>
<td>390 (59.8%)</td>
<td>203 (31.1%)</td>
<td>59 (9.0%)</td>
<td>652</td>
</tr>
</tbody>
</table>
### Age

<table>
<thead>
<tr>
<th>Job position</th>
<th>Mean age</th>
<th>S.D.</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisors</td>
<td>31.6265</td>
<td>7.9584</td>
<td>20 to 62</td>
</tr>
<tr>
<td>Managers</td>
<td>36.4146</td>
<td>9.4123</td>
<td>20 to 59</td>
</tr>
<tr>
<td>Entire Sample</td>
<td>34.0353</td>
<td>9.0369</td>
<td>20 to 62</td>
</tr>
</tbody>
</table>

### Length of Service

<table>
<thead>
<tr>
<th>Job position</th>
<th>Mean length of service</th>
<th>S.D.</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisors</td>
<td>7.6790</td>
<td>7.0948</td>
<td>1 to 40</td>
</tr>
<tr>
<td>Managers</td>
<td>11.5396</td>
<td>9.0462</td>
<td>1 to 40</td>
</tr>
<tr>
<td>Entire Sample</td>
<td>9.6212</td>
<td>8.3553</td>
<td>1 to 40</td>
</tr>
</tbody>
</table>

### Number of Children

<table>
<thead>
<tr>
<th>Job position</th>
<th>Mean No. of children</th>
<th>S.D.</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisors</td>
<td>0.5556</td>
<td>0.9344</td>
<td>0 to 5</td>
</tr>
<tr>
<td>Managers</td>
<td>1.0884</td>
<td>1.2736</td>
<td>0 to 5</td>
</tr>
<tr>
<td>Entire Sample</td>
<td>0.8236</td>
<td>1.1485</td>
<td>0 to 5</td>
</tr>
</tbody>
</table>

### Number of Brothers and Sisters

<table>
<thead>
<tr>
<th>Job position</th>
<th>Mean No. of brothers andsisters</th>
<th>S.D.</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisors</td>
<td>3.8765</td>
<td>2.2012</td>
<td>1 to 14</td>
</tr>
<tr>
<td>Managers</td>
<td>4.3689</td>
<td>2.3096</td>
<td>1 to 14</td>
</tr>
<tr>
<td>Entire Sample</td>
<td>4.1242</td>
<td>2.2681</td>
<td>1 to 14</td>
</tr>
</tbody>
</table>

### TOOLS USED FOR DATA COLLECTION

In view of the problem, the investigator of this study, has selected three standard psychological tests related to job role stress (role ambiguity and role conflict), need for achievement and job involvement. This set of questionnaires using as measures of dependent variables are fully described in the following few pages

1. The Role Stress Questionnaire that consists of two parts to measure “role ambiguity” and “role conflict” by Tracy and Johnson (1983), (The revised form of the original by Rizzo, House and Schuler, 1970).

3. Job Involvement Description and Rational by Lodhal and Kejner (1966)

DESCRIPTION OF THE TOOLS

Role Stress Questionnaire

The original form of the role conflict and ambiguity scales was developed by Rizzo, House, and Schuler. It was developed to reflect the conceptual categories developed by Kahn, Wolfe, Quinn, Snoek, and Rosenthal (1964). The categories of role conflict as operationalized by Rizzo et al., included: intra-sender conflict, inter-sender conflict, inter-role conflict, and person-role conflict.

Development of the role conflict and ambiguity scales began with the generation of 29 items designed to measure all four types of role conflict and the two sources of ambiguity when role occupants lack adequate role-relavant information, and when expectations are not clearly defined (Rizzo et al., 1970).

When the scales were originally developed, the items designed to measure conflict were worded negatively and the items designed to measure ambiguity were worded positively. The positively worded items are usually reverse scored so that high role stress scores reflect high levels of perceived role conflict and high levels of perceived role ambiguity.

A 7-point Likert response format was employed and respondents were asked to indicate the extent to which a particular items was characteristic of their job or role. The response anchors were Definitely Not True and Extremely True.
The revised form by Tracy and Johnson (1983) consists of 14 items, the first 6 items measure role ambiguity and the next 8 items measure role conflict. Each statement of which has five alternative responses: strongly agree, agree, undecided, disagree and strongly disagree.

Reliability and Validity

Murphy and Gable (1988) conducted two studies to assess the validity and reliability of the original 29-item and the abridged 14-item Role Conflict and Ambiguity Scales. The sample for this study consisted of 362 academic and non-academic administrators from the six publicly-supported, doctorate-granting universities in New England who responded to a mailed questionnaire.

Factorial Validity: A comparison of the items defining of role ambiguity presented earlier suggest that the items clearly reflect role ambiguity. In contrast, comparison of the items defining role conflict, suggests that the items reflect intrasender role conflict and inter-sender role conflict, respectively.

Factor Intercorrelations and Reliabilities: The factor intercorrelation ranged from .30 to .32. These findings differ from those obtained by Schwab et al., (1983). Their results demonstrated a higher intercorrelation between the two empirically derived role conflict scales (.61) than that obtained in this study (.32). Despite this finding it is suggested that the two empirically derived role conflict components be collapsed. Combining these makes conceptual sense and increases the alpha reliability estimate to .81.
Achievement Motivation Questionnaire

This instrument was used to measure need for achievement. This scale was developed by Richard Lynn (1969) for the measurement of Meclelland's concept of achievement motivation. The scale was derived by factor analysis from a number of other questions. This questionnaire consists of 8 items. Each questionnaire has two alternative answers, either “Yes” or “No”.

Job Involvement Questionnaire

This scale was used to measure job involvement. This questionnaire was constructed and developed by Lodahl and Kejner (1965). It was constructed on the basis of the principles of Edwards and Kilp trivial (1948). Initially one hundred and ten items, potentially related to job involvement, were collected. The estimation of duplication etc. reduced the list of 87 items which were submitted to expert judges and 47 items were discarded after statistical calculations. The remaining 40 items were cast into Likert format with four category of responses: strongly agree, agree, disagree and strongly disagree. Again these items were administered in random order to 137 nursing personnel in a large hospital. The above set of items was again reduced to 20 items by considering item-total correlations, community of items and the theoretical clarity of the item and the final form of the scale consists of 20 items.

Reliability and Validity

Lodahl and Kejner (1965) established the split-half reliability and the concurrent validity of this 20 item scale by administering it to three occupational groups of nurses, engineers and students. Corrected split-half correlations in the samples ranged from .72 to .89. This led the researchers to
comment on the adequate, but not high, internal consistency, which was probably due to the multi-dimensionality of the scale.

Further evidence of validity was demonstrated in a study by Goodman, Furcon, and Rose (1969). Job involvement items developed by Lodahl and Kejner were used in control traits in a multitrait-multimethod matrix examination of the convergent and discriminant validity of creative ability traits. In a sample of 63 government research employees, reliability of the involvement scale was .83. The result of interest was a finding that the job involvement items displayed both convergent and discriminant validity. Convergent validity was indicated the values in the diagonals of the matrix, discriminant validity was indicated by degree to which a diagonal value exceeds corresponding raw and column values.

Singh (1983) used the split-half and test-retest methods to determine the reliability of the Hindi version of the Lodahl and Kejner’s job involvement scale. By administering the scale on the employees of different organization, the coefficient of correlations obtaining by split half and test-retest are .843 and 862, respectively.

**ADMINISTRATION AND SCORING OF TOOLS**

The three questionnaires was made into a form of booklets along with a personal information blank are given to a group of managers and supervisors from engineering industries

Personal information blank included name, job position (manager-supervisor), age, sex, length of service, educational qualification, marital status, number of children, bother/sisters, birth order, monthly income, and being stockholder.
I Role Stress Questionnaire

Instructions

The questionnaire has 14 items and following instruction were given:

"The statements given below relate to your role with special reference to the duties and rules to your job. Each statement has 5 alternative answers. They are Strongly Agree, Agree, Undecided, Disagree, and Strongly Disagree."

"Kindly tick the answer which you feel best explains your position."

Scoring

The first 6 items that measure role ambiguity are positive statements and require direct scoring:

- Strong agreement - 1
- Agreement - 2
- Undecided - 3
- Disagreement - 4
- Strong disagreement - 5

The sum of the scores obtained through this first 6 items would be the score of the respondent on the role ambiguity. The score would range from 6 to 30. The higher the score, the role ambiguity is more.
The next 8 items measuring role conflict are negative statement and are scored in the reverse manner:

Strong agreement - 5
Agreement - 4
Undecided - 3
Disagreement - 2
Strong disagreement - 1

The sum of the scores obtained through this next 8 items would be the score of the subject on the role conflict. Would range from 8 to 40.

The greater the overall score the more role conflict.

Achievement Motivation Questionnaire:

The questionnaire has 8 items and the following instructions were given:

“Please kindly tick “YES” or “NO” against each answer. Please be sure to answer each question and decide one way or another, even if it is hard to make a decision”.

Scoring

The scoring is done as follows:

One mark for ‘Yes’ answers to questions 2, 3, 7, 8 and

One mark for ‘No’ answers to questions 1, 4, 5, 6.
The sum of the scores obtained through this two methods, would be the score of the subject on achievement motivation questionnaire. The score would range from 0 to 8. The great the score the more achievement motivation subject developed.

**III Job Involvement Questionnaire:**

*Instruction*

The scale consists of 20 item and the following instructions were given.

"Kindly finish the following data for items given below. This test consists of 20 statements. Read each of the following statements and give your responses. The response alternative are: Strongly agree, Agree, Disagree, and Strongly disagree".

"Tick the response alternative, most appropriate as far as you are concerned."

*Scoring*

Scoring was done in two ways according to instruction given in the scoring key as suggested by the author’s Lodahl and Kejner. In direct scoring whatever number the subject had ticked will be taken as the score for that particular item. For the items 10,13,14,16,18, and 19 required direct scoring:

- Strong agreement - 1
- Agreement - 2
Disagreement - 3
Strong disagreement - 4

For the items 1,2,3,4,5,6,7,8,9,11,12,15,17 and 20 required reverse scoring:

Strong agreement - 4
Agreement - 3
Disagreement - 2
Strong disagreement - 1

The sum of the scores obtained through this two methods, would be the score of the subjection the job involvement questionnaire. The score would range from 20 to 80. The higher the score, the job involvement is more.

**STATISTICAL TREATMENT OF DATA**

The subjects were divided into particular groups with the help of the personal data of each subject.

The scores obtained by the various groups were analyzed with the following descriptive and inferential statistical techniques:

1) Descriptive Statistic i.e. Mean and Standard Deviation

2) Multivariate Analysis of Variance (MANOVAs)

3) Univariate ‘t’ Test
4) One-Way Analysis of Variance follow by Scheffé’s Post-hoc. Comparison

5) Usual Bivariat correlational Analysis.

6) Canonical Correlations and Redundancy Analysis

These statistical techniques were applied and findings are interpreted in next chapter