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CHAPTER:-7

Conclusion

7.0 Introduction:-

In this chapter, an attempt is made to integrate various threads of analysis developed in earlier chapters pertaining to –“A comparative Analysis of Regional Industrial Development: Pre and Post Economic Reforms with Special Reference to Gujarat”. This chapter has been divided into following three parts:

Part one (7.1) presents a brief summary of the analysis in the study.

Part two (7.2) discusses Findings and Suggestions of the study.

Part three (7.3) briefly deals with the limitations of the study and points out the areas for further research in this field.

7.1 Brief Summary of the Analysis in the Study:-

❖ A detailed discussion of concepts of Economic Reforms, Economic Development, Industrial Development and Regional Development is presented in the Chapter One.

❖ The subject related explanations of various studies are covered in the Chapter Two. It is divided into three divisions – studies on Indian economy, state-wise inter-regional comparison studies, and studies on Gujarat State. Here, importance is given to studies related to pre and post economic reforms, a summary of which is as follows:

1) There is no improvement in rural poverty and sustained reduction in unemployment rates during economic reforms period in India.

2) India’s growth process has polarized the economy.
3) The shares of the manufacturing sector and the tertiary sector have increased compared to the share of primary sector in India after economic reforms.

4) In India, industrial states are growing much faster than the backward states.

5) The state bureaucracies need to be friendly to business and industry. So that the encouragement policy of industry would became successful.

6) The study of five states – Gujarat, Haryana, Kerala, Orissa and Punjab – Shows that Haryana and Punjab have higher level of income, Gujarat is investment friendly, Kerala is the best for human development, where as Orissa has a high poverty level.

7) The study of Karnataka and Maharashtra shows that there is higher centralization of industry in developed regions.

8) The study of district wise Industrial development of Karnataka shows that there is a need to diversify industrial growth geographically in a planned manner in order not only to have balanced regional growth but also to tap the resources available in various parts of the state.

9) The study of growth of industry in Andhra Pradesh Shows that in the general developmental process the service sector is gaining increasing prominence, specially after the information technology revolution in Andhra Pradesh.

10) The study of changes in the Madhya Pradesh economy shows that the state in spite of being in the low income group, its process of development has increased after liberalization due to growth in industrialization and education sector.

11) Gujarat requires framing efficient policy to overcome the problems of inefficient management to water resources, population pressure and availability of energy for its speedy economic development.

12) In the face of the decline in the agriculture sector the economic growth of Gujarat is volatile.
13) In spite of its lead in the industrialization Gujarat lags behind in terms of the quality of employment and human development.

14) Developed regions in Gujarat have benefited from the beginning because of industrialization, while less developed regions are ignored which shows regional disparity in the state.

15) Most of the investment in Gujarat seems to be concentrated in regions known as Golden corridor and silver corridor which has not helped rural Gujarat.

16) The response to the vibrant Gujarat policy has been positive, which has provided a diversified structure of industry.

17) The state government’s policy of physical infrastructure development can be credited for the development of industry in Gujarat.

18) Gujarat has to contemplate seriously has it can avoid paying a high price for its speedy industrial development in form of grave pollution problem.

- The explanation of the statistical tools and methods used for the study is presented in the Chapter Three. A conceptual explanation of analyses of various statistical tools and techniques is included here.

- The indicators of industrial growth are measured by $\beta$- Growth Rate, Average, Standard Deviation and Coefficient of Variation (C.V.) in the Chapter Four, results of which are as follows:

  1) Looking to the results of $\beta$ growth rate a negative growth rate is observed in the pre economic reforms period in one indicator – Number of Workers. While a positive growth rate is observed in all the indictors of post economic reforms in India.

  2) Looking from the Average point of view, seven indicators such as Number of Factories, Fixed Capital, Number of Workers, Wages to
Workers, Total Inputs, Value of Output and Profits show an increasing trend during the post economic reforms period compared to that of the pre economic reforms period in India.

3) Looking from the Coefficient of Variation point of view, the highest Coefficient of Variation is in Profit (103.89) after the economic reforms, which shows a wide variation in Profit in India.

- An attempt is made to study the trends of economic growth of Gujarat with reference to important changes in the economy together with changes in Net State Domestic Product and Per Capita Net State Domestic Product in the Chapter Five.

With reference to the Industrial development of Gujarat, an explanation of the $\beta$- growth rate, Correlation Coefficient (r) and Coefficient of Determination ($R^2$) is given for the measurement of the indicators of industrial growth such as Number of Factories, Fixed Capital, Number of Workers, and Wages to Workers, Total Inputs, Value of Output and Profits.

The Null Hypothesis has been tested by significance T-test of Mean in the common group of industries selected by changing NIC codes during 30 years of this study period- pre and post economic reforms- on the basis of the Annual Survey of Industries- Two digit NIC classifications, a summary of which is as follows:

1) Gujarat is one of the fast developing states of India. With the help of technology Gujarat has made many achievements in the agriculture sector. Animal husbandry and dairying have played a vital role in the rural economy of Gujarat.
Gujarat is the largest producer of milk in India. An Amul milk cooperative federation product is well known all over India and is Asia’s biggest dairy.

The government takes effective measures to make agriculture progressive through “Krishi Mahotsav”.

The agriculture department has given Soil Health Cards to improve the quality of the agricultural soil. Here the soil is tested scientifically for various properties like productivity, mineral composition, water retaining capacity and others.

The farmers are provided facilities of E–market through the internet together with Gujarat Niyamrit Bazar Sangh to keep them informed about the prices of the agricultural products.

Besides this the farmers are given “Kisan Credit Cards” to increase their borrowing capacity from the commercial banks.

2) The state of Gujarat is one of the highly industrialized states in India. Gujarat organized Vibrant Gujarat Global Investors Summit every year. This provides information about Gujarat to national and international investors which has helped Gujarat to become the highly investor friendly state of India.

The liberalization policy of the central government, Gujarat has provided remarkable encouragement to industries. This has led to the development of engineering, textiles, chemicals, soda ash, cement, fertilizers and petrochemicals industries. Gujarat produces about 90% of India’s required amount of soda ash and gives the country about 60% of its national requirement of salt.

3) The state domestic product is an important macro economic indicator which is used to measure the growth of the state. The calculation of the
state income is done at the constant price is shows changes of the state income more accurately because the commodity price changes are not taken into consideration.

In Gujarat, with reference to annual growth rate of net state domestic product many changes have turned positive after 1992-93, which were negative before the reforms.

4) In any economy, for its income agriculture, industries and service sector contributions are important. The increasing contribution of the secondary and tertiary sector compared to the primary sector in economy is indicative of development.

It is seen here that the share of the primary sector was 39.9% in 1980-81, which decreased to 13% in 2009-10. In contrast to this, the share of the secondary sector has increased to 27.9% from 22.6%. Similarly, the share of the service sector has also increased to 59.1% from 37.4% in Gujarat state.

5) Per capita net state domestic product is an important tool to measure regional disparities. The overall picture of per capita net state domestic product shows improvement after 1990-91, which is a positive sign for people’s standard of living in Gujarat.

6) Here, looking to the percentage analysis before the economic reforms, the first rank with the highest Mean in number of factories, number of workers, wages to workers was textile and in fixed capital, total input, total output, profits was chemicals. While the last rank with the lowest Mean in number of factories, fixed capital, number of workers, wages to workers, total input, total output was leather industries and in profits was fabricated metal industries.
After the economic reforms, the first rank with the highest Mean in number of factories was machinery equipment, in fixed capital, wages to workers was chemicals, in number of workers was textile, in total input, total output, profits was rubber, plastic, cock, petroleum industries. While the last rank with the lowest Mean in all the industries was leather industries.

- A comparative study is made between Gujarat and common geographical perspective states (such as Maharashtra, Rajasthan and Madhya Pradesh) and other developed states (such as Maharashtra, Andhra Pradesh, Karnataka and Tamil Nadu) in the Chapter Six, a summary of which is follows:

1) A comparative study of Gujarat and common Geographical perspective states (such as Maharashtra, Rajasthan and Madhya Pradesh) of India indicates that:

   The highest average Number of Factories, Number of Workers, Wages to Workers, Total Input, Value of Output, and Profit are seen in Maharashtra before and after economic reforms. Maharashtra is at the first position in average Fixed Capital before economic reforms, and it is at the second position after economic reforms.

2) A comparative study of Gujarat and other Developed states (such as Maharashtra, Andhra Pradesh, Karnataka and Tamil Nadu) of India indicates that:

   - The highest average Number of Factories is seen in Maharashtra before economic reforms, whereas it is in Tamil Nadu after economic reforms.
Here, **Gujarat is at the fourth position** in average Number of Factories before and after economic reforms.

- The highest average Fixed Capital is seen in Maharashtra before economic reforms, whereas it is in Gujarat after economic reforms.

  Here, **Gujarat is at the second position** in average Fixed Capital before economic reforms.

- The highest average Number of Workers is seen in Maharashtra before economic reforms, whereas it is in Tamil Nadu after economic reforms.

  Here, **Gujarat is at the fourth position** in average Number of Workers before and after economic reforms.

- The highest average Wages to Workers is seen in Maharashtra before and after economic reforms.

  Here, **Gujarat is at the third position** in average Wages to Workers before and after economic reforms.

- The highest average Total Input is seen in Maharashtra before and after economic reforms.

  Here, **Gujarat is at the second position** in average Total Input before and after economic reforms.

- The highest average Value of Output is seen in Maharashtra before and after economic reforms.

  Here, **Gujarat is at the second position** in average Value of Output before and after economic reforms.
• The highest average Profit is seen in Maharashtra before and after economic reforms.

Here, **Gujarat is at the second position** in average Profit before and after economic reforms.

7.2 **Findings and Suggestions of the Study**:-

7.2.1 **Findings**:-

**According to the Objectives Numbers 1 and 3**:-

With reference to the objective (1) related to the performance and growth of industrial sector of Gujarat: the sectorial composition of changes in NSDP shows that the contribution to the economy from the **primary sector has constantly decreased**. The sectoral composition of NSDP (in percentage) of the **Secondary sector** of Gujarat state in the year 1980-81 was 22.6 % which increased to 31.3 % in 1990-91, which decreased 29 % in 2000-01, and again decreased 27.9% in 2009-10.The **secondary sector** contribution has **fluctuated**, and that of the **tertiary sector has constantly increased**.(Table 5.3 and Graph 5.5)

With reference to the objective (3) related to the changes in the industrial structure of Gujarat after the economic reforms: Seven indicators such as Number of Factories, Fixed Capital, Number of Workers, and Wages to Workers, Total Inputs, Value of Output and Profits are selected as the main indicators of industrial growth of Gujarat.

The growth rate during Pre economic reforms period-1980-81 to 1989-90-is found to be negative with respect to the number of factories, and number of workers. The growth rate during Post economic reforms period-1990-91 to
2009-10 is found to be positive with respect to all indicators. (Table 5.5 and Graph 5.10)

This clearly indicates a positive effect of the economic reforms in Gujarat.

**According to the Objective Numbers 2:-**

With reference to the objective (2) related to evaluate the industrial development of Gujarat and compare it with certain other states with specific perspectives: A comparative study of **Gujarat** and **common Geographical perspective states** (such as Maharashtra, Rajasthan and Madhya Pradesh) of India indicates that: **Gujarat is at the second position** in average Number of Factories, Number of Workers, Wages to Workers, Total Input, Value of Output, and Profit before and after economic reforms. Gujarat is at the **second position** in **Fixed Capital** before economic reforms and is in the **first position** after economic reforms. (Graphs 6.1 to 6.7)

A comparative study of **Gujarat** and **other Developed states** (such as Maharashtra, Andhra Pradesh, Karnataka and Tamil Nadu) of India indicates that: **Gujarat is at the second position** in average Total Input, Value of Output, Profit, **at the third position** in average Wages to Workers, **at the fourth position** in average Number of Factories, Number of Workers before and after economic reforms. Gujarat is at the **second position** in **Fixed Capital** before economic reforms and is in the **first position** after economic reforms. (Graphs 6.8 to 6.14)

These observations indicate that Gujarat has to put in more economic and political efforts (creating encouraging environment for industries and liberating industries from bureaucratic interferences) to become the number one state in India.
According to the Objective Numbers 4:-

With reference to the objective (4) related to achieve results of correlation and regression analysis between various variables such Number of Factories, Number of Workers, Fixed Capital, Total Input, Value of Output and Profits in Gujarat: the results of **T-test for significance test of coefficients of correlation** between two variables a negative linear correlation is observed in the pre economic reforms period in Number of Factories and Number of Workers, Number of Workers and Value of Output, and Number of Workers and Profits; while a positive linear correlation is observed in all the indicators of post economic reforms. (Point 5.3.1.2)

The statistical analysis of the growth rate, coefficients of correlation and T-test show that there is a noteworthy positive effect of economic reforms in selected indicators in Gujarat.

According to the Objective Numbers 5:-

With reference to the objective (5) related to make a comparative study of the ratio analysis of the Textile and Chemical industries in Gujarat: In terms of ratio analysis the overall condition of the textile industry seems to have deteriorated after the reforms. (Table 5.20 and Graph 5.32)

In terms of ratio analysis the overall condition of the chemical industry seems to have improved after the reforms. (Table 5.21 and Graph 5.33)
According to the Null Hypotheses Numbers 1 to 6:-

Here, **T-test** is used to work out the significance test of **coefficients of correlation between two variables** for indicators of industrial growth of Gujarat.

**Number of Factories (X₁) and Number of Workers (X₃):- [(1)H₀] &[(2)H₀]**

(Pre and Post Economic Reforms Period)

The result of T-test for significance test of coefficients of correlation between the two variables such as Number of Factories (X₁) and Number of Workers (X₃) shows that the $R^2$ is **0.1060 before the economic reforms**. It is a low correlation between the two variables, whereas the $R^2$ is **0.4615 after the economic reforms**. It is a Medium correlation between the two variables.

Here, it is seen that the hypothesis of No correlation between numbers of factories(x₁) and numbers of workers(x₃) was accepted for the pre economic reform period, while it is rejected for the post economic reform period.

This shows that there is a correlation between numbers of factories(x₁) and numbers of workers(x₃) moved from Low to Medium Correlation after Economic Reforms. (Scatter Graphs 5.11 and 5.12)

**Number of Workers (X₃) and Value of Output (X₆):- [(3)H₀] &[(4)H₀]**

(Pre and Post Economic Reforms Period)

The result of T-test for significance test of coefficients of correlation between the two variables such as Number of Workers (X₃) and Value of Output (X₆) shows that the $R^2$ is **0.1560 before the economic reforms**. It is a low correlation between the two variables, whereas the $R^2$ is **0.7455 after the economic reforms**. It is a High correlation between the two variables.
Here, it is seen that the hypothesis of No correlation between Number of Workers ($X_3$) and Value of Output ($X_6$) was accepted for the pre economic reform period, while it is rejected for the post economic reform period.

This shows that there is a correlation between Number of Workers ($X_3$) and Value of Output ($X_6$) moved from Low to High Correlation after Economic Reforms. (Scatter Graphs **5.13** and **5.14**)

**Number of Workers ($X_3$) and Profits ($X_7$):** - $[(5)H_0]$ & $[(6)H_0]$

(Pre and Post Economic Reforms Period)

The result of T-test for significance test of coefficients of correlation between the two variables such as Number of Workers ($X_3$) and Profits ($X_7$) shows that the $R^2$ is **0.0150 before the economic reforms**. It is a low correlation between the two variables, whereas the $R^2$ is **0.7221 after the economic reforms.** It is a High correlation between the two variables.

Here, it is seen that the hypothesis of No correlation between Number of Workers ($X_3$) and Profits ($X_7$) was accepted for the pre economic reform period, while it is rejected for the post economic reform period.

This shows that there is a correlation between Number of Workers ($X_3$) and Profits ($X_7$) moved from Low to High Correlation after Economic Reforms. (Scatter Graphs **5.21** and **5.22**)

**According to the Null Hypotheses Numbers 7 to 13:**

A **common group of industries** is made for the analysis from the changing N.I.C. codes during 30 years of this study period-pre and post economic reforms- on the basis of the Annual Survey of Industries- Two digit NIC classifications.

The following main seven indicators are taken into consideration in each common group of industries for the measurement of the industrial growth
of Gujarat. For this T-test has been used for significance test of mean and each null hypothesis has been tested.

**Number of Factories:**- [(7)H₀]

The results of T-test pair two samples for Means the linear correlation is 0.96 which is close to 1. It means that there is a High correlation between the average Number of Factories before and after economic reforms.

Here, (7)H₀ is rejected. So, it is concluded that there is a difference between the average Number of Factories before and after 1991 due to economic reforms. (There is an increase in average Number of Factories)

**Fixed Capital:**-[(8)H₀]

The results of T-test pair two samples for Means the linear correlation is 0.60. It means that there is a Medium correlation between the average Fixed Capital before and after economic reforms.

Here, (8)H₀ is rejected. So, it is concluded that there is a difference between the average Fixed Capital before and after 1991 due to economic reforms. (There is an increase in average Fixed Capital)

**Number of Workers:** - [(9)H₀]

The results of T-test pair two samples for Means the linear correlation is 0.92 which is close to 1. It means that there is a High correlation between the average Number of Workers before and after economic reforms.

Here, (9)H₀ is accepted. So, it is concluded that there is a no difference between the average Number of Workers before and after 1991 due to economic reforms.
**Wages to Workers:** - [(10)H₀]

The results of T-test pair two samples for Means the linear correlation is 0.81. It means that there is a Medium correlation between the average Wages to Workers before and after economic reforms.

Here, (10)H₀ is rejected. So, it is concluded that there is a difference between the average Wages to Workers before and after 1991 due to economic reforms. (There is an increase in average Wages to Workers)

**Total Input:** - [(11)H₀]

The results of T-test pair two samples for Means the linear correlation is 0.76. It means that there is a Medium correlation between the average Total Input before and after economic reforms.

Here, (11)H₀ is rejected. So, it is concluded that there is a difference between the average Total Input before and after 1991 due to economic reforms. (There is an increase in average Total Input)

**Value of Output:** - [(12)H₀]

The results of T-test pair two samples for Means the linear correlation is 0.76. It means that there is a Medium correlation between the average Value of Output before and after economic reforms.

Here, (12)H₀ is rejected. So, it is concluded that there is a difference between the average Value of Output before and after 1991 due to economic reforms. (There is an increase in average Value of Output)

**Profits:** - [(13)H₀]

The results of T-test pair two samples for Means the linear correlation is 0.88. It means that there is a Medium correlation between the average Profit before and after economic reforms.
Here, \((13)H_0\) is rejected. So, it is concluded that there is a difference between the average Profit before and after 1991 due to economic reforms. (There is an increase in average Profit)

**Remarkable progress is observed in Gujarat after reforms in most of the 14 group of industries (Point 5.3.2) from the changing NIC codes industries.**

**According to the Null Hypotheses Numbers 14 to 19:-**

Here, an attempt is made to study the changes in three indicators of industrial growth such as **Number of Workers, Fixed Capital and Profits**. For this, the **Null Hypotheses** has been tested by the **ONE WAY ANOVA** technique of statistical analysis for **Gujarat and other developed states** with reference to **pre (Before 1991) and post (After 1991) economic reforms period**.

**The Number of Workers for Gujarat and other Developed states:-**

\([(14)H_0\] & [(15)H_0] - (Pre and Post Economic Reforms Period)

Here, it is seen that the Null Hypothesis of No difference between the Number of Workers of Gujarat and other Developed states for pre and post economic reforms period are rejected.

This indicates that there is a difference between the Number of Workers of Gujarat and other Developed states for pre and post economic reforms period. (Tables 6.15 and 6.16)
The Fixed Capital for Gujarat and other Developed states\(16\mathcal{H}_0 \& 17\) :- 
(Pre and Post Economic Reforms Period)

Here, it is seen that the Null Hypothesis of No difference between the Fixed Capital of Gujarat and other Developed states for pre and post economic reforms period are rejected.

This indicates that there is a difference between the Fixed Capital of Gujarat and other Developed states for pre and post economic reforms period. (Tables 6.17 and 6.18)

The Profit for Gujarat and other Developed states\(18\mathcal{H}_0 \& 19\mathcal{H}_0\) :-
(Pre and Post Economic Reforms Period)

Here, it is seen that the Null Hypothesis of No difference between the Profit of Gujarat and other Developed states for pre and post economic reforms period are rejected.

This indicates that there is a difference between the Profit of Gujarat and other Developed states for pre and post economic reforms period. (Tables 6.19 and 6.20)

7.2.2 Suggestions:-

1) In many other states economic data are available at the district levels. Gujarat can follow this pattern so that local level planning suggestions can be made.

2) The textile industry, which saw its golden period before 1991 has declined remarkably after 1991. Gujarat government needs to make necessary efforts to revive it as it has considerable potential to provide large scale employment.
3) The chemical industry has witnessed rapid growth during last few decades. This was at a heavy cost of damage to the environment due to hazardous chemicals. Gujarat needs to take a serious note that a blind race for development ultimately leads to irreparable damage to the environment. Stringent measures should be taken to save environment.

7.3 **Limitations of the Study and Areas for Further Research:**

7.3.1 **Limitations:**

1) As Gujarat is taken as a region of study here, the internal regional disparities are not examined here.

2) The industrial policies of Gujarat and other states are not taken into consideration in this study.

3) The basic limitations of the statistical techniques are applicable to this study also.

7.3.2 **Areas for Further Research:**

1) An intra-state regional analysis of Gujarat can be made in a different study.

2) A comparative analysis for different industries in view of the industrial policy of Gujarat can be made in a different study.

3) Separate studies can be made to analyze causes for selective regional development in different states.

4) A comparative analysis of the positive and negative results of various states’ industrial policies can be made.

5) A study can be made to examine whether industrial development is responsible for the regional migration of population in Gujarat.