CHAPTER IV

METHOD & PROCEDURE

In the preceding chapter we have reviewed many studies related with employees adjustment and have also discussed the influences of various factors that are responsible for bringing about adjustment or maladjustment of employees. The purpose of the present chapter is to discuss and describe the methods and procedures that have been employed for the present study.

Fielder and others\(^1\) have suggested the following three classes of criteria for measuring adjustment:

1. Subjective Indices of adjustment which depend on subjects' report or self-evaluation.

2. Group Acceptance criteria which are based on group members' evaluation of the subject.

3. Personal Effectiveness criteria indicative of the subjects' ability to operate effectively.

The above mentioned indices or criteria have been classified by other writers as subjective and objective criteria.\(^2\) Subjective criteria is related to personal judgements either by an individual
about himself or by a group about an individual. Objective criteria relate to any external measure of effectiveness of an individual such as the personal records of productivity, profit, wages, sales, etc. We note that the subjective indices and group acceptance criteria come under the 'Subjective Criteria' proposed by Smith, whereas the personal effectiveness relates to 'objective criteria'. For every measurement the question of the criteria is the first and the foremost requisite. But the choice of criteria necessarily depends upon the design and the scope of the investigation. We have already stated in the chapter I that the present study is a comparative one and emphasis is to be laid on the extent and variety of employees adjustment of the U.P. Government Roadways and Private Bus Services.

If the purpose of measurement is concerned with employee efficiency and productivity then objective criteria are the most meaningful. However, the measurement of employees adjustment in terms of their satisfaction-dissatisfaction should largely depend on subjective criteria. Again, the choice of objective criteria for gauging the adjustment of drivers and conductors becomes obscure due to certain limitations. Firstly, no suitable measure could be evolved for assessing the productivity and mileage covered by them. Secondly, no objective records are maintained either by the Roadways or by the Private Bus Services for the mileage, accidents and earnings of each drivers and conductors.

As regards the subjective criteria the 'subjective indices'
may be more meaningful specially for finding out each employee's extent of satisfaction or dissatisfaction. Again, the personal practices, the question of supervision and subordination and specially the personal aspects of life cannot be more accurately investigated by means of 'group acceptance criteria'. Thus, it was decided to utilize the 'Subjective indices' of adjustment for the present investigation.

Employees adjustment could be measured by means of direct as well as indirect methods. Interviews, Questionnaires, Rating Scales and Projective Techniques are usually considered as direct methods of measuring adjustment. Indirect methods are such as 'My Job Contest', Friesen's Incomplete Sentence Blank, 'Error-Choice' method originally suggested by Hammond, etc. It is argued that direct methods are more appropriate in many respects than indirect methods. Again, the interviews and Projective Techniques are time consuming and usually it becomes difficult to analyse the responses quantitatively. Scales and inventories are more useful in these respects. These considerations supported the utilization of either an Inventory or a Scale. The Statistical implications and certain other limitations of scales are quite well known. The scales usually give an overall picture but seldom depict the influences of various factors that contribute to employees adjustment or maladjustment. If scales are prepared to determine the influence of various factors than a more tedious and laborious statistical procedure is involved. Thus,
it was decided that for the purposes of a comparative study, like ours, an Inventory will prove more useful than the scale.

Construction Of An Attitude And Adjustment Inventory:

A review of the existing test materials made it evident that a preliminary probe into the multiplicity of adjustment problems, faced by drivers and conductors, of both the organisations was essential. A more closer examination of the tests ruled out their utility on account of language difficulty. It was also observed that none of the tests could be effectively utilised for studying the specific factors that cause maladjustment among drivers and conductors. Thus, the primary task was to determine relevant areas of adjustment and to select representative items for each of them. For this purpose on-the-job observations and interviews of employees, executives and proprietors were conducted. On the basis of the on-the-job observations and interviews conducted, the following five areas of adjustment were selected:

1. Adjustment with the job.
2. Adjustment with the management.
3. Social Adjustment.
4. Home adjustment.

Items were chosen for each area and questions, representing the items, were framed. Some of the representative items of each area are
given below:

A - Job:

Do you feel that your job is permanent and secure? Yes ( )
No ( )

Do you think you possess proper ability and skill for the job you are doing? Yes ( )
No ( )

How many hours, per day, have you to spend on your job? Hours

What sort of roads you generally get? Good ( )
Ordinary ( )
Bad ( )

How do you feel about your job? I like it ( )
I am indifferent to it ( )
I dislike it ( )

B - Management:

Does the management or the proprietor give a sympathetic hearing to workers' complaints and grievances? Yes ( )
No ( )

Do you think that the management or the proprietor is interested in the welfare of the employees? Yes ( )
No ( )

How many days of various types of leave, per year, are granted ordinarily by the management to the employees of your category?

<table>
<thead>
<tr>
<th>Nature of leave</th>
<th>No. of days</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Leave with full pay</td>
<td></td>
</tr>
<tr>
<td>b) Leave with half pay</td>
<td></td>
</tr>
<tr>
<td>c) Leave without pay</td>
<td></td>
</tr>
</tbody>
</table>
Do your superiors give you impracticable or conflicting orders?  
Frequently ( )  
Occasionally ( )  
Rarely ( )

C - Social:

Do you think that your friends are as sincere to you as you are to them?  
Yes ( )  
No ( )

Do you have many friends?  
Many ( )  
A few ( )  
None ( )

How are your neighbours?  
Sympathetic ( )  
Selfish ( )  
Noble ( )  
Indifferent ( )  
Mean ( )  
Helpful ( )  
Jealous ( )  
Quarrelsome ( )

How do people think generally about drivers and conductors?  
They are Respectable ( )  
Good ( )

D - Home:

Have you good and cordial relations with most of your relatives?  
Yes ( )  
No ( )

Are you often troubled by the illness of your dependants?  
Yes ( )  
No ( )

How do you feel when you are with your members of the family?  
Happy ( )  
Indifferent ( )  
Worried ( )

Is your income sufficient for the following:  
Your necessaries ( )  
Education of children ( )  
Medicines ( )  
Recreation & Luxuries ( )
E - Moral and Religious:

With which of the following four principles do you agree most?

One should adopt unfair means for one's gains. ( )

One should not adopt unfair means even if it is to his disadvantage. ( )

One should sacrifice greater good of other person for a little advantage of his own. ( )

One should sacrifice his own advantages for the greater good of others. ( )

Do you perform prayers?

Regularly ( )
Occasionally ( )
Rarely ( )

How do you think about the religious-minded people? Are they desirable for the society. ( )
Just ordinary. ( )
Undesirable for the society. ( )

It will be observed that the Inventory consisted of Yes-No, open-ended, and multiple-choice response categories. The questions representing the various items of each area were randomized and the Inventory was translated into Urdu and Hindi (Appendix 'A' and 'B').

Preliminary Survey:

The Inventory prepared in this way was taken to Kanpur to
determine its reliability and validity. Kanpur is one of the important centres of Bus Services where three types of organizations were operating, namely, U.P. Government Roadways, Private Bus Services and Kanpur Nagar Transport. The Nagar Transport was run by the Kanpur Corporation and its jurisdiction was only limited to the city. The preliminary survey was started on 19th December, 1958, and continued till 15th January, 1959. During this period the Inventory was administered to 190 drivers and conductors of the Roadways, Nagar Transport and Private Bus Services. The drivers and conductors of the above mentioned three organizations were randomly selected from the list supplied by the organizations. Each subject (driver and conductor) included in the sample was personally approached and the purpose and aim of the study was fully explained. Some prominent drivers and conductors of each organization were also requested to participate in the study. But their cooperation was sought only for collecting the returns and to remove the suspicions, which had crept into the minds of some of their co-workers owing to the peculiar nature of our investigation. The returns were thoroughly checked and incomplete forms were eliminated. The responses were scored by means of a scoring key prepared for each area. Every positive response was given a score of one, neutral response was given a score of zero and the negative response was allotted a score of minus one.

Reliability coefficient of each area was calculated by
split-half method is given in Table 1.

<table>
<thead>
<tr>
<th>AREAS</th>
<th>Value of Split-half Reliability Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job</td>
<td>.70</td>
</tr>
<tr>
<td>Management</td>
<td>.96</td>
</tr>
<tr>
<td>Social</td>
<td>.74</td>
</tr>
<tr>
<td>Home</td>
<td>.75</td>
</tr>
<tr>
<td>Moral and Religious</td>
<td>.92</td>
</tr>
<tr>
<td>Total</td>
<td>.62</td>
</tr>
</tbody>
</table>

We find that reliability coefficient of each area is reasonably high, but that of the total inventory is considerably low.

Analysis of responses and interviews of the subjects, revealed certain shortcomings of the Inventory. Some of the important findings are given below:

1. Subjects understood well and responded more easily to Yes-No type of items.

2. Majority of the subjects obtained high positive scores on moral and religious items.

3. Subjects felt difficulty in responding to the open-ended and multiple-choice response categories.

4. The average time, required for administration, was found to be nearly 30 minutes which is considerably high.

5. The number of items under each area were unevenly distributed.

6. The scoring and tabulation of open-ended and multiple-choice categories was complicated and tedious.
7. Many important items such as treatment of supervisors, opportunity for advancement, emotional and health adjustment and adjustment with neighbours, etc., were not included in the Inventory.

It was realised that in order to prepare a truly objective Inventory the above mentioned facts must be taken into consideration. It was considered desirable to adopt a more systematic approach for proper assessment of employees adjustment.

Final Form of the Inventory:

Necessary modifications were made in the light of existing relevant literature and the findings of the preliminary survey. It was considered that job, management, social and personal areas were the important aspects of employees adjustment. These broad areas of employees adjustment have also been suggested by many experts in the field of Industrial Psychology. Moral and Religious area was dropped as the subjects showed no significant variation in their responses - everybody tended to score high in this area. Home area was changed to personal area, which now includes such factors as Emotional, Health, Financial, Home and Family Adjustment. The various factors of each individual area were selected on the basis of our own preliminary probe and the suggestions of many studies which we have reviewed in the Chapter III. A complete list of factors, of each area, that have been included in the inventory is given on the next page.
A - Job Adjustment: Working Hours; Fellow Workers; Passengers; Nature of work; Social Status of the job; Condition of the bus; Roads; Opportunity for rest; Pay and Advancement; Over-all job satisfaction.

B - Adjustment with Management: Treatment of supervisors; Facilities given by the Management; Attitude of supervisors towards employees; Employees attitude towards Management; Leave policy; Reward and punishment practices; Praise and Blame; Promotion and demotion practices.

C - Social Adjustment: Sociability; Neighbours; Friends; Attitude towards members of the community; Social participation.

D - Personal Adjustment: Financial; Emotional; Health; Home and Family.

Questions representing these factors were framed. The final form of the inventory consisted of 100 questions, 25 under each of the four areas. The questions, of various areas were randomised and the response categories were reduced to only Yes-No type of responses. The appeal on the cover page of the inventory was retained. The inventory was prepared in Hindi and Urdu and each item was thoroughly scrutinised and ambiguous or vague items were modified to convey clearly the desired meaning. In order to assure anonymity the subjects were not required to mention their names, address or reveal their identity.

Data Collection:

For administrative purposes the U.P. Government Roadways is divided into seven regions, namely, Gorakhpur, Lucknow, Allahabad, Agra, Bareilly, Meerut and Dehra Dun. For the present study it was
thought desirable to obtain samples from the following regions:

Western Region: Consisting of Meerut, Dehra Dun, Bulandshahr, Saharanpur, etc.

Central Region: Consisting of Agra, Aligarh, Mathura, Etah, Kasganj, etc.

Eastern Region: Consisting of Lucknow, Bare Banki, Kangur, Allahabad, Rae Bareilly, etc.

Samples of drivers and conductors of Private Bus Services and the Roadways have been taken from the above mentioned regions. The random sampling technique was employed to select drivers and conductors for administering the Inventory. A comprehensive list of drivers and conductors of each depot of the Roadways was compiled. 20 per cent of the subjects were randomly selected from such a list. Similarly a list of the subjects of Private Bus Service was prepared for each route and the subjects were randomly selected (20 per cent) from the list. The sample of subjects of the Roadways and Private Bus Services were taken from all such places where the two organizations co-existed. The Table 2 represents the number of employees, randomly selected, from each Region and included in the study.

<table>
<thead>
<tr>
<th>Regions</th>
<th>Number of Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Roadways</td>
</tr>
<tr>
<td>Eastern</td>
<td>178</td>
</tr>
<tr>
<td>Central</td>
<td>117</td>
</tr>
<tr>
<td>Western</td>
<td>110</td>
</tr>
<tr>
<td>Total</td>
<td>405</td>
</tr>
</tbody>
</table>
The subjects included in the sample were personally approached, report was formed with them and the Inventory was administered to them. Help of drivers and conductors, proprietors and the Roadways officers was obtained in the data collection. In this way the Inventory was administered to 405 and 135 drivers and conductors of the Roadways and Private Bus Service, respectively.

Scoring:

The returns of the Inventory were scored with the help of a set of punched scoring keys, prepared for each area. The keys were separately prepared for Urdu and Hindi forms. The method of scoring was very simple. On every key, for every area, holes were punched for 'Yes' and 'No' at the top and at the bottom of each page. Yes and No responses of items were also punched. The scorer was required to adjust the key in such a manner that the punched 'Yes' and 'No' at the top and the bottom, were clearly visible. Then the scorer had to count the tick marks (√), visible through the holes, and assign 1 mark to each of them. A score of one was given to every response depicting adjustment of the subject. The responses representing maladjustment were assigned no score. Thus, having counted the scores of each area, the scorer entered the score on various items of each individual on a tabulation sheet. In this way responses of each subject, on all the 100 items of the Inventory, were recorded.
Reliability:

The forms were also scored for determining the reliability of the Inventory by the split-half method. The 25 randomly distributed items of each area were alternatively divided into Part I and Part II. The total score of Part I and Part II of each subject, for each area, was found out. Product-Moment Coefficient of correlation between the set of scores in Part I and Part II was computed for each area and the split-half Reliability Coefficient was calculated by the Spearman-Brown Prophecy Formula. The reliability coefficient of each area is given in Table 3.

<table>
<thead>
<tr>
<th>Areas of Adjustment</th>
<th>Reliability Coefficient Value of Split-Half Reliability Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job</td>
<td>.83</td>
</tr>
<tr>
<td>Management</td>
<td>.94</td>
</tr>
<tr>
<td>Social</td>
<td>.80</td>
</tr>
<tr>
<td>Personal</td>
<td>.80</td>
</tr>
<tr>
<td>Total</td>
<td>.93</td>
</tr>
</tbody>
</table>

The reliability coefficient of each area is based on 472 cases but the reliability of the total inventory is based on only 105 cases. We find that the reliability coefficients are reasonably high. Thus it may be concluded that the present inventory is a reliable tool.

Validity:

The validity of the present inventory has been calculated both
by internal consistency and external criteria methods. 200 subjects were randomly selected from our tabulation sheets and inter-correlations (Tetrachoric Correlation) between various areas of the Inventory were calculated by means of Cosine-Pl formula. The values of intercorrelations are given below in Table 4.

**TABLE - 4**

<table>
<thead>
<tr>
<th>INTER-CORRELATIONS</th>
<th>Job</th>
<th>Management</th>
<th>Social</th>
<th>Personal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job</td>
<td>-</td>
<td>.32</td>
<td>.56</td>
<td>.69</td>
<td>.94</td>
</tr>
<tr>
<td>Management</td>
<td>-</td>
<td>-</td>
<td>.38</td>
<td>.65</td>
<td>.84</td>
</tr>
<tr>
<td>Social</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.47</td>
<td>.77</td>
</tr>
<tr>
<td>Personal</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.77</td>
</tr>
</tbody>
</table>

We find that the values of the intercorrelations vary from .33 to .94. The results clearly suggest that the Inventory is internally consistent. Rating by immediate supervisors, fellow workers, or other people who knew the subject very intimately was employed as external criterion. Each subject was judged by at least three persons regarding his adjustment to job, management, social and personal aspects of life. Each judge was required to evaluate the subjects' independently. The judges were asked to evaluate the subjects as adjusted or maladjusted on the basis of the following important variables:—

**Job:** Interested in work; works hard and sincerely; reasonably efficient; etc.
Management: Superior holds good opinion; satisfied with policy and practice of the management; treats superiors respectfully; seldom complains against management; etc.

Social: Friendly, cooperative; helpful; makes friends easily; seldom quarrels; etc.

Personal: Emotionally mature; keeps in good health; family life happy; no serious financial worries; etc.

The above mentioned variables were independently assessed by the three judges and any discrepancy in their rating led to the elimination of the individual from the list. In this manner two groups of adjusted \((N = 15)\) and maladjusted \((N = 17)\) employees were finally selected. The Attitude and Adjustment Inventory was administered to both the groups of employees. The responses were scored and t-test was applied to find out the significant difference between the means of the two groups. The t-values for each area are reported in Table 5.

**TABLE - 5**

<table>
<thead>
<tr>
<th>AREA</th>
<th>Calculated value of 't'</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job</td>
<td>6.21</td>
<td>Highly significant at 1% level.</td>
</tr>
<tr>
<td>Management</td>
<td>8.37</td>
<td>- do -</td>
</tr>
<tr>
<td>Social</td>
<td>4.98</td>
<td>- do -</td>
</tr>
<tr>
<td>Personal</td>
<td>7.53</td>
<td>- do -</td>
</tr>
</tbody>
</table>

The value of \(t\) with 30 df. at 1% level of significance = 3.64
The above-mentioned analysis clearly revealed that the Inventory fully discriminated between the adjustment and maladjustment of employees in each and every area.

So far we have discussed the methods and procedures of the study and preparation of the tool, to study differences in the extent of employees adjustment of the two organizations, i.e., Roadways and Private Bus Services. Now we would like to briefly mention the statistical tests and techniques that have been utilized to analyse the data.

**Statistical Methods:**

The information obtained and the data collected from the drivers and conductors of U.P. Government Roadways and Private Bus Services have been statistically analysed to draw inferences. It must be mentioned, at this point, that we have employed only relevant statistical techniques to analyse the data.

Measures of central tendency and variability have been extensively employed to analyse the extent of differences between employees' adjustment in the Roadways and Private Bus Services. Tate suggests that the measures of central tendency and variability "in addition to providing the basis for exact comparisons of the two series, are indispensable in the analysis and interpretation of a single series."13 Means and medians of employees' adjustment in various areas have been
calculated to compare the extent of employees' adjustment in the two organizations. The variability of a series may be more important and may reveal more about the series than average value. Again, "averages are always more meaningful and less susceptible to misinterpretation when accompanied by statements regarding variability." Thus, together with means and medians, we have also reported the various measures of variability. As regards the measures of variability, the quartile deviations and standard deviations have been calculated and reported for both the series, the Roadways and the Private Bus Services. These measures are more trustworthy and informative as compared to other measures of variability.

The percentages have been reported in order to make the results more easily understandable. The test of proportion has also been employed to analyse the differences, on various items, between the proportions of those employed in the Government Roadways and Private Bus Services.

When two independent samples of sizes \( n_1 \) and \( n_2 \), with sample proportions \( p_1 \) and \( p_2 \) are to be compared and the significant difference between them is to be calculated then the test of proportion is the most suitable test. The formula, given on the next page, is used with null hypothesis that the two proportions come from the same population.
\[ z = \frac{p_2 - p_1}{\frac{\sqrt{n_1 n_2}}{n_1 + n_2}} \]

\[ \sqrt{\frac{p(1-p)}{n_1}} + \frac{p(1-p)}{n_2} \]

Where \[ p = \frac{n_1 p_1 + n_2 p_2}{n_1 + n_2} \]

Kolmogorov-Smirnov's two-sample test was used to analyse the differences between the adjustment of employees of the Roadways and the Private Bus Services. This test "is sensitive to any kind of difference in the distribution from which the two samples were drawn - differences in location (central tendency), in dispersion; in skewness, etc."\(^{16}\) The method, rationale and other considerations regarding the usefulness of Kolmogorov-Smirnov test has been fully discussed by Siegal.\(^{17}\)

On the basis of the statistical methods, given above, the data have been analysed and this analysis of the data and the interpretations of the findings have been studied in the next Chapter.

REFERENCE:


<table>
<thead>
<tr>
<th></th>
<th>Author(s)</th>
<th>Year</th>
<th>Reference</th>
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</thead>
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<tr>
<td></td>
<td>Laseau, L.N.</td>
<td></td>
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<tr>
<td>7</td>
<td>McMurry, R.N.</td>
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<td>Lawshe, C.H.</td>
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</table>