8.1 Summary and Major Findings:-
In this study an attempt has been made to examine the Infrastructure, Economic Growth and Human Development: A case study of Gujarat (1991-92 to 2009-10). The contributions of Infrastructure and Human Development to accelerate Economic Growth and vice versa in rapidly growing state Gujarat have been studied.

'Economic Growth' is the process by which productive capacity of an economy increases over time to bring about rising levels of national income. 'Infrastructure' and 'Human Development' are two essential ingredients which stimulate 'Economic Growth' as well as stimulated by 'Economic Growth'.

Infrastructure is basic physical and organizational structure needed for the operation of a society or enterprise, or the services and facilities necessary for an economy to function. It can be generally defined as the set of interconnected structural elements that provide framework supporting an entire structure of development. Extensive and efficient infrastructure is critical for ensuring the effective functioning of the economy, as it is an important factor determining the location of economic activity and the kinds of activities or sectors that can develop in a particular economy. Infrastructure development, both economic and social is one of the major determinants of economic growth and it contributes to economic growth both by increasing productivity and by providing amenities which enhance the quality of life. In macro-economic literature, a number of studies have found empirical support for a positive impact of infrastructure on aggregate output.
Economic growth is the major concern of any State. It is conventionally measured as the percentage rate of increase in real gross domestic product. More importance is given to the growth of the ratio of GDP to population, which is also called per capita income.

Human development is a crucial ingredient of economic growth. It stimulates as well as stimulated by economic growth. Human Development means to build human capabilities of the people. Though material capital is crucial for economic achievements, yet human capital is no less. In the beginning of 1960's the emphasis was shifted from material capital to human capital.

The present study has examined the crucial issues like infrastructure, economic growth and human development in the state Gujarat. We have found Gujarat, a state with high economic growth on one hand and comparatively low human development on the other. The main thrusts of our study had been to examine, the trend of infrastructural Components and Economic Growth (Per Capita Net State Domestic Product at factor cost and constant prices) as well as the long run and short run causal relationship between these two components (with the help of time series data analysis) and also Human Development scenario of the state Gujarat with the help of different components related to Human Development. The district-wise cross section data analysis (for three time points 1991, 2000-01 and 2009-10) has also been done to identify the category of the districts with respect to different components of infrastructure, economic growth and human development as well as weighted aggregate infrastructure index, weighted aggregate index of economic growth and human development index in Gujarat. The relationship between the variables weighted aggregate infrastructure index and weighted aggregate index of economic growth as well as human development index and weighted aggregate index of economic growth at district level in Gujarat has also been analyzed in this study. The trend and pattern of public expenditure on social and economic services in the state Gujarat has also been examined in this study to understand the reason behind
Gujarat's comparatively low human development instead of its high economic growth and the decreasing impact of weighted aggregate index of economic growth on human development with respect to the result of cross district regression analysis.

The major findings of the study are summarized below:

- It has been found that, though there is increasing trend with respect to 'Road Length per 100 sq. km. of area' in the state Gujarat in the time period 1980-81 to 2009-10, yet Gujarat's road length per 100 sq. km. of area is below India's average in the given time period (except in 1999-00). Again, with respect to 'Rail Route Length per 100 sq. km. of area' though the steadily falling trend (due to decline in metre guage and narrow guage) has been found in the state Gujarat in the time period 1980-81 to 2009-10, yet its rail route length per 100 sq. km. of area is higher than India's average in the given time period. Further, it has been found that Gujarat's transportation infrastructure stock (with respect to area) is higher than all India's average for the given time period.

We have found from the district-wise analysis of the state Gujarat that, in 1991 the districts were concentrated under medium category with respect to 'Transportation Infrastructure index'. There were seven districts- Ahmedabad, Kheda, Surat, Vadodara, Mahesana, Valsad and Panch Mahals under high category, two districts- Kachchh and The Dangs under low category and rest of the districts (Gandhinagar, Sabar Kantha, Rajkot, Bhavnagar, Junagadh, Bharuch, Amreli, Jamnagar, Surendranagar, Banas Kantha) under medium category with respect to this indicator. For both the time points 2000-01 and 2009-10, most of districts were concentrated under medium category with respect to 'Transportation Infrastructure Index'. In 2000-01, the districts Gandhinagar, Kheda, Surat, Vadodara, Valsad, Anand and Navsari were under high category, the districts Amreli, Jamnagar, Surendranagar, Kachchh, The Dangs and
Patan were under low category and the rest of the districts (Ahmedabad, Mahesana, Sabar Kantha, Rajkot, Bhavnagar, Junagadh, Bharuch, Banas Kantha, Panch Mahals, Porbandar, Narmada and Dahod) were under medium category with respect to this indicator. In 2009-10, the districts Ahmedabad, Gandhinagar, Kheda, Surat, Vadodara, Valsad, Anand, Dahod and Navsari were under high category, the districts Amreli, Jamnagar, Surendranagar, Kachchh, The Dangs and Narmada were under low category and the rest of the districts - Mahesana, Sabar Kantha, Rajkot, Bhavnagar, Junagadh, Bharuch, Banas Kantha, Panch Mahals, Patan and Porbandar were under medium category with respect to this indicator. By comparing the district-wise performances with respect to this indicator between the two time points (2000-01 and 2009-10), it has been found that, there were three districts which improved their categories between these two time points- the districts Ahmedabad and Dahod shifted form medium to high category and Patan shifted from low to medium category. The district Narmada is the only exception which deteriorated with respect to its category and shifted from medium to low category with respect to this indicator.

- The ‘Communication’ infrastructure has been studied with the help of two indicators- Telecommunication and Post Offices. It has been found that, though Gujarat experienced an increasing trend with respect to ‘number of telephone connections per hundred people’ and it was also higher than India’s average in the given time period, yet in the case of ‘number of post offices per 100 sq. km. of area’, it was lower in Gujarat than India’s average in the time period 1983-84 to 2009-10 (except in the year 1986-87). It has also been found that, Gujarat’s communication infrastructure stock is higher than India’s average in the given time period.
It has been found that there is an increasing trend of ‘per capita electricity consumption’ in Gujarat and it is also significantly higher than India’s average for the time period 1980-81 to 2009-10. From the district-wise analysis of the state Gujarat, it has been found that, in 1991 with respect to the indicator ‘Percentage of electrified villages to total inhabited villages’ most of the districts were found under high category except eight districts of which two districts - Surat and Sabar Kantha were under medium category and other six districts - Vadodara, Junagadh, Bharuch, Banas Kantha, Panch Mahals and Kachchh were under low category. The districts were concentrated under high category in both the time points 2000-01 and 2009-10 with respect to this indicator. In 2000-01, the districts Ahmedabad, Gandhinagar, Kheda, Mahesana, Sabar Kantha, Rajkot, Amreli, Panch Mahals, Surendranagar, The Dangs, Patan, Anand and Navsari were under high category, the districts Surat, Vadodara, Bhavnagar, Junagadh, Bharuch, Banas Kantha, Kachchh and Dahod were under medium category and the rest of the districts (Valsad, Jamnagar, Porbandar and Narmada) were under low category with respect to this indicator. In 2009-10, there were nineteen districts (Ahmedabad, Gandhinagar, Kheda, Surat, Mahesana, Sabar Kantha, Rajkot, Vadodara, Bhavnagar, Junagadh, Bharuch, Amreli, Panch Mahals, Surendranagar, The Dangs, Patan, Anand, Dahod and Navsari) under high category; three districts (Jamnagar, Kachchh and Narmada) under medium category and rest of the three districts (Valsad, Banas Kantha and Porbandar) under low category with respect to the indicator. The districts Surat, Vadodara, Bhavnagar, Junagadh, Bharuch and Dahod which were under medium category in 2000-01 shifted to high category in 2009-10. The districts Jamnagar and Narmada shifted from low to medium category and the district Banas Kantha shifted from medium to low category between the given time points.
Gujarat has shown an increasing trend with respect to ‘numbers of scheduled commercial banks per hundred sq. km. of Area.’ But it was higher than India’s average only for four years, from 1980-81 to 1983-84 and lower than India’s average for the rest of the time period (1984-85 to 2009-10).

It has been observed from the district-wise analysis of the state Gujarat that, with respect to ‘Banking Facilities’ in the year 1991, there were five districts- Ahmedabad, Kheda, Surat, Vadodara and Valsad under high category, other seven districts- Gandhinagar, Mahesana, Rajkot, Bhavnagar, Junagadh, Amreli and Panch Mahals under medium category and rest of the districts Sabar Kantha, Bharuch, Jamnagar, Surendranagar, Banas Kantha, Kachchh and The Dangs under low Category. Both in 2000-01 and 2009-10 most of the districts were concentrated under medium and low categories with respect to this indicator. In 2000-01, the districts Ahmedabad, Gandhinagar, Surat, Vadodara, Anand and Navsari were under high category, the districts Kheda, Mahesana, Sabar Kantha, Rajkot, Valsad, Bharuch, Panch Mahals, Porbandar and Dahod were under medium category and rest of the districts Bhavnagar, Junagadh, Amreli, Jamnagar, Surendranagar, The Dangs, Banas Kantha, Kachchh, Patan and Narmada were under low category with respect to this indicator. Similarly, in 2009-10, the districts - Ahmedabad, Gandhinagar, Surat, Vadodara, Anand and Navsari were under high category, the districts Bhavnagar, Amreli, Jamnagar, Surendranagar, The Dangs, Banas Kantha, Kachchh, Patan and Narmada were under low category and the rest of the districts- Kheda, Mahesana, Sabar Kantha, Rajkot, Valsad, Junagadh, Bharuch, Panch Mahals, Porbandar and Dahod were under medium category with respect to this indicator. The district Junagadh was the only district which improved its category and shifted from low category in 2000-01 to medium category in 2009-10 with respect to this indicator.
• Though, there is an increasing trend with respect to ‘Gross Irrigated Area as percentage of Gross Cropped Area’ in Gujarat, yet it is lower than India’s average for the given time period (1980-81 to 2009-10).

In the case of district-wise analysis of the state Gujarat it has been found that, in 1991 most of the districts were under low category with respect to this indicator. There were only six districts- Ahmedabad, Gandhinagar, Kheda, Surat, Mahesana and Banas Kantha under high category, other five districts- Vadodara, Sabar Kantha, Rajkot, Valsad, Bhavnagar under medium category and rest of the districts under low category with respect to this indicator in 1991. Again, in both the time points 2000-01 and 2009-10, most of the districts were concentrated under medium and low category with respect to this indicator. In 2000-01, the districts Gandhinagar, Kheda, Surat, Mahesana, Banas Kantha, Anand and Navsari were under high category, the districts Ahmedabad, Vadodara, Sabar Kantha, Rajkot, Valsad, Bharuch, Kachchh and Patan were under medium category and rest of the districts (Bhavnagar, Junagadh, Amreli, Jamnagar, Surendranagar, The Dangs, Panch Mahals, Porbandar, Narmada and Dahod) under low category with respect to this indicator. In 2009-10, the districts Gandhinagar, Kheda, Surat, Mahasana, Banas Kantha, Anand and Navsari were under high category, the districts Amreli, Jamnagar, Surendranagar, Kachchh, Patan, The Dangs, Panch Mahals, Porbandar and Dahod were under low category and rest of the districts (Ahmedabad, Vadodara, Sabar Kantha, Rajkot, Valsad, Bhavnagar, Junagadh, Bharuch and Narmada) were under medium category with respect to the indicator ‘Gross Irrigated Area as percentage of Gross Cropped Area’. After comparing the performances of the districts with respect to this indicator between the two time points (2000-01 and 2009-10), it has been found that, the districts Bhavnagar, Junagadh and Narmada improved their categories and shifted from low to medium category. There were two medium category districts - Kachchh and Patan,
which deteriorated with respect to their categories and shifted to low
category between this two time points.

- It has been found from the district-wise analysis of the state Gujarat that,
with respect to the indicator ‘Percentage of villages have clean drinking
water to total inhabited villages’ most of the districts were under high
category in 1991. There were only three districts- Surat, Jamnagar and
Panch Mahals under medium category and four districts- Sabar Kantha,
Banas Knatha, Kachchh and The Dangs under low category with respect
to this indicator. Though, most of the districts were concentrated under
high and medium category with respect to this indicator in 2000-01, yet
most of them shifted from medium category to high category in 2009-10.
In 2000-01, the districts Gandhinagar, Kheda, Surat, Rajkot, Valsad,
Anand and Navsari were under high category, the districts Ahmedabad,
Vadodara, Mahesana, Sabar Kantha, Bhavnagar, Bharuch, Amreli, Banas
Kantha, Panch Mahals, Dahod, Patan were under medium category and
rest of the districts Junagadh, Jamnagar, Surendranagar, Kachchh,
Porbandar, The Dangs and Narmada under medium category with respect
to this indicator. In 2009-10, the districts Ahmedabad, Gandhinagar,
Kheda, Surat, Mahesana, Sabar Kantha, Rajkot, Vadodara, Valsad,
Bhavnagar, Junagadh, Bharuch, Amreli, Panch Mahals, Jamnagar,
Surendranagar, The Dangs, Patan, Porbandar, Anand, Narmada, Dahod,
Navsari were under high category, the district Banas kantha was under
medium category and the district Kachchh was under low category with
respect to this indicator. After comparing the district-wise performances
with respect to this indicator between the time points 2000-01 and 2009-
10, it has been found that, the districts Ahmedabad, Vadodara, Mahesana,
Sabar Kantha, Bhavnagar, Bharuch, Amreli, Panch Mahals, Dahod and
Patan shifted from medium category to high category and the districts
Junagadh, Jamnagar, Surendranagar, Porbandar, Narmada and The
Dangs shifted from low to high category between the time points 2000-01 and 2009-10.

- In the case of ‘Education’, two indicators have been considered in this study- ‘Numbers of schools per hundred sq. km of area’ and ‘Numbers of teachers per hundred pupils.’ It has been found that, though there is increasing trend of the state Gujarat with respect to ‘number of schools per hundred sq. km. of area’, yet it is lower than India’s average in the given time period (1980-81 to 2009-10). Again, in the case of ‘Numbers of teachers per hundred pupils’ the state shows increasing trend in the given time period. It was higher than India’s average for twenty one years (from 1983-84 to 1986-87, 1988-89 to 1996-97 and from 2002-03 to 2009-10) and lower than India’s average for rest of the nine years. It has also found that the educational infrastructure stock of the state Gujarat is lower than India’s average in the given time period.

In the case of district-wise analysis of the state Gujarat it has been found that, in 1991 with respect to ‘Educational Facilities’, there were six districts (Ahmedabad, Kheda, Vadodara, Sabar Kantha, Valsad, Panch Mahals) under high category, eight districts (Bhavnagar, Amreli, Jamnagar, Bharuch, The Dangs, Surendranagar, Banas Kantha, Kachchh) under low category and the remaining five districts (Gandhinagar, Surat, Mahesana, Rajkot, Junagadh) under medium category. Though, most of the districts were found either under high category and low category with respect to this indicator in 2000-01, yet in 2009-10 most of the districts were found under low category. In 2000-01, the districts Ahmedabad, Gandhinagar, Kheda, Surat, Vadodara, Mahesana, Sabar Kantha, Valsad, Panch Mahals, Anand, Dahod and Navsari were under high category, the districts Bhavnagar, Bharuch, Amreli, Jamnagar, Surendranagar, The Dangs, Banas Kantha, Kachchh, Patan, Porbandar and Narmada were under low category and remaining two districts- Junagadh and Rajkot.
under medium category with respect to this indicator. In 2009-10, there were eight districts (Ahmedabad, Gandhinagar, Kheda, Surat, Vadodara, Panch Mahals, Anand and Dahod) under high category, six districts (Mahesana, Sabar Kantha, Valsad, Navsari, Junagadh and Rajkot) under medium category and rest of the districts (Bhavnagar, Bharuch, Amreli, Jamnagar, Surendranagar, The Dangs, Banas Kantha, Kachchh, Patan, Porbandar and Narmada) under low category with respect to this indicator. There were four districts- Mahesana, Sabar Kantha, Valsad and Navsari which shifted from high category (2000-01) to medium category (2009-10) with respect to this indicator.

- There are two indicators namely- ‘Number of medical institutions per hundred sq. km. of area’ and ‘Number of beds in medical institutions per hundred people’, which have been considered to represent the health infrastructure in the state Gujarat. It has been found that, with respect to the indicator ‘Numbers of medical institutions per hundred sq. km. of area’, the state Gujarat has not only shown a decreasing trend, it is also lower than India’s average in the given time period (1980-81 to 2009-10). Decrease in number of PHCs, CHCs and urban government hospitals in Gujarat are some major reasons behind its decreasing trend with respect to this indicator. Though, the trend of ‘Numbers of beds in medical institutions per hundred people’ is decreasing, yet it is higher than India’s average for all the years in the given time period (except in 2009-10). It has been found that, Gujarat’s health infrastructure stock (composite index of these two indicators) was higher than India’s average for the time period 1980-81 to 2006-07 and lower than India’s average for rest of the time period (2007-08 to 2009-10).

In the case of district-wise analysis of the state Gujarat it has been found that, in 1991 with respect to ‘Health Facilities’, there were five districts- (Ahmedabad, Kheda, Surat, Vadodara and Valsad) under high category,
other five districts (Gandhinagar, Banas Kantha, Panch Mahals, Kachchh and The Dangs) under low category and rest of the nine districts (Mahesana, Sabar Kantha, Rajkot, Bhavnagar, Junagadh, Bharuch, Amreli, Jamnagar, Surendranagar) under medium category. Most of the districts were found under low category in both the time points 2000-01 and 2009-10. In 2000-01, there were nine districts (Ahmedabad, Gandhinagar, Kheda, Vadodara, Mahesana, Valsad, Panch Mahals, Anand and Navsari) under high category, five districts (Surat, Sabar Kantha, Junagadh, Bharuch and Narmada) under medium category and rest of the districts (Rajkot, Bhavnagar, Amreli, Jamnagar, Surendranagar, The Dangs, Banas Kantha, Kachchh, Patan, Porbandar and Dahod) under low category with respect to this indicator. In 2009-10, the districts Gandhinagar, Kheda, Surat, Mahesana, Valsad, Panch Mahals, Anand, Navsari and Dahod were under high category, the districts Bhavnagar, Bharuch, Amreli, Jamnagar, Surendranagar, The Dangs, Banas Kantha, Kachchh, Patan, Rajkot and Porbandar were under low category and the rest of the districts (Ahmedabad, Vadodara, Sabar Kantha, Junagadh, and Narmada) were under medium category with respect to this indicator. After comparing the district-wise performances with respect to this indicator between the two time points 2000-01 and 2009-10, it has been found that, the districts Ahmedabad and Vadodara shifted from high to medium category and the district Bharuch shifted from medium to low category between. The districts Dahod (under low category in 2000-01) and Surat (under medium category in 2000-01) improved their health facilities and shifted to high category in 2009-10.

It has been found from this study that, though Gujarat’s economic infrastructure stock was higher than India’s average for all the years in the given time period (1980-81 to 2009-10), yet its social infrastructure stock was higher than India’s average for the time period 1983-84 to 2004-05 and lower than India’s average for the rest of the years considered in this
study. Gujarat's aggregate average infrastructure stock is also higher than India's average for all the years in the given time period (1980-81 to 2009-10).

In the case of district-wise analysis of the state Gujarat it has been found that, in 1991 with respect to the ‘weighted aggregate infrastructure index’ the districts Ahmedabad, Kheda, Surat, Vadodara, Mahesana and Valsad were under high category, the districts Gandhinagar, Sabar Kantha, Rajkot Bhavnagar, Panch Mahals and Junagadh were under medium category and rest of the districts (Bharuch, Amreli, Jamnagar, Surendranagar, Banas Kantha, Kachchh and The Dangs) were under low category. In 2000-01, the districts Ahmedabad, Gandhinagar, Kheda, Surat, Vadodara, Mahesana, Anand and Navsari were under high category, the districts Sabar Kantha, Rajkot, Valsad, Bharuch, Panch Mahals and Dahod were under medium category and rest of the districts (Bhavnagar, Junagadh, Amreli, Jamnagar, Surendranagar, Banas Kantha, Kachchh, The Dangs, Patan, Porbandar and Narmada) were under low category with respect to this indicator. In 2009-10, the districts Ahmedabad, Gandhinagar, Kheda, Surat, Vadodara, Valsad, Anand and Navsari were under high category, the districts Mahesana, Sabar Kantha, Rajkot, Junagadh, Banas Kantha, Panch Mahals and Dahod were under medium category and the districts Bhavnagar, Bharuch, Amreli, Jamnagar, Surendranagar, Kachchh, The Dangs, Patan, Porbandar and Narmada were under low category with respect to this indicator. After comparing the performances of the districts with respect to weighted aggregate infrastructure index between the two time points 2000-01 and 2009-10, it has been found that the districts- Surat, Valsad, Dahod, Junagadh, Narmada and Bhavnagar improved their ranks and the districts Anand, Navsari, Ahmedabad, Kheda, Mahesana, Sabarkantha, Bharuch, Patan and Porbandar deteriorated with respect to their ranks between these two time points. Further, the district Valsad shifted from medium
category to high category, the districts Junagadh and Banas Kantha shifted from low to medium category between these two time points. The districts Mahesana (shifted from high to medium category) and Bharuch (shifted from medium to low category) degraded with respect to their categories between the given time points (2000-01 and 2009-10).

- In this study, the state Gujarat has been compared with fifteen major states of India with respect to their infrastructure index (2009-10). It has been found that, the state Gujarat obtains second rank with respect to Weighted Aggregate Economic Infrastructure Index as well as Weighted Aggregate Infrastructure Index (only after Haryana). The comparatively better economic infrastructure due to Gujarat's improved transportation, communication, electricity infrastructure is the reason behind it. Again, the state obtains fourth rank with respect to Weighted Aggregate Social Infrastructure Index (after Kerala, Karnataka and Tamil Nadu). The comparatively low education infrastructure and health infrastructure (with respect to number of medical institutions per 100 sq. km. of area) are the reasons behind it.

- It has been found that the trend of per capita NSDP (at factor cost and constant prices) is increasing in the state Gujarat for the time period 1980-81 to 2009-10. It has been also found that, Gujarat's economic growth is higher than India's average economic growth in the given time period except for the years 1987-88 and 1991-92.

In the case of district-wise analysis of the state Gujarat it has been found that, with respect to ‘Weighted Aggregate Index of Economic Growth’ (1991), the districts Ahmedabad, Gandhinagar, Surat, Vadodara, Rajkot, Valsad and Kachchh were under high category, the districts Kheda, Mahesana, Bhavnagar, Junagadh and Jamnagar were under medium category and the rest of the districts (Sabar kantha, Bharuch Amreli,
Surendranagar, Banas Kantha, Panch Mahals and The Dangs) were under low category. In 2000-01 the districts Ahmedabad, Vadodara, Surat, Valsad and Gandhinagar were under high category, the districts Kheda, Mahesana, Rajkot, Bhavnagar, Junagadh, Bharuch, Jamnagar, Kachchh, Porbandar, Anand and Navsari were under medium category and the districts Sabar kantha, Amreli, Surendranagar, Banas Kantha, Panch Mahals, The Dangs, Patan, Narmada and Dahod were under low category with respect to this indicator. Similarly, in 2009-10, the districts Ahmedabad, Gandhinagar, Surat, Vadodara, Rajkot and Valsad were under high category, the districts Kheda, Mahesana, Sabar Kantha, Bhavnagar, Junagadh, Bharuch, Jamnagar, Anand and Navsari were under medium category and the rest of the districts (Amreli, Surendranagar, Banas Kantha, Panch Mahals, Kachchh, The Dangs, Patan, Porbandar, Narmada and Dahod) were under low category with respect to this indicator. After comparing the performances of the districts with respect to 'Weighted Aggregate Index of Economic Growth' between the two time points 2000-01 and 2009-10, it has been found that the districts- Surat, Rajkot, Mahesana, Kheda, Bhavnagar, Jamnagar, Junagadh, Sabar Kantha, Banas Kantha and Narmada improved their ranks and the districts Vadodara, Valsad, Gandhinagar, Bharuch, Porbandar, Navsari, Anand, Kachchh and Dahod deteriorated with respect to their ranks between the given time points. The district Porbandar was one of the districts whose rank has diminished severely between these two time points. It obtained 8th rank in 2000-01 and deteriorated to 19th in 2009-10. There are some districts which improved their categories with respect to this indicator between the two time points- the district Rajkot which was under medium category in 2000-01 shifted to high category in 2009-10 and the district Sabar Kantha which was under low category in 2000-01 shifted to medium category in 2009-10 with respect to this indicator. Again, there were two districts- Kachchh and Porbandar which deteriorated with respect to their categories and shifted
from medium to low category between 2000-01 and 2009-10 with respect to this indicator.

- In Gujarat, as the district-wise data of per capita income or expenditure is not available, nine indicators of economic growth related to banking, agriculture and industry has been considered to calculate weighted aggregate index of economic growth.

It has been found that, with respect to ‘Weighted Composite Banking Index’ in 1991, there were five districts- Ahmedabad, Gandhinagar, Vadodara, Valsad and Kachchh under high category, other five districts- Kheda, Surat, Rajkot, Junagarh, Jamnagar were under medium category and rest of the nine districts Mahesana, Sabar Kantha, Bhavnagar, Bharuch, Amreli, Surendranagar, Banas Kantha, Panch Mahals and The Dangs under low category. In 2000-01, the districts Ahmedabad, Vadodara, Surat, Valsad, Porbandar, Kachchh were under high category, the districts Gandhinagar, Rajkot, Bhavnagar, Jamnagar, Bharuch, Anand and Navsari were under medium category and rest of the districts (Kheda, Sabar Kantha, Mahesana, Junagadh, Amreli, Surendranagar, Banas Kantha, Panch Mahals, The Dangs, Patan, Narmada, Dahod) were under low category with respect to this indicator. Similarly, in 2009-10, the districts Ahmedabad, Gandhinagar, Surat, Vadodara, Rajkot were under high category, the districts Mahesana, Sabar Kantha, Valsad, Bhavnagar, Bharuch, Amreli, Jamnagar, Surendranagar, Banas Kantha, Panch Mahals, Patan, Porbandar, Anand, Navsari were under medium category and rest of the districts (Kheda, Junagadh, Panch Mahals, The Dangs, Narmada and Dahod) were under low category with respect to this indicator. After comparing the district-wise performances with respect to this indicator between the two time points (2000-01 and 2009-10), it has been found that, the districts Gandhinagar and Rajkot shifted from medium to high category, the districts Mahesana, Sabar Kantha,
Surendranagar, Banas Kantha, Panch Mahals, Patan shifted from low to medium category. The district Porbandar deteriorated with respect to its category between these two time points and shifted from high category to medium category.

Further, with respect to ‘Weighted composite agricultural index’, it has been found that, in 1991 there were eight districts- Ahmedabad, Gandhinagar, Kheda, Surat, Vadodara, Mahesana, Valsad, Panch Mahals under high category, five districts- Sabar Kantha, Bhavnagar, Junagadh, The Dangs and Kachchh under medium category and rest of the districts Rajkot, Bharuch, Amreli, Jamnagar, Surendranagar, Banas Kantha under low category. Most of the districts were concentrated under high and low category in 2000-01 and high and medium category in 2009-10 with respect to this indicator. In 2000-01, the districts Ahmedabad, Gandhinagar, Kheda, Surat, Mahesana, Valsad, Junagadh, Anand and Navsari were under high category, the districts Vadodara, Sabar Kantha, Panch Mahals, Porbandar and Dahod were under medium category and rest of the districts (Rajkot, Bhavnagar, Bharuch, Amreli, Jamnagar, Surendranagar, Banas Kantha, Kachchh, The Dangs, Patan and Narmada) under low category with respect to this indicator. In 2009-10, the districts Ahmedabad, Gandhinagar, Kheda, Surat, Rajkot, Junagadh, Anand, Dahod, Navsari were under high category, the districts Vadodara, Mahesana, Sabar Kantha, Valsad, Bhavnagar, Jamnagar, Banas Kantha, Panch Mahals, Porbandar, Narmada were under medium category and rest of the districts- Bharuch, Amreli, Kachchh, Surendranagar, The Dangs, Patan were under low category with respect to ‘Weighted composite agricultural index’. After comparing the district-wise performances between the two time points (2000-01 and 2009-10), it has been found that, the district Rajkot improved its category and shifted from low to high category. The district Dahod shifted from medium to high, the other four districts Bhavnagar, Jamnagar, Banas Kantha and Narmada
shifted from low to medium category between these two time points with respect to this indicator. There were only two districts- Mahesana and Valsad, which deteriorated with respect to their categories and shifted from high to medium category.

In 1991, there were four districts- Ahmedabad, Surat, Rajkot and Valsad were under high category, eight districts- Gandhinagar, Kheda, Vadodara, Mahesana, Bhavnagar, Bharuch, Jamnagar, Surendranagar under medium category and rest of the districts- Sabar Kantha, Junagadh, Amreli, Banas Kantha, Panch Mahals, Kachchh, The Dangs under low category with respect to ‘Weighted Composite Industrial Index’. In 2000-01, there were six districts (Ahmedabad, Kheda, Surat, Mahesana, Rajkot, Valsad) under high category, ten districts (Gandhinagar, Vadodara, Sabar Kantha, Bhavnagar, Junagadh, Bharuch, Amreli, Jamnagar, Surendranagar, Panch Mahals) under medium category and rest of the districts (Banas Kantha, Kachchh, The Dangs, Patan, Porbandar, Anand, Dahod, Navsari and Narmada) under low category with respect to this indicator. Though most of the districts were concentrated under medium and low category with respect to ‘Weighted composite industrial index’ in 2000-01, yet in 2009-10, the districts were equally distributed under high (nine districts- Ahmedabad, Kheda, Surat, Mahesana, Rajkot, Valsad, Bhavnagar, Junagadh, Bharuch) and low (nine districts- Amreli, Banas Kantha, Kachchh, The Dangs, Patan, Porbandar, Anand, Narmada, Bavdhan) categories. The rest of the districts- Gandhinagar, Vadodara, Sabar Kantha, Jamnagar, Surendranagar, Panch Mahals and Navsari were under medium category with respect to this indicator. After comparing the district-wise performances with respect to this indicator between this two time points (2000-01 and 2009-10), it has been found that, there were four districts which improved their categories – Bhavnagar, Junagadh and Bharuch (shifted from medium to high category) and Navsari (shifted from low to medium category) between
these two time points. The district Amreli deteriorated with respect to its category and shifted from medium (2000-01) to low category (2009-10).

- It has been found from time series analysis of the state Gujarat for the time period (1980-81 to 2009-10) that there is long run as well as short run bi-directional positive and significant causal relationship between log Weighted Aggregate Infrastructure Index and Economic Growth (log Per Capita NSDP at factor cost and constant prices) in the state Gujarat.

- The Human Development in the state Gujarat has been examined with the help of different relevant indicators related to human development and the state’s position in India as well as between fifteen major states of India with respect to these components of human development. It has been found from the analysis that Gujarat is an economically growing state with Rs. 48511 (3rd rank) Per Capita NSDP at factor cost and constant prices in 2009-10. The state has obtained 5th rank with respect to rural Monthly Per Capita Consumption Expenditure (MPCE) Rs.1065.4 and 7th rank with respect to urban MPCE Rs. 1914.7 (at current prices) among 15 major states. As per 2009-10 data there is 23% below poverty line population in the state Gujarat against India’s 29.8% and the state has obtained 6th rank (in ascending order) among 15 major states of India. Gujarat has obtained first rank with lowest urban unemployment (18) and 5th rank with respect to rural unemployment (8) among 15 major states of India in 2009-10. As per 2007-08 data, Gujarat has obtained 14th rank (in ascending order) with 3.26% of working children as compared to India’s 1.92% among 15 major states of India. Gujarat has attained 79.31% literacy rate (as per 2011 census data). There is strong discrimination between male and female literacy rate in the state also. As per Census 2011 data, there are 87.23% of male literates against 70.73% of female literates in Gujarat. As per 2009-10 data, though the state Gujarat’s gross enrollment ratio (GER) is high in primary classes (with 120.42 GER the state ranked 3rd among 15
major states), yet it decreases to 86.51 in upper primary classes and the state has obtained 7th rank among 15 major states of India. It may be high drop out rate in primary classes 25.66 in 2009-10 (Gujarat obtained 10th rank (in ascending order) among 15 major states) is a major reason behind it. In upper primary classes also the drop out rate of the state was very high 39.70 (ranked 8th among 15 major states) in 2009-10. The state has obtained 9th rank with pupil-teacher ratio 32 in primary classes and 33 in upper primary classes in 2009-10.

The state Gujarat has obtained 6th rank (in descending order) with 75.7% of pucca houses among 15 major states of India in 2009. In 2009, with 93.4% of households with electricity connection, Gujarat has obtained 7th rank among 15 major states of India. A large proportion of households (42.65%) in Gujarat are without latrine facility (i.e. use either public latrine or in open) and the state has obtained 6th rank (in ascending order) among 15 major states. With 90.3% (in 2011) of households have improved source of drinking water facility, the state Gujarat has obtained 8th rank (in descending order) among 15 major states of India.

Gujarat’s Infant Mortality Rate (IMR) was 44 in 2010. The state has obtained 7th rank among 15 major states of India with respect to this indicator. The state Gujarat has obtained 6th rank among 15 major states of India with Life Expectancy at Birth (LEB) 69.1 in the time period 2006-10. Gujarat’s Under Five Mortality Rate (U5MR) was 61 in 2009. The state has obtained 9th rank (in ascending order) among 15 major states of India with respect to this indicator. It is also a major concern that the state Gujarat has 69.7% of Anaemic children against India’s 69.5% (in 2005-06). The state has obtained 8th rank among 15 major states of India with respect to this indicator. As per 2005-06 data, both in Gujarat and India 55.3% of women were anaemic and the state has obtained 8th rank among 15 major states of India with respect to this indicator. Gujarat has also
significantly high Maternal Mortality Rate (MMR) 148 (in 2007-09) and it has obtained 6th rank among 15 major states of India. Gujarat’s 36.3% of women are with B.M.I less than 18.5 and the state has obtained 9th rank among 15 major states of India in 2005-06.

Again, with 38.77% of malnourished children (0-5 years), Gujarat has obtained 8th rank and with 4.56% of severely malnourished children Gujarat has obtained 14th rank among 15 major states (the state was only better than the state Bihar (25.94%) with respect to severely malnourished children) in 2011. There were 56.6% of children with complete vaccination in Gujarat (against India’s 61%) in 2009. The state has obtained 11th rank (in descending order) among 15 major states of India with respect to this indicator. The total fertility rate (TFR) of the state Gujarat in the time period 2008-10 was 2.5 (against India’s 2.6) and ranked 10th (in ascending order) among 15 major states of India. As per Census 2011 it has been found that, Gujarat’s sex ratio is very low 918 (against India’s average 940) and the state has obtained 11th rank (in descending order) among 15 major states of India.

In Human Development Index, the state Gujarat obtained 6th rank in 1991 and has remained stagnant for the time points 1999-00 and 2007-08. Human Development Index is a composite index consist Health Index, Income Index and Education Index. Between the time points 1999-00 and 2007-08, whereas in health index Gujarat has improved its rank from 8th to 6th, in income index its rank has remained same i.e. 4th and in education index the state’s rank has deteriorated from 6th to 8th. In this section 15 major states of India have been distributed into Virtuous Cycle, Lopsided Economic Growth, Lopsided Human Development and Vicious Cycle with respect to their categories in HDI and Economic Growth (per capita net state domestic product at factor cost and constant prices). It has been found that Gujarat was under Lopsided Economic Growth for all the three
time points 1991, 1999-00 and 2007-08 with high Economic Growth but medium Human Development Index. It means Gujarat’s Economic Growth is not transforming into Human Development and it may be due to comparatively low expenditure on health and education in Gujarat.

From district-wise analysis of the state Gujarat it has been found that, in 1991, the districts Ahmedabad, Gandhinagar, Surat, Vadodara, Rajkot, Valsad, Bharuch and Jamnagar were under high category, the districts Kheda, Bhavnagar, Junagadh, Amreli and Kachchh were under medium category and the remaining six districts (Sabar Kantha, Mahesana, Surendranagar, Panch Mahals, Banas Kantha and The Dangs) were under low category with respect to Human Development Index. In 2000-01, the districts Ahmedabad, Surat, Rajkot, Bharuch, Kachchh, Anand and Navsari were under high category, the districts Gandhinagar, Kheda, Vadodara, Valsad, Bhavnagar, Junagadh, Amreli, Jamnagar, Patan, Porbandar, Narmada were under medium category and the districts Mahesana, Sabar Kantha, Surendranagar, Banas Kantha, Panch Mahals, The Dangs and Dahod were under low category with respect to Human Development Index. Similarly, in 2009-10, with respect to HDI, the districts under high category were Ahmedabad, Gandhinagar, Bharuch, Amreli, Jamnagar, Anand, Narmada and Navsari, the districts under medium category were Vadodara, Rajkot, Valsad, Bhavnagar, Junagadh, Kachchh, Patan, Porbandar and the districts under low category were Kheda, Surat, Mahesana, Sabar Kantha, Surendranagar, Banas Kantha, Panch Mahals, The Dangs and Dahod.

By comparing the district-wise HDI between the two time points- 2000-01 and 2009-10, it has been found that HDI was consistently high for the districts Ahmedabad, Bharuch, Anand, and Navsari on one hand and the districts Mahesana, Sabar Kantha, Surendranagar, Banas Kantha, Dahod, The Dangs and Panch Mahals were always among the bottom liners on
the other. Though the districts Gandhinagar, Jamnagar, Amreli and Narmada were under medium category of HDI in 2000-01, yet in 2009-10 they managed to shift under high category. Some interesting movements across the districts have been noticed over time. For instance, Surat started with an appreciable HDI scenario and it was under high category both in 1991 as well as 2000-01, but its performance declined considerably in 2009-10 and shifted to low category. The category of the districts Rajkot and Kachchh deteriorated and shifted from high to medium category between the years 2000-01 and 2009-10. The category of the district Kheda also declined and it shifted from medium to low category between the time points 2000-01 and 2009-10. By comparing the ranks of the districts with respect to HDI between these two time points (2000-01 and 2009-10), it has been found that, some districts which improved their ranks were- Ahmedabad, Gandhinagar, Kheda, Vadodara, Mahesana, Bhavnagar, Junagadh, Amreli, Jamnagar, Banas Kantha, The Dangs, Patan, Anand and Narmada. Again, the districts which deteriorated with respect to their ranks in HDI score between the given time points were- Surat, Sabar Kantha, Rajkot, Valsad, Bharuch, Surendranagar, Panch Mahals, Kachchh, Porbandar, Dahod and Navsari.

- District-Wise Human Development Indices have been calculated with normalized values of the three indicators, namely - Per Capita Bank Deposits; Educational Attainment Index and Infant Mortality Rate. It has been found that with respect to the indicator ‘Per capita bank deposit index’ in 1991, there were six districts- Ahmedabad, Gandhinagar, Kheda, Vadodara, Valsad, Kachchh under high category, four districts- Surat, Rajkot, Junagadh, Jamnagar under medium category and rest of the nine districts (Mahesana, Sabar Kantha, Bhavnagar, Bharuch, Amreli, Surendranagar, Banas Kantha, Panch Mahals and The Dangs) were under low category. It has been observed that, in 2000-01 and 2009-10 the districts Ahmedabad, Gandhinagar, Vadodara, Kachchh, Navsari,
Porbandar, Anand were under high category, the districts Kheda, Surat, Rajkot, Valsad, Bhavnagar, Bharuch, Jamnagar were under medium category and the districts Sabar Kantha, Amreli, Surendranagar, Banas Kantha, Panch Mahals, The Dangs, Patan, Narmada and Dahod were under low category with respect to this indicator. The district Mahesana which was under low category with respect to this indicator in 2000-01 shifted to medium category in 2009-10. Again, the district Junagadh which was under medium category with respect to this indicator in 2000-01 shifted to low category in 2009-10.

In the case of ‘Educational Attainment Index’ (1991), it has been found that, the districts were almost equally distributed under high (six districts- Ahmedabad, Gandhinagar, Kheda, Surat, Rajkot, Valsad), medium (seven districts- Vadodara, Mahesana, Sabar Kantha, Junagadh, Bharuch, Amreli, Jamnagar) and low category (six districts- Bhavnagar, Surendranagar, Banas Kantha, Panch Mahals, Kachchh and The Dangs) categories. In 2000-01, most of the districts were concentrated under high and medium category with respect to this indicator. The districts Ahmedabad, Gandhinagar, Kheda, Surat, Mahesana, Sabar Kantha, Bharuch, Anand and Navsari were under high category, the districts Vadodara, Rajkot, Valsad, Junagadh, Amreli, Panch Mahals, The Dangs, Patan, Porbandar were under medium category and rest of the districts (Bhavnagar, Jamnagar, Surendranagar, Banas Kantha, Kachchh, Narmada and Dahod) were under low category with respect to educational attainment index in 2000-01. In 2009-10, there were eight districts- Gandhinagar, Kheda, Mahesana, The Dangs, Amreli, Anand, Narmada and Navsari under high category, the other eight districts- Ahmedabad, Sabar Kantha, Bhavnagar, Bharuch, Jamnagar, Banas Kantha, Panch Mahals and Patan under medium category and the rest of the districts Surat, Vadodara, Surendranagar, Rajkot, Valsad, Kachchh, Porbandar, Junagadh, Dahod under low category with respect to ‘Educational
Attainment Index'. After comparing the district-wise performances with respect to this indicator, it has been found that, the districts Ahmedabad, Sabar Kantha and Bharuch which were under high category with respect to this indicator in 2000-01 shifted to medium category in 2009-10. The district Surat shifted from high category in 2000-01 to low category in 2009-10. There were two districts Amreli and The Dangs which were under medium category with respect to educational attainment index in 2000-01 shifted to high category in 2009-10.

Further, with respect to ‘Infant Mortality Rate index’ in 1991, there were eight districts- Ahmedabad, Surat, Rajkot, Valsad, Bhavnagar, Bharuch, Amreli and Jamnagar under high category, other nine districts - Gandhinagar, Kheda, Mahesana, Sabar Kantha, Surendranagar, Banas Kantha, Panch Mahals, Kachchh and The Dangs under low category and rest of the districts- Vadodara and Junagadh under medium category. In 2000-01, there were nine districts- Surat, Rajkot, Valsad, Bhavnagar, Bharuch, Jamnagar, Patan, Anand and Narmada under high category, six districts- Ahmedabad, Gandhinagar, Sabar Kantha, Junagadh, Amreli and Kachchh under medium category and rest of the districts- Kheda, Vadodara, Mahesana, Surendranagar, Banas Kantha, Panch Mahals, The Dangs, Porbandar, Dahod and Navsari under low category with respect to this indicator. In 2009-10, the districts Ahmedabad, Surat, Rajkot, Valsad, Bhavnagar, Junagadh, Bharuch, Patan, Anand, Narmada and Jamnagar were under high category, the districts Gandhinagar, Sabar Kantha, Amreli and Kachchh were under medium category and the districts Kheda, Vadodara, Mahesana, Surendranagar, Banas Kantha, Panch Mahals, The Dangs, Porbandar, Dahod and Navsari were under low category with respect to ‘Infant Mortality Rate index’. After comparing the district-wise performances with respect to this indicator, it has been found that, the districts- Ahmedabad and Junagadh which were under medium category
with respect to this indicator in 2000-01 shifted to high category in 2009-10.

- It has been found from the district-wise analysis (to examine the relationship between 'Weighted Aggregate Infrastructure Index' and 'Weighted Aggregate Index of Economic Growth' in Gujarat by comparing the score or category of the districts with respect to these two indicators between the two time points 2000-01 and 2009-10) that the districts Ahmedabad, Gandhinagar, Surat, Vadodara, Mahesana, Sabar Kantha, Valsad, Kachchh, Porbandar, Anand, Navsari, Junagadh, Amreli, Surendranagar, The Dangs, Narmada, Patan, Dahod, Kheda, Bharuch, Bhavnagar have positive relationship between these two indicators. According to this analysis there were four districts- Panch Mahals, Jamnagar, Banas Kantha and Rajkot which have no link between these two indicators, neither category-wise nor change in the direction of aggregate score wise.

Further, it has been observed from the cross district regression analysis between 'log Weighted Aggregate Infrastructure Index' and 'log Weighted Aggregate Index of Economic Growth' that there is significant positive relationship between these two variables both in 2000-01 and 2009-10. Though, the impact of 'log Weighted Aggregate Index of Economic Growth' on 'log Weighted Aggregate Infrastructure Index' is positive, significant and increasing (increased from 0.352 in 2000-01 to 0.760 in 2009-10) over time (between 2000-01 and 2009-10), yet the impact of 'log Weighted Aggregate Infrastructure Index' on 'log Weighted Aggregate Index of Economic Growth' is positive and significant and decreasing over time (decreased from 1.086 in 2000-01 to 0.305 in 2009-10). So, Weighted Aggregate Index of Economic Growth is translating into Weighted Aggregate Infrastructure Index but not the other way round. It may be the comparatively greater influence of other factor on economic growth is the reason behind it.
• It has been found from the district-wise analysis (to examine the relationship between 'Human Development Index (HDI)' and 'Weighted Aggregate Index of Economic Growth' in Gujarat by comparing the score or category of the districts with respect to these two indicators between the two time points 2000-01 and 2009-10) that except the districts Rajkot, Kheda, Sabar Kantha, Patan, Surat and Anand all the other nineteen districts have achieved the direct positive relationship between these two indicators.

It has been observed from the cross district regression analysis between 'log Human Development Index' and 'log Weighted Aggregate Index of Economic Growth' that there is significant, positive relationship between these two variables in both the time points 2000-01 and 2009-10. The impact of log Human Development Index on log Weighted Aggregate Index of Economic Growth is positive, significant and increasing between the time points 2000-01 and 2009-10 (coefficient of log Human Development Index has increased from 0.217 in 2000-01 to 0.528 in 2009-10). So, Human Development Index is translating into Weighted Aggregate Index of Economic Growth. It has also been found that Weighted Aggregate Index of Economic Growth elasticity of Human Development Index is positive, significant and decreasing (decreased from 0.656 to 0.321) between the years 2000-01 and 2009-10 i.e. Weighted Aggregate Index of Economic Growth is not translating into Human Development Index. It may be the comparatively lower expenditure on education and health is the reason behind this.

• It has been found from the analysis of trend and pattern of public expenditure on social and economic services in Gujarat for the time period 1991-92 to 2009-10 that, the state Gujarat experienced comparatively high social service expenditure (as compared to economic service
expenditure) only four years- 2003-04, 2004-05, 2007-08 and 2009-10 in the given time period. In 2009-10 the state Gujarat, with high social service expenditure (as compared to its economic service expenditure) has obtained 4th rank among 15 major states of India. Gujarat has experienced fluctuating trend with respect to expenditure on education, sports, arts, culture- varied between 7.55% and 17.45% (of total public expenditure) in the time period 1991-92 to 2009-10. It has been decreased from 13.85% in 1991-92 to 13.78% in 2009-10. The state Gujarat has obtained 12th rank among 15 major states with respect to expenditure on education, sports, arts, culture (as percentage of total public expenditure) in 2009-10. Gujarat's expenditure on education, sports, arts, culture (as percentage of total expenditure) has not only been decreased between the years 1991-92 and 2009-10, it was also lower than eleven major states in India in 2009-10.

It has been found that, Gujarat's expenditure on health, family welfare varied between 1.69% and 4.56% (of total public expenditure) in the given time period (1991-92 to 2009-10). It has increased from 3.66% in 1991-92 to 3.79% in 2009-10. Gujarat has obtained 9th rank among 15 major states of India with respect to its expenditure on health and family welfare (as percentage of total public expenditure) in 2009-10. So Gujarat's expenditure on health, family welfare (as percentage of total expenditure) was lower than eight major states in India in 2009-10.

It has been found that Gujarat experienced highly fluctuating trend varied between 1.84% and 12.21% in the given time period (1991-92 to 2009-10) with respect to the percentage of total public expenditure on water supply, sanitation, housing and urban development. It has increased from 3.19% in 1991-92 to 12.21% in 2009-10. Gujarat has obtained first rank among 15 major states with highest expenditure on water supply, sanitation, housing and urban development (as percentage of total public expenditure)
expenditure) in 2009-10. So Gujarat's expenditure on water supply, sanitation, housing and urban development (as percentage of total expenditure) has not only been increased significantly between the years 1991-92 and 2009-10, it was also highest among fifteen major states in India in 2009-10.

It has been found that, Gujarat's expenditure on social welfare and nutrition varied between 1.48% and 5.96% in the time period 1991-92 to 2009-10. Though, it has increased from 2.55% in 1991-92 to 3.20% (as percentage of total public expenditure) in 2009-10, yet the state Gujarat has obtained 11th rank among 15 major states of India with comparatively low expenditure on social welfare and nutrition (as percentage of total expenditure) in 2009-10.

Gujarat's expenditure on economic services (as percentage of total public expenditure) was significantly higher than its social service expenditure for all the years in the time period 1991-92 to 2009-10, except in- 2003-04, 2004-05, 2007-08 and 2009-10. In 2009-10 the state Gujarat obtained 6th rank among 15 major states with comparatively lower expenditure on economic services (31.07%) than social services (35.89%).

Gujarat's expenditure on agriculture and allied services (as percentage of total public expenditure) varied between 1.71% and 5.48% in the time period 1991-92 to 2009-10. It has increased from 4.26% in 1991-92 to 4.36% in 2009-10. Gujarat has obtained 9th rank among 15 major states with respect to this indicator in 2009-10. So Gujarat's expenditure on agriculture and allied services (as percentage of total expenditure) was lower than eight major states in India in 2009-10.

Gujarat's expenditure on irrigation and flood control (as percentage of total public expenditure) was highly fluctuating- varied between 4.26% and
15.93% in the time period 1991-92 to 2009-10. It has decreased from 11.75% in 1991-92 to 7.58% in 2009-10 and the state Gujarat obtained 3rd rank among 15 major states of India with respect to this indicator in 2009-10.

Gujarat has experienced highly fluctuating trend with respect to the expenditure on energy (as percentage of total public expenditure) also. It varied between 5.46% and 14.76% in the time period 1991-92 to 2009-10. It has decreased from 10.6% in 1991-92 to 6.17% in 2009-10 and the state Gujarat has obtained 6th rank among 15 major states of India with respect to this indicator.

It has been found that, Gujarat's expenditure on transport and communication (as percentage of total public expenditure) varied between 1.94% and 7.35% in the time period 1991-92 to 2009-10. It has increased from 4.69% in 1991-92 to 7.35% in 2009-10 and the state Gujarat has obtained 3rd rank among 15 major states of India with respect to this indicator in 2009-10.

So, after comparing Gujarat's position among 15 major states with respect to its expenditure on different social and economic services in 2009-10, it has been concluded that Gujarat's position was not good with respect to its expenditure (as % of total public expenditure) on education, sports, arts & culture, health & family welfare, social welfare & nutrition and agriculture & allied services.
8.2 Policy Implications:

1. It has been found that Gujarat's Road length per 100 sq. km. of area, Gross Irrigated area as percentage of gross cropped area, Number of post offices per 100 sq. km. of area, Number of scheduled commercial banks per 100 sq. km. of area, Number of schools per 100 sq. km. of area and Number of medical institutions for 100 sq. km. of area are below India’s average for the time period 1980-81 to 2009-10. Though, Gujarat obtained second rank with respect to its ‘Weighted Aggregate Economic aggregate Infrastructure Index’ and ‘Weighted Aggregate Infrastructure Index’ (only after Haryana), yet it obtained fourth rank with respect to ‘Weighted Aggregate Social Infrastructure Index’ (after three states- Kerala, Karnataka and Tamil Nadu). So, investment program needs to be chalked out by Gujarat government to increase its infrastructure facilities with respect to these indicators.

2. Though Gujarat’s literacy rate increased to 79.31% as per Census 2011 data yet the state’s gender disparity in literacy rate is high- the male and female literacy rate in Gujarat are 87.23% and 70.73% respectively. Again, the state's sex ratio is 918 which is lower than India’s average (940). Percentage of child labour is also high in the state. Though the state’s enrollment ratio in primary section is very high yet it is comparatively low in high and higher secondary classes because of its high drop out rate. To improve the state’s education scenario, with child education, female and adult education is also required. It is a well-known fact that only an educated person can understand the requirement of education for his or her children. As the prosperity of future generation mostly depends on women, women education and empowerment need to be given more importance. The educated parents can also understand the requirement of female child and also have the knowledge about the
requirement of family planning. This will not only improve sex ratio in Gujarat but also decrease the percentage increment in population.

Keeping in view the disadvantageous position of Gujarat population on the front of education and sex ratio, it is suggested that a comprehensive education policy should be evolved to take care of these hurdles in attaining still faster growth rate in the state.

3. Though there is impressive decline in infant mortality rate (IMR), under five mortality rate (U5MR) and maternal mortality rate (MMR) in Gujarat over the period under study, yet the figures turn unattractive when compared with the respective rates achieved by the state Kerala (the state with lowest IMR, U5MR and MMR among 15 major states of India). As compared to Kerala, the state Gujarat has almost 3.42 times high IMR (2011), 4.36 times high U5MR (2009) and 1.83 times high MMR (2007-09). So, there is urgent need to improve the health facilities to obtain IMR, U5MR and MMR comparable with Kerala. It is also found from the study that prevalence of calorie undernourishment (%), prevalence of under-weight children is high in Gujarat. The percentage of anaemic children and women, percentage of women with Body-Mass Index<18.5 are also high in Gujarat. So policy-makers need to increase attention to nutrition and availability of quality food to needy people. As per 2009 data, Gujarat’s percentage of completely immunized children (12 to 23 months) is significantly lower than India’s average and the state obtains 11th rank with respect to this indicator among 15 major states. So, Gujarat needs to invest more to increase its percentage of completely immunized children.

4. Though Gujarat’s position vis-à-vis fifteen major states of India is encouraging with respect to toilet facility, yet nearly two-fifth of population is not having the latrine facilities within their premises use. So, policy makers need to increase attention to increase toilet facilities in the state. The possible help either in the form of subsidy or loan or both should be
extended to all beneficiaries who want to have toilets in their homes irrespective of income groups. Interest-free bank loans should be provided to all beneficiaries who want to have toilets in their houses. The programme of construction of toilets in rural areas is linked to making people aware of sanitation standards and the adverse health impact of unsanitary conditions which require house-to-house contacts and follow-up. This can only be done effectively by the well-coordinated efforts of NGOs and government. The role of NGOs is, thus, very crucial in the implementation of the sanitation programme.

5. Both in 1999-00 as well as 2007-08, the state Gujarat has obtained 6th rank in HDI among 15 major states of India. With respect to the ingredients of HDI, though Gujarat obtained 4th rank with respect to its income index for both of the two time points- 1999-00 and 2007-08, the state obtained 8th rank with respect to education index and 6th rank with respect to health index in 2007-08. It may be the comparatively low health index and education index are the major reasons behind Gujarat's 6th rank with respect to HDI score among 15 major states. So increasing, effective public investment is required to make Gujarat's social infrastructure (education and health) stronger and to improve human development.

6. Glaring disparities on the basis of district-wise availability of infrastructure facilities, economic growth and human development were noticed in this study. It is suggested to evolve a development policy to target to remove the drawbacks in various districts. For this, district-wise public investment program has to be chalked out. It is found that the public expenditure in Gujarat on social as well as economic services registered a fluctuating pattern showing that there has not been a consistent policy of public investment in the state. It is suggested that a long run policy, keeping in view the emerging requirements, should be chalked out in the state in order to achieve steady growth in respective sector.
7. It has been found that Gujarat’s public expenditure (as % of total public expenditure) was comparatively low on education, sports, arts & culture, health & family welfare, social security, welfare & nutrition and agriculture & allied services. The state obtained 12th, 9th, 11th and 9th among 15 major states with respect to these indicators. So Gujarat needs more investment in these sectors to improve its human development as well as agricultural upliftment. The Gujarat government may explore the possibilities of attracting private investment in these sectors to plug the gap between required and actual investment (generally public investment).

8. It has been found that, Kerala obtained first rank among 15 major states with respect to weighted aggregate index of social infrastructure index in 2009-10. The state Kerala obtained first rank with highest MPCE (both in rural and urban), literacy rate (in overall as well as with respect to male and female), Sex ratio and human development index. Again, it has been also found that Kerala has lowest score with respect to poverty ratio, percentage of population have no latrine within premises use, infant mortality rate, under five mortality rate, percentage of working children, percentage of anaemic children (0-5 years), percentage of anaemic women, maternal mortality rate, percentage of women with B.M.I<18.5, total fertility rate. Kerala was under virtuous cycle with high economic growth as well as high human development index for the two time points (1999-00 and 2007-08). So, Kerala can be considered as model state for social and human development. The state Gujarat can follow different related policies of the state Kerala (which are suitable for the state) to achieve high human development and still higher economic growth.