CHAPTER I

THE RESEARCH DESIGN.

Introduction:

Industrialisation is a major common goal, among the third world countries. In these countries a drive for diversification of the economy through rapid industrialisation was considered necessary for upliftment of the economy from the bootstraps of poverty and unemployment. It was expected to bring about material prosperity, modernisation and civilisation in their traditional economies.

But the experience indicates that industrialisation in these countries has proved to be less beneficial in transferring the surplus labour from agriculture as well as in the regional distribution of gains from development. The concentration of industries in few favourable centres/regions has led to disparities in regional development. The structure of spatial organisation in these countries consists of big agglomerations surrounded by the vast hinterlands. Such a spatial organisation is not conducive to promote development. Moreover, equality today demands equal distribution of fruits of development not only among different social classes but also among different regions of a national economy. Therefore removal of
regional disparities through promotion of industries in backward regions has become the most important component of industrial policy in recent years in both developed as well as developing countries.

Statement of the Problem:

Industrial development in India is at a very slow rate and the significant feature of it is its concentration in few regions/states in the country. Therefore, there are 'inter-state' and 'intra-state' disparities in industrial development. The inter-state disparities in industrial development have arose due to the concentration of industries in few advanced states like Maharashtra, Gujarat, West Bengal and Tamil Nadu. The other states like Madhya Pradesh, Bihar, Uttar Pradesh, Rajasthan, Orissa etc., have not received any significant share in industrial growth.

Industrial development in these states - both advanced and backward - is not spatially distributed within the state. It has been concentrated in few centres which has given rise to the problem of intra-state disparities. In Karnataka, it is observed that, there is uneven and lopsided industrial development. Many industries are concentrated in and around Bangalore. The Hyderabad Karnataka region which includes Bidar, Gulbarga, and Raichur, the northern most part of the state is extremely
backward in industrial development. In recent years both the central and state governments are trying hard to remove the imbalances. Consequently, a number of incentives and subsidies have been introduced to attract and promote industries in this region.

In this context, it is essential to observe the spread of industrial development within this backward region and analyse its contribution for the regional development. Therefore the present study intends to analyse the structure and spread of industrial development within the region and assess its contribution to promote balanced regional development in this backward region.

Justification for the Study:

There is dearth of studies pertaining to analysis of industrial location and regional development in the backward regions. This study is first of its kind, analysing the industrial structure and regional development in Hyderabad Karnataka region as no such study in the past is carried out in this backward region.

Further since industrial development in backward regions is accepted as one of the strategy to remove the regional disparities in the country. Therefore, it is imperative to analyse the impact of these policies on industrial structure and its spread in a backward region.
In recent years, many industries have come up in Hyderabad Karnataka region, hence it is essential to study their location trends in the region and the impact of it on regional development in this region.

Review of Literature:

There are number of studies available on industrial location and regional development. These studies may be grouped into three categories.

1. Studies on Industrial Location.
2. Studies on Regional Development.

Studies available on industrial location, in theoretical literature, emphasise on the cost and demand factor in determination of location.

In the cost approach Von Thunen, considers two significant factors: transport cost and rent of land in the theory of agricultural location. Launhardt attempt an analysis of location of specific manufacturing industries in terms of transport costs, market areas and raw material resources.¹

Weber's (1909) analysis considers three costs influencing location of manufacturing units. These are transport costs, labour costs and costs due to agglomeration. He emphasised the role of transport cost in location decision.

The other theorists like Palander (1935), Hoover (1948) and Ritschl also treated least cost point as the optimum location.

August Losch (1940) produced a theory of location with demand as a major spatial variable. The right approach to him is to find the place of maximum profits where total revenue exceeds total costs by greatest amount.

Recent theorists like Walter Isard (1956) and Melvin Greenhut (1956) have attempted to integrate both least cost and market demand approaches to identify the profit maximisation location. In such a situation the optimum


4. Losch, August., 'The Economics of Location', Yale University Press, USA, 1954 (First German Edition 1940).


profit maximising location may be neither least cost nor the maximum revenue location.

There are studies available on regional development which deal with the inter relationship between location of economic activity and the regional growth process. These also provide the analysis of a typical sequence of stages through which regions move during the growth process and the pattern of spatial structure that may emerge out of the interaction between the two.

The concept of growth pole, as developed by Perroux (1950) exists in abstract economic space. Development is polarised and the growth poles emerge as a consequence of the clustering of economic activities at some points in functional space.

The regional or geographical growth pole as developed by Boudeville (1966) is located in the polarised geographical space i.e., in an urban area.

The central place theory as developed by Christaller (1966) explains the existing spatial structure. The theory


seeks to explain the location and size, distribution of service activities over geographical space.

Studies related to transmission of growth process from the centre to the periphery and the analysis of the mechanism include Myrdal’s 10 (1957) 'backwash' and 'spread effects' which explain the cumulative causation process. Hirschman’s 11 (1958) 'polarisation' and 'trickling down' effects are similar to 'spread' and 'backwash' effects. He argues that growth is expected to trickle down from the centres over a period of time and may pull up the lagging regions around them.

The analysis of diffusion of innovations in a spatial structure is provided by Hagerstrand 12 (1967) with his "hierarchical" and "neighbourhood effects".

Few empirical studies on industrial location and regional development include Godbole's 13 (1978) study, which concentrates mainly on the industrial dispersal policies in


Maharashtra state, and their contribution to development of industries in the backward regions.

The National Committee on Development of Backward Areas (NCDBA) (1981) also evaluates the impact of various schemes and concessions in promoting industrial development in backward regions. It suggests a growth centre approach to promote development in backward regions.

Ramkrishna Sarma's work (1982) on 'Industrial Development of Andhra Pradesh' covering the period from 1960 to 1976, analyses the industrial growth in the state and its distribution over geographical space. It examines inter-regional disparities over a period of time. It also analyses the role of various promotional agencies in the industrial development of the state.

Sadhak (1986) examines the aspect of regional disparities in India in the light of some theoretical concepts about origin and growth of regional disparities and evaluates the impact of incentives, subsidies and location


regulations in inducing industrial development in backward areas. It is a study carried out in Maharashtra state.

Krishnamurthy’s\(^{17}\) (1990) study is an investigation into the industrial dispersal and regional development covering the period 1960 to 1981. It examines the regional disparities in Andhra Pradesh in industrial development. A detailed observations of the financial assistance, rendered by various state level promotional/financial agencies as well as the various schemes of subsidies, concessions and incentives has been analysed.

Thus, these studies deal explicitly with industrial location, regional development and incentives and concessions or dispersal policies. But an integrated view of the impact of industrial location on regional development is not taken into consideration. The present study is an attempt in this direction.

Objectives of the Study:

The major objectives of the study are as follows.

1. To review the impact of industrial location on regional development.

2. To examine the pattern of industrial location and regional development within the Karnataka state.

3. To examine the industrial development within Hyderabad Karnataka region.

4. To study the impact of industrial location on regional development and identify the backward areas in the region.

Hypotheses:

With these objectives in view, the following hypotheses have been framed.

1. There is uneven geographical distribution of industrial units in Karnataka State.

2. There is uneven distribution of industrial units in Hyderabad Karnataka region.

3. There is a significant association between industrial location and regional development.

Methodology:

The methodology of the present study can be broadly outlined as under.

A. Sources of Data:

The study is mainly based on secondary data. The Annual Survey of Industries (ASI) for census sector and sample sector of Karnataka state constitute the source of data in the study. Besides 'Statistical Abstract of Karnataka', Karnataka At A Glance, District At A Glance were used. These were issued by the Directorate of Economics and Statistics, Government of Karnataka, Bangalore.
The data on small scale industries published by the Directorate of Industries and Commerce Bangalore, as well as, the talukawise plan statistics published by Planning Department are also used extensively.

Besides these Census Reports, Government Reports, Books, Journals, News Papers etc., are used to collect the necessary data. Further the unpublished reports and statements available in government offices and experts have been used to strengthen the statistical and informative base of the study.

B. Data Analysis.

To analyse the industrial development statistical techniques like quotient of industrialisation, location quotient are applied both in the state and in the region. Besides these, co-efficient of localisation is also applied in the state analysis.

The quotient of industrialisation in general indicates the disparities in the levels of industrial development of different districts within the region/state. It is computed by dividing the percentage share of a given district/region in the industrial employment of a region/state by its share in the total population of the region/state i.e.,
Quotient of Industrialisation (QI) = \frac{\text{Percentage share of a district/region in the industrial employment of the region/state.}}{\text{Percentage share of a district/region in the total population of the region/state.}}

If the quotient of industrialisation in a district/region is greater than unity, it may be interpreted to mean that the district/region has a higher share of industrialisation within the region/state than it should have on the basis of its population. Conversely, the quotient value of less than unity for a district/region indicates that the district/region has less than its due share on the basis of population.

The location quotient indicates the degree of concentration of a particular industry at a particular place. Symbolically, location quotient may be defined as

\[ \text{Location Quotient} = \frac{\text{ei}^d}{\text{ed}} \]

\[ \text{(LQ)} = \frac{\text{Ei}}{E} \]

Where,

\( \text{ei}^d = \text{Employment in a given industry in a given district/region.} \)

\( \text{ed} = \text{Aggregate industrial employment in a given district/region.} \)

\( \text{Ei} = \text{Aggregate employment in a given industry at the regional/state level.} \)

\( E = \text{Aggregate industrial employment at the regional/state level.} \)

\( i = 1, \ldots, n \text{ industry group in the region/state.} \)
If the location quotient is equal to zero, it implies that the industry is not located in the district/region at all. If the location quotient is less than one the industry contributes less than proportionate share to industrial employment in the district/region as compared to state average. On the other hand if location quotient is greater than one, it indicates that the industry in the district contributes more than proportionate share to industrial employment in the region/state and therefore it is highly concentrated there. If location quotient is equal to one it indicates an even distribution of that industry within the region.

Coefficient of localisation (CL) is a measure which gives a precise degree of the localisation of any particular industry. This statistical index of localisation measures the local concentration of a given industry and compares it with the distribution of industries as a whole.

For the purpose of the present analysis, the coefficient of localisation has been computed by taking into consideration the distribution of factory employment in the different districts of Karnataka state.

The coefficient of localisation indicates the propensity of each industry for localisation. Those industries which show low coefficient of localisation have high propensity for dispersal. On the contrary, those
industries which show high coefficient of localisation have low propensity for dispersal. Industries with moderate coefficient of localisation have usually a wide choice of location determined by the relative pull of different factors.

To analyse industrial development within the State and within the Hyderabad Karnataka region a set of ten industrial indicators were used. The analysis is done at four different points in time i.e., 1970-71, 1975-76, 1980-81 and 1988-89 in the state and at 1975-76, 1980-81, 1985-86 and 1988-89 for the region. The integrated index of development is prepared both for the state and the region separately to have a clear picture of the spreading of industrial development within the state/region. The regional development in the Hyderabad Karnataka region is further analysed in detail during 1975-76, 1985-86 and 1988-89, with the help of twenty eight indicators, and a composite index of regional development is prepared.

To analyse the relation between industrial development and regional development in the Hyderabad Karnataka region, Karl Pearson's coefficient of correlation is calculated. The formula is

\[ r = \frac{\Sigma xy}{\sqrt{\Sigma x^2 \cdot \Sigma y^2}} \]
The significance of the correlation coefficient is tested by t test. The formula for t test is

\[ t = \frac{\sqrt{n - 2}}{\sqrt{1 - r^2}} \cdot r \]

The measure of dispersion i.e., co-efficient of variation (CV) is also used in the study.

Further the association between different variables like agricultural development, industrial development and infrastructural development with regional development is analysed with the help of multiple regression. The formula is \( y = a + b_1x_1 + b_2x_2 + b_3x_3 \) was fitted to the relevant data. The significance of correlation and regression coefficient was tested by Analysis of Variance i.e., ANOVA.

The association between industrial development and regional development is further analysed with simple linear regression analysis. The equation for linear regression is \( Y = a + bx \).

The degree of inequality in the industrial development is demonstrated by Lorenz Curve. For drawing Lorenz curve in the region, the following procedure is adopted.

1. Rank the talukas according to density i.e., employment divided by area.

2. Calculate the percentage of the total area in each taluka.
3. Sum these percentages cumulatively.

4. Calculate the percentage of the total population employed in registered factories.

5. Sum these percentages cumulatively.

6. Plot the cumulative percentages on X and Y axes.

If the distribution occurs unevenly, the curve moves away from the 'line of equal distribution' or equity line. If the distribution were even, the curve would be a straight line. To calculate the variability, the Gini coefficient is used. Gini co-efficient varies from 0 to 1. Zero indicates even distribution and one indicates extreme uneven distribution of units.

Besides these, statistical techniques like Spearman's Rank Correlation, Compound Rate of Growth, Percentages, Point Method (Plot), Graphs etc., are also used in the study.

C. Period of Analysis

The study broadly covers the period from 1970-71 to 1988-89. The non availability of the data in respect of many comparative indicators for a period earlier than 1970-71 was a major handicap in the selection of the time period.

D. Limitations of the Study

The study analyses industrial location and regional development in Hyderabad Karnataka region which is an
extremely a backward region in the state. Hence the conclusions drawn from the study have a limited applications and they may not be generalised. The limits are also set by the availability of data and the personal capacity of the researcher.

Design of the Study.

The present study is divided into eight chapters.

Chapter I is introductory in nature and it spells out the research design of the present study explaining the objectives, hypotheses framed, the methodology used for data collection and analysis and the scheme of organisation.

Chapter II deals with industrial location and regional development within the established theoretical framework. It reviews the regional factor in the development process. It discusses factors influencing location of industries, the process of regional growth and the 'centri-petal' and 'centri-fugal' forces inherent in it, contributing to the expansion or contraction in regional inequalities in development.

Chapter III on 'Regional Dispersal Policies in India' evaluates the impact of various industrial policies and other measures on dispersal of industries in the backward regions. The chapter also analyses the incentives and concessions to backward areas, offered by both central
government and state government in detail.

Chapter IV on 'Industrial Development in Karnataka' examines the industrial development in India vis-a-vis Karnataka. It also analyses the structure, growth, regional distribution of industries in the State. It examines the pattern of industrial dispersal within and between districts/regions of the State, with the help of statistical tools, such as quotient of industrialisation, location quotient and co-efficient of localisation. To analyse the industrial development in the state a set of ten selective indicators of industrial development is chosen to prepare the integrated index of industrial development. The analysis is done for four different points in time i.e., 1970-71, 1975-76, 1980-81 and 1988-89. It identifies the industrialised, semi-industrialised, industrialising and non-industrialised districts in the state.

Chapter V gives an overview of the economy of Hyderabad Karnataka region and its constituent districts namely, Bidar, Gulbarga and Raichur. The nature of the district economies, their physical, social and economic characteristics are analysed in detail to produce a clear cut picture of this backward economy.

Chapter VI on 'Industrial Development in Hyderabad Karnataka Region' reveals industrial growth, structural ratios, industrial structure in the Hyderabad Karnataka
region. The trends in localisation and spatial distribution of industries in the region is analysed with the help of quotient of industrialisation and location quotient. The degree of concentration of factories in the region is also analysed with the help of Lorenz Curve. The integrated index of industrial development is prepared on the basis of a set of ten indicators for different time periods such as 1975-76, 1980-81, 1985-86 and 1988-89 periods and the industrialised, semi-industrialised, industrialising and non-industrialised talukas in the region are identified.

Chapter VII on 'Industrial Location and Regional Development in Hyderabad Karnataka Region' analyses regional development for three different points in time i.e., 1975-76, 1985-86 and 1988-89, on the basis of a set of twenty eight socio-economic indicators of development. On the basis of integrated index of development the talukas are grouped as highly developed, developed, backward and highly backward. These groups were statistically compared and analysed with industrial development groups. The association between industrial development and regional development is analysed with different statistical tools.

The last Chapter (chapter VIII) 'Summary, Conclusions and Suggestions' concludes with the major conclusions arrived at in the foregoing analysis and on the basis of them provides few suggestions regarding future course of industrial development in the region.