CHAPTER IV
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METHOD OF STUDY

The previous Chapter has given an account of the evolution of the study wherein how the variables of the study were determined empirically and the development of the research instruments were discussed. The method of the study will be explained here.

Subjects

Subjects for the study were finally chosen from 20 industrial organizations. The subjects consisted of: 1. Managers who head different departments in industrial organizations; and 2. Managers' superiors in the organizations selected for the study.

The organizations chosen for the study represented a cross section of industries in the city of Madras. At the time of the study there were 48 industrial organizations (factories) in Madras employing 500 or more workers. Initially, a sample of 25 factories were chosen on the basis of systematic random sample method. Later on, 5 organizations were dropped from the original list of 25 due to certain difficulties. The final list consisted of 20 organizations.
The heads of departments from 20 organizations and superiors of those managers formed the samples. Subjects consisted of 210 managers and 75 superiors. The investigator met either individually or in small groups all the subjects and explained in detail the purpose of the study and the nature and characteristics of research instruments. It was made clear to the subjects that the study was intended only for the purposes of an academic research and not for administrative uses. The need for scientific study of managerial effectiveness was discussed with enthusiasm by the subjects. The voluntary nature of their participation was made clear to subjects. There was willing and enthusiastic participation by most of the subjects. A coding system was used to associate the superior's rating with the appropriate manager. The coding system also permitted the investigator to identify the subjects and their organizations.

The instruments were printed and bound into a single volume. Each instrument contained a face sheet giving simple and detailed instruction with the help of examples in order to facilitate answering the questions. Over and above this, the investigator explained to the subjects the manner of filling up the questionnaires.

One hundred and seventy five managers and seventy five supervisors returned the filled up questionnaires. Out of these, 140 questionnaires filled up by the managers and 60
supervisory rating forms only were found usable. The rest were rejected because they were incomplete.

**Instruments and type of data generated**

1. **Need-satisfaction Questionnaire (NSQ):** Six different types of needs, their satisfactions and the strength (importance) of those needs were assessed through the questionnaire.

2. **Leader Behaviour Description Questionnaire (LBDQ) - Form XII:** Data on 12 leadership dimensions were generated by this.

3. **Self-description Inventory (SDI):** Four personality factors and three motivational factors were studied with the help of this instrument.

4. **Organizational Climate Questionnaire (OCQ):** Data on 10 organizational climate dimensions were generated using this questionnaire.

5. **Self-Rating Form:** The self-rating form was used to assess three aspects of a manager's job. They were: 1. The extent to which a manager is able to achieve the task goals of his position; 2. The extent to which he is rewarded for this; and 3. The extent to which a manager expended effort to achieve the goals of his position. Each of the above aspects was assessed on a seven point scale ranging from 1(minimum) to 7(maximum).
6. **Biographical form**: It generated data such as experience, career growth in management position, salary history etc.

7. **Supervisory Rating Form**: Supervisors of managers used this form to rate managers on two aspects of their work: 1. The overall effectiveness of managers to achieve their task goals; and 2. The extent of effort expanded by them to achieve these goals. Just like the self rating form, the supervisory rating form also contained a seven-point scale to rate the managers.

8. **Index of Managerial Effectiveness (IME)**: A detailed discussion of the criterion problem and the development of a psychometrically valid index of managerial effectiveness is discussed hereunder.

**Managerial Effectiveness**: The problem of criteria and development of an index of managerial effectiveness (IME)

The problem of establishing valid and reliable criteria has been always difficult and beset with controversies in industrial and organizational psychology. The debate as to the usefulness of single (composite) versus multiple criteria has generated much thinking and theorizing (Wallace and Weitz, 1955; Kendall, 1956; Katzell, 1957; Taylor and Nevis, 1961; Weitz, 1961; Biaseuvel, 1965; Wallace, 1965; Guion, 1967; Owens and Jewell, 1969; Bray and Moses, 1972; and Patricia Smith, 1976). The indecisive treatment of the subject in most standard
publications of industrial psychology is evidence that the controversy is not yet satisfactorily resolved.

Requirements of criteria

The selection and development of a criterion are crucial and critical phases of any research programme. For a criterion to qualify three conditions should be met. They are: 1. Relevance; 2. Freedom from contamination; and 3. Reliability.

Criterion relevance relates to the adequacy of criterion measures as indices of true abilities or effectiveness of individuals in fulfilling some important goal or goals of an organization. The objective oriented approach and 'planned performance planning' by Patton (1960) and McConkey (1962) and the distinctions made by Astin (1964) between 'conceptual criterion' and 'criterion performance' are helpful in establishing relevant criterion measures.

Regarding freedom from contamination, any factor that distorts true reflection of individual differences should be controlled and avoided. The ever present possibility of many forms of criterion contamination "should not cause us to throw up our hands in despair, for there are ways of minimizing if not eliminating them"(McCormick & Tiffin, 1979).
Criterion Dimensions:

As jobs have various facets multiple criteria are needed to assess the various facets (Sashore, Indik & Georgopoulos, 1960 and Pores, 1962). When criteria are highly inter-correlated, there is no problem involved in the selection of which criterion to use; in such a situation any given criterion, or an 'overall' criterion could be used since other criteria are highly related to it. But when criteria are not highly correlated, the investigator has to choose from the following alternatives: 1. Select one of the criteria and use it; 2. Use each criterion independently; 3. Combine the various criterion dimensions into a single 'composite' criterion, using some weighting scheme; and 4. Develop an 'overall' criterion, usually ratings (such as supervisors' ratings of overall job performance (McCormick & Tiffin, 1974).

The investigator has resorted to alternative three, i.e., combine the various criterion dimensions into a single 'composite' criterion, which will be explained shortly. Some of the criterion measures usually used so far to assess managerial success are: salary and organizational levels attained by the manager corrected statistically for age or length of time, superior's rating of the manager, attitude surveys of managers' subordinates, quantity of organizational output, cost related indices such as scrappage rates, tool replacement costs, cost of
processing standard work units, criteria of employee relations effectiveness (Merrihue & Katzell (1955) and other objective measures (Campbell et al, 1970). Attempts have been made and is being made to combine with other measures, peer ratings and subordinates ratings of managerial effectiveness. A more recent technique is that of 'scaled expectations' (Smith & Kendall, 1963; Kendall & Hilton, 1965; and Fogli, Hulin & Blood, 1971). Campbell et al (1970) point out that none of these has yielded any high hope for using such indicators for measuring managerial effectiveness.

For the purposes of the present study, the investigator chose a number of criterion measures such as age, initial salary, present salary, years of service of the manager in the company, number of promotions obtained, self rating and superior's rating. Inter-correlations among the criterion measures were calculated as a first step towards developing an index of managerial effectiveness. The correlation matrix is given in Table 8.
**TABLE 8**

Correlation Matrix of Seven Criterion Variables Chosen to Develop Index of Managerial Effectiveness

\(N = 140\)

<table>
<thead>
<tr>
<th></th>
<th>1.0000</th>
<th>0.2916**</th>
<th>0.1558@</th>
<th>0.5857**</th>
<th>0.3660**</th>
<th>0.1128@</th>
<th>0.0556@</th>
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<td>1.0000</td>
<td>0.5296**</td>
<td>0.6828**</td>
<td>0.5843**</td>
<td>0.0706@</td>
<td>0.0256@</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td>1.0000</td>
<td>0.0053@</td>
<td>0.0430@</td>
<td>0.0203@</td>
<td>0.2440**</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td>1.0000</td>
<td>0.6771**</td>
<td>0.0641@</td>
<td>0.0259@</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
<td>1.0000</td>
<td>0.1272@</td>
<td>0.2428**</td>
<td></td>
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<tr>
<td>5.</td>
<td></td>
<td></td>
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<td>1.0000</td>
<td>0.0959@</td>
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<tr>
<td>6.</td>
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<td>1.0000</td>
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<td>7.</td>
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</table>

Note: ** \(P > .01\)

@ Not significant

The results presented in Table 8 indicate positive and significant correlations at the .01 level among a number of criterion variables. Among the variables that are significantly correlated three criterion variables were chosen for developing index of managerial effectiveness for the following reasons.

Of the various types of criteria used in personnel psychology, supervisory ratings are used most frequently. An analysis by Lent, Aurbach and Levin (1971) of 406 studies published in Personnel Psychology indicates that 897 of 1506 criteria used in those studies were supervisory
evaluations. Though supervisory rating is not free from contamination and considered as one of the 'soft' criteria, it has certain advantages (Campbell et al., 1970). Some of the advantages are: 1. Supervisory ratings are based upon the overall impressions of the performance of a subordinate gained over a period of time, and 2. Salary increases, promotions etc. of subordinates are based upon the appraisal of more than one superior which is likely to offset the negative rater effects to a fair degree.

Table 8 shows that the correlation between superior's rating and present salary level of managers is positive and significant ($r = .2440$, significant at the .01 level). Hence salary level attained by the manager was taken as one of the criterion variables for calculating the index of managerial effectiveness. Superior's rating also could have been used but for the fact that the investigator could not obtain the ratings for 10 managers out of 140.

The second variable utilized for the computation of the index was number of promotions obtained by a manager. Promotion indicates the career growth of an individual. Hardly anybody is promoted in an organization for reasons of incompetence though occasionally a manager who is incompetent may be promoted for other reasons. Generally promotions are given to an individual because of his competence to achieve the goals of his position and consequent worth of the manager for the organization.
The result of the correlational analysis shows that number of promotions is positively and significantly correlated with superior's rating ($r = .2428$, significant at .01 level) and years of service ($r = 0.6771$, significant at .01 level). Hence promotion is a valid indication of the effectiveness of a manager.

The third criterion chosen was the rate of salary increase. Apart from the quantum of salary increase given as a reward for the performance effectiveness of a manager, the frequency with which such rewards are given to a person is another clue regarding his worth to the organization. Hence the rate of salary increase was also considered for the computation of the index of managerial effectiveness. Since the correlations among these three variables are only moderate, they represent different types of appraisals of a manager. Hence, the three criterion variables were combined to develop a composite criterion for the purposes of calculating the index.

Thus for the purposes of the present study, IME was calculated using the relative salary increase of a manager in a company, the rate of his salary increase and the rate of his promotion. The computation of the managerial index is discussed hereunder:
Let \( x' = \frac{x - \bar{x}}{\text{SD } x} \),

Where \( x = \) Present salary of a manager
The highest salary of a manager
in that Co.

\( \bar{x} = \) the arithmetic mean of \( x \)
\( \text{SD } x = \) standard deviation of \( x \)

Now \( x' \) will be distributed with mean zero and \( \text{SD l} \).
Assuming that \( x' \) is distributed normally, it will vary
from -3 to +3. By transforming \( x' \) to \( A \), \( A = x' +3 \). Then
\( A \) is distributed normally with mean 3 and \( \text{SD l} \). Therefore
\( A \) will vary from zero to 6.

Let \( y' = \frac{y - \bar{y}}{\text{SD } y} \),

Where \( y = \) Salary increase of a manager in a Co.
number of years of service in that Co.

\( \bar{y} = \) the arithmetic mean of \( y \)
\( \text{SD } y = \) standard deviation of \( y \)

Now \( y' \) will be distributed with mean zero and \( \text{SD l} \).
Assuming that \( y' \) is distributed normally, it will vary from
-3 to +3. By transforming \( y' \) to \( B \), \( B \) equals \( y' +3 \). Then
\( B \) is distributed normally with mean 3 and \( \text{SD l} \). Therefore,
\( B \) will vary from zero to 6.

Let \( z' = \frac{z - \bar{z}}{\text{SD } z} \)

Where \( z = \) number of promotions obtained by a manager
number of years of service in that Co.

\( \bar{z} = \) the arithmetic mean of \( z \)
\( \text{SD } z = \) the standard deviation of \( z \)
Now \( z' \) will be distributed with mean zero and \( \text{SD} 1 \).
Assuming that \( z' \) is distributed normally, it will vary from \(-3\) to \(+3\). By transforming \( z' \) to \( C \), \( C = z' + 3 \). Then \( C \) is distributed normally with mean 3 and \( \text{SD} 1 \). Therefore, \( C \) will vary from zero to 6.

Hence Index of Managerial Effectiveness (IME) is defined as follows:

\[
\text{IME} = \frac{A + B + C}{18} \times 100
\]

Where \( A = \) the relative salary of a manager in a company adjusted to vary from zero to 6

\( B = \) the rate of salary increase of a manager in a company adjusted to vary from zero to 6, and

\( C = \) the rate of promotion obtained by a manager in a company adjusted to vary from zero to 6.

Since the maximum value of \((A+B+C)\) is 18 and minimum zero, IME will vary between zero and 100.

It has been noted that intercompany variation with reference to salary could be high even though years of service may be the same. To make the comparison of managers meaningful, existing salary of a manager in a company was divided by the maximum salary of a manager in that company. Similarly, instead of taking the raw
values of salary increase and the number of promotions, their rates were taken for computing the IME.

Selection of Criterion Groups for the Study

Using the IME, effectiveness indices of 140 managers constituting the sample were calculated. Then the managers were rank ordered on the basis of the index scores and divided into three groups with regard to their effectiveness: 1. The High effective; 2. The Medium effective; and 3. The Low effective. The upper 30 managers on the ranked list constituted the 'High', the middle 30 constituted the 'Medium' and the lowest 30 constituted the 'Low' group managers respectively with regard to effectiveness.

The classification of managers on their effectiveness into high, medium and low using IME received substantial validation from discriminant function analysis. The results of the discriminant function analysis is discussed in Chapter V. The statement of the problem and hypotheses are presented in the next Chapter.