Chapter VII

Levels of Urbanization Levels of Regional Development and Their Relationship
CHAPTER VII

LEVELS OF URBANISATION, LEVELS OF REGIONAL DEVELOPMENT AND THEIR RELATIONSHIP

The development of a region can be identified with an increase in the levels of urbanisation. There is yet no definite consensus whether the existence of towns/cities provide base for economic development or economic development represents the main cause of urbanisation. However, the inferences drawn from explanations from both contradictory views, the proper size and number of urban centres and optimum level of urbanisation measured in respect of the total development of the region or nation, put a consistent impact on the socio-economic development of the region. Now, there is a general agreement that urbanisation is not only an excellent index of economic development and social modernization, but also a stimulus to such change.¹ Behind much of this reasoning in the assumption that "the city is the most efficient mode of human settlement having large population concentrated in a small place where friction cost is minimum, the demand density is high and production can be expanded within a small space, resulting in specialization of production and the creation of external economies. External economies are associated not only with decreasing cost of material and services, but also with stimulation of further specialization."² The process of specialization tends the development of new services, and industries whose growth is correlated with the size of cities and level of urbanization. It is, therefore, logical

to expect that cities would exercise a generative function on real income, and that
the growth of urban centres is fundamental to the growth of nation. Hoselitz\(^3\)
recognized that cities could not be shown at all times to be generative of economic
development. He distinguished two types of cities as to 'generative' and
'parasitic'. A city is 'generative' if its impact on economic growth is favourable,
i.e., if its formation and continued existence and growth is one of the factors
accountable for the economic development of the region or the country in which it
is located. A city is 'parasitic' if it exerts an opposite impact. The main objective
of this chapter is to analyse the levels of urbanization based on urban accretion and
spatial organization. The levels of regional development is identified by
considering four factors: agricultural, industrial, infrastructural and demographic.
Further an attempt is also made to find out the relationship between urbanization
and regional development of the coastal region of Karnataka.

**PART – I: LEVELS OF URBANIZATION**

The levels of urbanization is very unevenly distributed in India, even during
the post independence period, large urban centres maintained an 'external
orientation' in serving as a link between local elite and outside world rather than
an economic outgrowth of the indigenous national economy. Indian economic
development pre-supposes the concentration of growth at the urban pockets. There
are few urbanized areas which control almost the whole economy of a nation
because urban centres being of multi-activities-innovates, receivers, containers and
distributors their role is pertinent enough in regulating the system of economic

\(^3\) Hoselitz, B.F. (1955) "Generative and Parasitic Cities", Economic Development and Cultural Change,
transaction and channelizing the resource mobility. Thus, the urban centres are acting against the process of decentralization. The concentration leading to the development of a dual economy in which a few urbanized areas manifest all these characteristics which are typical of a developed area while the major part of the country remains primitive in all respects: social, economic and cultural. The size and type of urban centres and degree of urbanization arises not only in the economic perspectives like location of industries and other productive activities, but also in such issues like creation of infrastructural network for achieving balanced economic development and socio-cultural transformation of rural society. Hence, keeping this in view the degree of regional development as an attribute of disparities in the level of urbanisation an attempt has been made in this section to determine the level of urbanisation of each taluk of Coastal Karnataka.

Neither the concepts of specialization in urbanization nor its limiting conditions are easily definable in quantitative terms. Various attempts have been made to find out an index of urbanization to know the regional disparity in urban process and pattern. Many of indices, so far suggested, can be criticised largely on the basis of their being ethnocentric and they do not take account of all these variables which are prerequisites:

a) for the origin and development of urban centre,

b) to spill over the effects of urbanization to the rural area,

c) to react with rural areas to promote the economic development of the country, and
d) for socio-cultural transformation of society.

However, it has been common practice that the degree of urbanization was computed by one indicator related to any aspect of demography of urban population while the other components of urbanization were invariably ignored. During the later half of the twentieth century scholars started making an effort to construct separate indices pertaining to different elements of each component of urbanization individually and collectively composing them. Two types of methods have been adopted so far, for determining the level of urbanization;

i) Single Indicator Method, and

ii) Multi-Indicator Method.

i) Single Indicator Method

Most of the urban geographers, sociologists and economists of first half of this century have adopted this method based on intensity of a single indicator to determine the level of urbanization of a particular region. This method is nothing but a method of calculating the intensity of particular indicator and higher the intensity of indicator greater is the level of urbanization and vice-versa. In this method simple percentage of urban population to total population or the density of urban population etc have been taken into consideration as an index for the urbanization.
Many of the scholars refer the urbanization as the proportion of population living in urban areas to the total population which can be expressed as follows:

\[
\frac{U}{T} \times 100
\]

Where: \(U\) is the urban population of the region and
\(T\) is the total population of the corresponding region.

This method is widely used to know the spatial pattern of the urbanization in a region.

Many scholars of this mono-indicator group followed the above method in the same form or with certain modifications. Some of the authors to mention here are: Meuriot⁶, Lampard⁷, Worth⁸, Redfield⁹, Ninor¹⁰, Tisdal¹¹, Oziewonski¹², Hoyet¹³, Mobogunje¹⁴, Northam¹⁵, Kansky¹⁶, Jakobson and Jai Prakash¹⁷, Abiodun¹⁸, Gryztzell¹⁹, B.J.L. Berry²⁰.

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⁹ Redfield, R. (1941) "The Folk culture of Yucatan", Chicago.
¹⁹ Gryztzell, K.G. (1964) "The Demarcation of Comparable City Area by Means of Population Density".
Many Indian geographers and other scholars have also made a few attempts, to use single indicator to measure the levels of urbanization and some of them are: Singh\textsuperscript{21}, Alam, Khan and Gopi\textsuperscript{22}, and R.N. Singh and Sahabdeen\textsuperscript{23}. Urbanization is a product of various socio-economic and demographic factors, economic specializations, advancing technology and variable i.e., the share of urban population to total linkages between the centres etc. But picking up only one population is rather weak indicator to give clear and comparative picture of the level of urbanization.

**Multi-Indicators Method**

After the fifties of this century, there has been an increasing use of statistical devices for analysis and measurement of the spatial variation of level of urbanization using two or more attributes of urbanization. Multi-variant procedures are increasingly being favoured in such studies. In order to find out the composite index of level of urbanization, multi regression analysis, Principal component Analysis and Factor Analysis etc., are being widely used. Geographers and other scholars attempted such multi-variant methods to determine the level of urbanization, among them Childe\textsuperscript{24}, Berry\textsuperscript{25}, Reissman\textsuperscript{26}, Schnore\textsuperscript{27}, Mobogunje\textsuperscript{28},

\begin{thebibliography}{99}
\end{thebibliography}
Brush, Pathak, Azir and Chatterjee, Pal, N. Sharma, Dutt and Chattopadhya are important.

Verma S.S. and Kundu Amitab have made an attempt to measure the level of urbanization in Rohilkhand Plain and north-western India respectively. Verma, S.S. considered the following five indicators.

i) Ratio of Urban Population (U/T)
ii) Urban Density (U/N)
iii) Average size of urban centre (U/N)
iv) Density of urban centres (N/A), and
v) Rate of urban growth.

By using simple ranking coefficient method, the level of urbanization of each taluk of the Rohilkhand region (U.P.) was determined and were classified into six categories: (1) Pure rural, (2) Very low, (3) Low, (4) Medium, (5) High and (6) Very high urbanized.

A commendable, ideal and thoughtful idea has been presented on this theme by Amitab Kundu, who endeavours to study the methodological issues involved in regionalization with special reference to the analysis of urban process and associated socio-economic development in the north-west India. For urban process he considers two components.

---

1) Urban Accretion, and
2) Spatial organization.

1) Urban Accretion has been comprehended with the help of four indicators:
   i) General urban accretion (U/R)
   ii) Urban accretion in class-I town,
   iii) Average size of urban index, and
   iv) Urban density.

2) Spatial organization is determined with the help of five variables:
   i) Average connectivity,
   ii) Catchment co-efficient,
   iii) Hierarchical distance,
   iv) Accessibility, and
   v) Distortion from the hierarchical norm.

The method of principal component analysis was applied on the variance and co-variance matrix and he (Amitab Kundu) built-up a parallel composite index by this alternative method for (i) urbanization and (ii) Social amenities and economic infrastructure separately to give an over view of level of urbanization and the level of socio-economic development for each district. Finally, they are correlated through which some generalization were abstracted for the north-western region of India.

CHOICE OF THE INDICATORS FOR THE PRESENT STUDY

This researcher has made an attempt to use the above said two methods (S.S. Verma and Amitab Kundu) in synthesised form.

Two major components considered for present study are:

A. Urban Accretion, and
B. Spatial organization of urban centres.
A. URBAN ACCRETION

Urban accretion is based on the following six indicators:

1. Urban – total population ratio’s (U/T)
2. Urban – rural population ratio’s (U/R)
3. Urban growth rate (during four decades)
4. Urban growth rate in 1981-91 (one decade)
5. Average size of urban centres, and
6. Density of urban population

1. Urban-total population ratio’s (U/T)

The U/T ratio’s (urban to total population) is widely used for the index of urbanization. It is obvious from the table no : 7.1, that lower the U/T ratio higher is the urban development and higher the U/T ratio lower is the urban development.

In 1971 five taluks namely Karwar, Kumta, Bhatkal, Udupi and Mangalore were recorded in ‘high development category of (< 6.89 U/T Score) while in ‘medium development category’ only two taluks viz., Honavar and Kundapur were recorded. None of the taluks were under the ‘Low development category’ and remaining one taluk i.e., Ankola was purely rural in character (See Table No.7.1).

In 1981 decade seven taluks viz., Karwar, Ankola, Kumta, Bhatkal, Kundapura, Udupi and Mangalore were under the ‘high development category’ (U/T Score values less than 6.83). Whereas in ‘medium development category’ only one taluk viz. Honavar was recorded while in low development category none of taluks was recorded.

In the decade of 1991, seven taluks namely Karwar, Ankola, Kumta, Bhatkal, Kundapura, Udupi and Mangalore were noticed in ‘high development’ category. Where as only one taluk (Honovar) appeared in medium category and is low development category, no taluka was noticed.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;6.83 High</td>
<td>No’s Name of the taluk</td>
<td>5</td>
<td>7</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Name of the taluk</td>
<td>Karwar</td>
<td>Karwar</td>
<td>Karwar</td>
<td>Karwar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kumta</td>
<td>Kumta</td>
<td>Kumta</td>
<td>Kumta</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bhatkal</td>
<td>Bhatkal</td>
<td>Bhatkal</td>
<td>Bhatkal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Udupi</td>
<td>Udupi</td>
<td>Udupi</td>
<td>Udupi</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mangalore</td>
<td>Mangalore</td>
<td>Mangalore</td>
<td>Mangalore</td>
</tr>
<tr>
<td>6.83 to 11.21 Medium</td>
<td>No’s Name of the taluk</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Name of the taluk</td>
<td>Honavar</td>
<td>Honavar</td>
<td>Honavar</td>
<td>Honavar</td>
</tr>
<tr>
<td>&gt;11.21 Low</td>
<td>Purely rural</td>
<td>1</td>
<td>Ankola</td>
<td>Ankola</td>
<td>Ankola</td>
</tr>
</tbody>
</table>

In the last decade (2001) six taluks (Karwar, Ankola, Kumta, Bhatkal, Udupi and Mangalore) were under the ‘high development’ category of U/T ratio’s. The Honavar taluk recorded in medium category while one taluk (Kundapura) came down to the low development category. No taluk recorded in purely rural category.

2) Urban-Rural Population ratio’s (U/R)

The impact of urbanization on the rural base of the region must be taken into consideration. The urban to rural population (U/R) ratio has been chosen as one of the important index of the urbanization. The Table No.7.2 reveals that the higher urban to rural ratio explains the lesser level of development and vise-versa. In the high level of development category six taluk appeared (Karwar, Kumta, Bhatkal, Kundapura, Udupi and Mangalore) in 1971, whereas in 1981 apart from above taluks Ankola was added. During 1991 and 2001 the seven taluks of 1981 have been continued in high level of development except that of Kundapura.
Table 7.2. Classification of Talukas According to Urban-Rural Population Ratios of Coastal Karnataka (1971-2001)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No's Name of the taluk</td>
<td>6 Karwar</td>
<td>7 Karwar</td>
<td>7 Karwar</td>
<td>6 Karwar</td>
</tr>
<tr>
<td>&lt;6.89 High</td>
<td>Kumta</td>
<td>Ankola</td>
<td>Ankola</td>
<td>Ankola</td>
<td>Ankola</td>
</tr>
<tr>
<td>6.89 to 12.33 Medium</td>
<td>Bhatkal</td>
<td>Kumta</td>
<td>Kumta</td>
<td>Kumta</td>
<td>Kumta</td>
</tr>
<tr>
<td>&gt;12.33 Low</td>
<td>Kundapura</td>
<td>Bhatkal</td>
<td>Bhatkal</td>
<td>Bhatkal</td>
<td>Bhatkal</td>
</tr>
<tr>
<td>&gt;12.33 Purely rural</td>
<td>Udupi</td>
<td>Kundapura</td>
<td>Kundapur a</td>
<td>Udupi</td>
<td>Udupi</td>
</tr>
<tr>
<td></td>
<td>Mangalore</td>
<td>Udupi</td>
<td>Mangalore</td>
<td>Udupi</td>
<td>Mangalore</td>
</tr>
</tbody>
</table>

In the medium development category, the Honavar taluk continued to be appeared from 1971 to 2001 while Kundapura taluk was newly added to this category.

In the 'low level of development' none of taluk was noticed from 1971 to 2001. In the 'purely rural category' Ankola was noticed in 1971 in Coastal Karnataka. However from 1981 onwards Ankola appears as urban.
3. Urban Growth Rate (During four decades)

By using the below given formula urban growth rate is calculated:

\[
UGR = \frac{P_2 - P_1}{P_1 + P_{1/2}} \times 100
\]

Where: 
- \( UGR \) is the urban growth rate
- \( P_2 \) is the urban population of the taluk in the later period of time
- \( P_1 \) is the urban population of the same taluk in the initial period of time
- \( t \) is the number of decades or years.

The average urban growth rate of Coastal Karnataka shows 198.67 per cent over a period of forty years (1961 to 2001). However, it varies from 14.93 per cent in Kundapura taluk to 270.34 per cent in Udupi taluk. The table no.7.3 reveals that the three taluks viz., Karwar, Udupi and Mangalore were grown more than the coastal Karnataka’s average (198.67%). The five taluks namely Ankola, Kumta, Honavar, Bhatkal and Kundapura (14.93%) were grown less than the coastal Karnataka’s average. (see Table No. 7.3)

Table 7.3 Taluk-wise Urban Growth Rate of Coastal Karnataka

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Karwar</td>
<td>213.81</td>
<td>23.25</td>
</tr>
<tr>
<td>2</td>
<td>Ankola</td>
<td>115.05</td>
<td>93.46</td>
</tr>
<tr>
<td>3</td>
<td>Kumta</td>
<td>35.83</td>
<td>31.77</td>
</tr>
<tr>
<td>4</td>
<td>Honavar</td>
<td>70.60</td>
<td>10.13</td>
</tr>
<tr>
<td>5</td>
<td>Bhatkal</td>
<td>179.83</td>
<td>33.97</td>
</tr>
<tr>
<td>6</td>
<td>Kundapura</td>
<td>14.93</td>
<td>-51.87</td>
</tr>
<tr>
<td>7</td>
<td>Udupi</td>
<td>270.34</td>
<td>4.79</td>
</tr>
<tr>
<td>8</td>
<td>Mangalore</td>
<td>222.31</td>
<td>36.28</td>
</tr>
<tr>
<td></td>
<td>Coastal Karnataka average</td>
<td>198.67</td>
<td>23.11</td>
</tr>
</tbody>
</table>

The average regional urban growth rate during 1991-2001 was 23.11 per cent. Out of eight taluks of Coastal Karnataka five taluks (Karwar, Ankola, Kumta, Bhatkal and Mangalore) were grown at higher rate than the Coastal Karnataka’s average. While three taluks (Honavar, Kundapura and Udupi) were grown lesser than the Coastal Karnataka’s average. While Kundapura taluk recorded negative growth (see Table No.7.3).

5. Average size of Urban Centres

The size of urban centres is an important aspect of urbanization.

\[ S_j = \frac{U_{ij}}{N_j} \]

Where: 
- \( S_j \) is the size index of urban centre for jth region
- \( U_{ij} \) is the total urban population of jth region
- \( N_j \) is the total number of urban centres of the jth region

Using the above formula the following analysis is made here (See Table No. 7.4) that the average size of the urban centres in coastal Karnataka was 61070 Population. But it varies between 17,833 people in Honavar taluk to 1,00,043 in Mangalore taluk. The average size of the urban centres in Mangalore taluk (having 6 towns) was more than 75,000 population. Whereas in Karwar, Bhatkal, Kumta, Kundapura, Ankola and Kumta taluks (having one town each, Udupi taluk with 4 towns) had an average size of urban centres between 26,000 to 76,000 population. In case of Honavar (1 town) taluk an average size of urban centres has below 20,000 population.
Table 7.4. Taluk-wise Average size of urban centres and urban population Density (2001)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the taluk</th>
<th>Average town size</th>
<th>Urban population density (Per sq.km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Karwar</td>
<td>75,020</td>
<td>102</td>
</tr>
<tr>
<td>2</td>
<td>Ankola</td>
<td>26,135</td>
<td>28</td>
</tr>
<tr>
<td>3</td>
<td>Kumta</td>
<td>34,498</td>
<td>59</td>
</tr>
<tr>
<td>4</td>
<td>Honavar</td>
<td>17,833</td>
<td>24</td>
</tr>
<tr>
<td>5</td>
<td>Bhatkal</td>
<td>42,171</td>
<td>121</td>
</tr>
<tr>
<td>6</td>
<td>Kundapura</td>
<td>28,595</td>
<td>18</td>
</tr>
<tr>
<td>7</td>
<td>Udupi</td>
<td>38,152</td>
<td>165</td>
</tr>
<tr>
<td>8</td>
<td>Mangalore</td>
<td>1,00,043</td>
<td>1072</td>
</tr>
<tr>
<td></td>
<td>Coastal Karnataka average</td>
<td>61,070</td>
<td>153</td>
</tr>
</tbody>
</table>


Urbanization has other normative aspects which is broadly related to the problems of over crowding in the urban centres. The concentration of population in few urban centres has put enormous strains on urban services such as housing, transportation, water supply, drainage, sanitation, medical, education, recreation and above all an acceptable aesthetic urban environment. To construct an index of social well being for the urbanities is a difficult task. For this purpose the index of urban density per sq.km has been used as a proxy for the composite index of social well being.

It is a apparent from the Table No.7.4, that the average density of the urban population in Coastal Karnataka is 153 persons per Sq.km; but it varies from 1072
per sq.km in Mangalore taluk to 18 persons per sq.km. in Kundapura taluk. While three taluks namely Karwar, Bhatkal and Udupi have density of urban population between 102 to 165 persons per sq.km., whereas in other taluks of Ankola and Kumta it is 28 and 59 persons per sq.km. The lowest urban population density was recorded in Honavar and Kundapura taluks (less than 24 persons per sq.km).

B. SPATIAL ORGANIZATION OF URBAN CENTRES

The concept of spatial organization of urban centres relate to the structural characteristics and location of the urban centres, their manifestation and linkages reflecting the spatial interaction among them. The spatial organization of urban centres depend on how the geographical space is organized through the transportation system, the hierarchy of urban centres and movement among them. The following two indicators have been chosen to articulate this concept.

1. Average number of urban centres,
2. Average connectivity.

1. Average Number of urban Centres

Origin and development of urban nodes depends upon various favourable geographical and economic conditions. The regional inequalities in the intensity of urban centres is based on the regional inequalities of physical conditions and economic development. The degree of functional efficiency of the urban centres also depends on the number of centres, area and population size of the taluk. The higher number of urban nodes shows the healthy conditions of urbanization and
their efficient functional linkages. In this point of view, the average number of urban centres has been determined with the help of following formula:

\[
Anj = \frac{n_j}{Aj} \times 1000 \text{ sq.km. area}
\]

Where: 
- \(Anj\) is the average number of urban Centres of ‘j’ th taluk
- \(n_j\) is the number of urban centres in ‘j’ th taluk
- \(Aj\) is the area of the ‘j’ in taluk

As per the above formula the average number of urban centres in Coastal Karnataka is 2.40 centres per thousand sq.km. area. It ranges from 0.64 urban centres per thousand sq.km, as minimum in Kundapura taluk to 7.19 urban centres per thousand sq.km, as maximum in Mangalore taluk. There are three taluks namely Bhatkal (2.86), Udupi (4.32) and Mangalore (10.71) that have more than Coastal Karnataka’s average index values (2.40 centres). While five taluks viz., Karwar, Ankola, Kumta, Honavar and Kundapura have less than the Coastal Karnataka’s average urban index (2.40 centres).

2. Average Connectivity

The higher number of transportation linkages terminating in a town would be the larger the size of its hinterland and also would serve its hinterland to the greater efficiency. The average connectivity of urban centres for each taluk has been calculated by using the following formula:

\[
Acj = \frac{c_{ij}}{n}
\]

Where: 
- \(Acj\) is the average connectivity of the ‘j’ th taluk
- \(c_{ij}\) is the number of transport lines (roads and railway tracks) terminating in the ‘i’th town of ‘j’th taluk
- \(n\) is the total number of towns in ‘j’ th taluk
By using the above formula the following analysis is made. The regional average connectivity is 4.44 per urban centre in the study region, however, it ranges from 3.00 per urban centre as a minimum in Kundapura taluk to 6.00 per urban centre as maximum in Kumta taluk. The average connectivity of urban centre in Kumta taluk is very high (6.00). Two taluks namely, Udupi and Mangalore have average connectivity of more than coastal region. The five taluks (Karwar, Ankola, Honavar, Bhatkal and Kundapura) have lesser connectivity than the coastal region.

COMPOSITE LEVELS OF URBANIZATION

An analysis of the spatial distribution of various indices of urbanization in Coastal Karnataka presents an interesting regional contrast. But, the general idea about the total urbanization process cannot be formulated through the above study. Here, the composite levels of development of urbanization has been constructed with the help of eight indicators (which have already explained individually) to show the regional disparities of urbanization of Coastal Karnataka. For this purpose the combined rank score method of Kendal is adopted to give ranks for eight indicators. (See Table No.7.5). The results reveal that lower the index value higher is the level of urbanization and vice-versa.
Table 7.5. Composite levels of Urbanization Based on Eight Indicators (2001) as per Kendal’s method

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the taluk</th>
<th>U/T Ratio’s</th>
<th>U/R Ratio’s</th>
<th>Urban growth rate (1961-2001)</th>
<th>Urban growth rate (1991-2001)</th>
<th>Average size of urban centres</th>
<th>Density of urban population</th>
<th>Average number of urban centres</th>
<th>Average connectivity</th>
<th>Total score of the ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Karwar</td>
<td>1.97</td>
<td>0.97</td>
<td>213.81</td>
<td>23.25</td>
<td>75,020</td>
<td>102.49</td>
<td>1.37</td>
<td>4.00</td>
<td>27</td>
</tr>
<tr>
<td>2.</td>
<td>Ankola</td>
<td>3.88</td>
<td>2.88</td>
<td>115.05</td>
<td>93.46</td>
<td>26,135</td>
<td>28.44</td>
<td>1.09</td>
<td>5.00</td>
<td>38</td>
</tr>
<tr>
<td>3.</td>
<td>Kumta</td>
<td>4.22</td>
<td>3.22</td>
<td>35.83</td>
<td>31.77</td>
<td>34,498</td>
<td>59.27</td>
<td>1.72</td>
<td>6.00</td>
<td>38</td>
</tr>
<tr>
<td>4.</td>
<td>Honavar</td>
<td>8.99</td>
<td>7.99</td>
<td>70.60</td>
<td>10.13</td>
<td>17,833</td>
<td>23.62</td>
<td>1.32</td>
<td>5.00</td>
<td>49</td>
</tr>
<tr>
<td>5.</td>
<td>Bhatkal</td>
<td>3.54</td>
<td>2.54</td>
<td>179.83</td>
<td>33.97</td>
<td>42,171</td>
<td>120.83</td>
<td>2.86</td>
<td>4.00</td>
<td>28</td>
</tr>
<tr>
<td>6.</td>
<td>Kundapura</td>
<td>13.20</td>
<td>12.20</td>
<td>14.93</td>
<td>-51.87</td>
<td>28,595</td>
<td>18.34</td>
<td>0.64</td>
<td>3.00</td>
<td>59</td>
</tr>
<tr>
<td>7.</td>
<td>Udupi</td>
<td>3.46</td>
<td>2.46</td>
<td>270.34</td>
<td>4.79</td>
<td>38,152</td>
<td>164.98</td>
<td>4.32</td>
<td>4.50</td>
<td>25</td>
</tr>
<tr>
<td>8.</td>
<td>Manglore</td>
<td>1.47</td>
<td>0.47</td>
<td>222.31</td>
<td>36.28</td>
<td>1,00,043</td>
<td>719.73</td>
<td>10.71</td>
<td>4.00</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Coastal Region</td>
<td>2.55</td>
<td>1.55</td>
<td>198.67</td>
<td>23.10</td>
<td>61070</td>
<td>153</td>
<td>2.51</td>
<td>Mean=34.62</td>
<td>Mean=34.62</td>
</tr>
</tbody>
</table>

Note: Figures in bracket show the ranks of the taluk based on their levels of development in particular indictors.
The composite indices of levels of urbanization are presented in Table No.7.6 and Figure No.7.1 reveal the levels of urbanization into three types as high, medium and low.

Table 7.6 Levels of Urbanization in Coastal Karnataka (2001)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Levels of urbanization</th>
<th>Range values of the regions</th>
<th>Number of taluks</th>
<th>Name of the taluk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>High</td>
<td>Mean − 1 S.D. and below (i.e., 19.44 and below)</td>
<td>1</td>
<td>Manglore</td>
</tr>
<tr>
<td>2</td>
<td>Medium</td>
<td>Mean − 1 S.D. to mean (i.e., 19.45 to 33.75)</td>
<td>3</td>
<td>Karwar, Udupi and Bhatkal</td>
</tr>
<tr>
<td>3</td>
<td>Low</td>
<td>Mean and above (i.e., 33.76 and above)</td>
<td>4</td>
<td>Ankola, Kumta, Honavar and Kundapura</td>
</tr>
</tbody>
</table>

1. High Urbanized Region

In this category one taluk namely Manglore is noticed and this has a composite index value below 19.44. In Manglore taluk four urban centres namely Mulki (class-IV town), Bajpe (class-V town), Mullur (class-V town) and Adyar (Class-V town) are seen. In this taluk, density of urban population, number of urban centres, urban growth rate, average size of urban centres, U/T ratio's and U/R ratio's are highly developed.
COASTAL KARNATAKA
COMPOSITE LEVELS OF URBANIZATION - 2001
(Based on 6-Urban Accretion and
2-Spatial-Organization Indicators)

Taluks
1. Karwar
2. Ankola
3. Kumta
4. Honavar
5. Bhatkal
6. Kundapura
7. Udupi
8. Mangalore

High (Below 19.44)
Medium (19.45- to 33.75)
Low (Above 33.76)

Fig. No. 7.1
2. Medium Urbanized Region

Three taluks viz., Karwar, Udupi and Bhatkal recorded as medium urbanized regions in the Coastal Karnataka. All these taluks have a composite index ranging between 19.45 to 33.75. Whereas in Karwar taluk, Karwar town itself is class-II town and its urban growth rate (1961-2001), average connectivity, average size of urban centres, and density of urban population are mediumly developed. In case of Udupi taluk urban growth rate, size of urban centre, density of urban population, average connectivity and U/R ratio's are mediumly developed. In this taluk class-V town (Saligram) and two class-VI towns (Yenagudde and Mallar) are located. While in Bhatkal taluk, the urban growth rate, density of urban population, number of urban centres, average connectivity are mediumly developed.

3. Low Urbanized Region

This region includes four taluks viz., Ankola, Kumta, Honavar and Kundapura. All these taluks have more than 33.76 index value.

In Coastal Karnataka, three urban regions of various levels of urbanization sprang up through the regionalization. The extremely southern part of the study region i.e. Mangalore and Udupi region is highly urbanized and it is flanked by less urbanized area in the central part of the coast i.e. Bhatkal and Kundapur, while mediumly urbanized region in the extreme north i.e. Karwar.

PART-II: LEVELS OF REGIONAL DEVELOPMENT

The process of economic growth involves a significant change in the economic activities over different regions along with a change in the structure of
economy. The policy implications of planning for economic development necessarily involves certain policy decisions relating to location of activities, flow of benefits and spatio-functional linkages of economic activities. Even so, it has to be conceded that the whole gamut of economic activities cannot be viewed in the context of overall socio-political consideration. Therefore, when development over different regions occurs unequally, it becomes politically imperative to resort to corrective policy measures. An unchecked and uncontrolled process of growth leading to regional disparities, results in numerous economic, social and cultural problems.

The inequalities, lead to incomplete utilization of resources and to a growth of public costs involved in functioning of its economy. Regional balance lead to under-utilization or even non-utilisation of economic resource both natural and human. But it needs for reducing the regional gaps in terms of social justice. It is believed that income inequalities can be reduced by way of reducing the regional disparities. The social justice demands that all citizens are treated alike and given an equal opportunities in life. In this way it is possible only when inter-regional disparities in the levels of development are ironed off. The reduction of regional disparities is essential from the point of maintaining national integration and political stabilities. If neglected and unchecked these disparities are capable of assuming serious dimensions and threatening the existence of a nation.

The levels of development of the region is conceived as a level (in an ordinal sense) of people command over material and immaterial wealth to the attainment of economic welfare. As a corollary to the same, a command over more and better
resources and factors of production, and approachability to factors and fruits of economic endeavour would be taken as measure of higher level of development. For measuring such levels of development, one cannot rely upon any single indicator may it be per-capita income, or urbanization, or industrialisation or any thing else. Nor one can measure the levels of development by indicators associated with material production alone.

However, in the development, planning indicators are needed mainly to help crystallization of goals of planning in terms of target and to measure the progress made towards the realization of set targets.

In the foregoing study the following four sectors: 13 indicators of agricultural sector, 10 indicators of industrial sector, 21 indicators of infra structural facilities and 12 indicators of demographic sector have been considered to measure taluka wise levels of regional development of Coastal Karnataka. For this purpose Kendal’s rank order score method is adopted.

1. FISHING AND AGRICULTURAL DEVELOPMENT

Fishing and Agricultural development are basic economic functions of coastal region. It is fundamental occupation of the people and provides the raw material to industries and goods of trade. In Coastal Karnataka about 60.78 per cent of population lives in rural areas and out of which more than 93.66 per cent of the people directly depend on fishing and agriculture. Out of 39.22 per cent of urban population about 6.33 per cent of population directly depends on fishing and agriculture.
Indicators of Fishing and Agricultural Development

X1. Percentage of net-sown area to total geographical area.

X2. Percentage of net irrigated area to net-sown area.

X3. Percentage of area under H.Y.V. to net-sown area.

X4. Percentage of area sown-more than once to net-sown area.

X5. Fertilizer consumption per hectare of net sown area (in Kg).

X6. Number of tonnes of fish catch.

X7. Number of cold storages.

X8. Number of ice plants.

X9. Percentage of cultivators to total main workers.

X10. Percentage of agriculture labourers to total main workers.

X11. Number of agriculture co-operative societies per 1000 cultivators.

X12. Agriculture loan advanced by agriculture co-operative societies per cultivator (in rupees).

X13. Percentage of rural population to total population.

2. INDUSTRIAL DEVELOPMENT

Industries are the key force for the rapid economic development of any region. Most of the economists have accepted the industrialisation as the most predominant strategy of development. A vast majority of the people in the study region live in villages, because of this our planning efforts should be to stimulate the rural economy through community development programme. In Coastal Karnataka some industrial centres are being identified at Manglore, Udupi, Karwar and Honavar.
**Indicators of Industrial Development**

- **X₁.** Number of industrial units per 1000 population
- **X₂.** Number of industrial units per 100 sq.km area.
- **X₃.** Percentage of industrial workers to total main workers.
- **X₄.** Percentage of workers engaged in house-hold industries to total main workers.
- **X₅.** Percentage of workers engaged in other-than house-hold industry to total main workers.
- **X₆.** Electricity consumption per industrial unit (Power in thousand units).
- **X₇.** Electricity consumption per-capita of industrial worker (Power in thousand units)
- **X₈.** Percentage of industrial workers to total population.
- **X₉.** The number of industrial workers per 100 sq.km. of area.
- **X₁₀.** Percentage of workers engaged in mining and quarrying activity to total main workers.

**3. DEVELOPMENT OF INFRA-STRUCTURE FACILITIES**

Infra-structure facilities like transport, communication, education, health, recreation, security, banking and electricity etc., play an important role in the process of economic development. Hence, a region having better and more infra-structure facilities may carry on its economic development more effectively. The growth of infra-structure facilities in the rural areas are the important need for economic development. The growing urbanization in a region leads to an increased use or demand of the facilities like educational, medical, transportation, communication, banking, market and some organization facilities, in the region.
Indicators of Infrastructural Facilities

$X_1$. Railway route length per 100 sq.km. of area.

$X_2$. National highway road length per 100 sq.km. of area.

$X_3$. State highway road length per 100 sq. km. of area.

$X_4$. District road length per 100 sq. km. of area.

$X_5$. Number of post-offices per 1,00,000 population.

$X_6$. Number of telegraphic offices per 1,00,000 population.

$X_7$. Number of telephone exchange offices per 1,00,000 population.

$X_8$. Number of telephone per 1,00,000 population.

$X_9$. Number of nursery and primary schools per 1,00,000 population.

$X_{10}$. Number of secondary schools per 1,00,000 population.

$X_{11}$. Number of degree colleges per 1,00,000 population.

$X_{12}$. Number of professional colleges (Polytechnic, Engineering and Medical) per 1,00,000 population.

$X_{13}$. Number of hospitals (including primary health centers and family planning centers) per 1,00,000 population.

$X_{14}$. Number of beds in the hospitals per 1,00,000 population.

$X_{15}$. Number of cinema theaters per 1,00,000 population.

$X_{16}$. Number of police station per 1,00,000 population.

$X_{17}$. Number of rationing shops per 1,00,000 population.

$X_{18}$. Per-capita electricity consumption (including industrial, commercial and non-commercial).
$X_{19}$. Number of commercial and rural banks per 1,00,000 population.

$X_{20}$. Per-capita bank deposits (in rupees).

$X_{21}$. Number of vehicles (including motor-cycles, cars, commercial vehicles etc.) on the road per 1,00,000 population.

4. DEMOGRAPHIC DEVELOPMENT

The economic development of the region is closely related with the small population size, higher density, higher urban ratio's, rural and sex-wise higher literacy, more share of working population, and less number of backward class (S.C. and S.T) people.

**Indicators of Demographic Development**

- $X_1$. Density of total population per sq.km. area.
- $X_2$. Percentage of literates to total population.
- $X_3$. Percentage of rural literates to total rural population.
- $X_4$. Percentage of male literates to total male population.
- $X_5$. Percentage of female literates of total female population.
- $X_6$. Percentage of main working population to total population.
- $X_7$. Percentage of primary working population to total population.
- $X_8$. Percentage of secondary working population to total working population.
- $X_9$. Percentage of tertiary working population to total working population.
- $X_{10}$. Percentage of marginal workers to total population.
- $X_{11}$. Percentage of S.C. population to total population.
- $X_{12}$. Percentage of S.T. population to total population.
Any single indicator cannot represent the overall picture of the level of development. Therefore, it is needed to construct a synthetical index representing the whole set of indicators based on 56 indicators, as selected above.

1. LEVELS OF DEVELOPMENT OF FISHING AND AGRICULTURE IN COASTAL KARNATAKA (2001)

In this study 13 indicators are considered for analysis (see table 7.8). Out of 8 taluks of Coastal Karnataka two taluks viz; Udupi and Mangalore taluks appear as very high developed. Out of 13 indicators of development of fishing and agriculture, these two taluks (Udupi and Mangalore) share first/second rank in most of the indicators. As a result, these two taluks show as very high developed. In the high development group, three taluks viz; Kumta, Honavar and Kundapur appear as high developed. In the medium development only one taluk i.e., Bhatkal appears as medium developed. In the low level of development of fishing and agriculture. We noticed only two taluks viz; Karwar and Ankola. There are no taluks under very low development of fishing and agriculture (see table no.7.7 and fig. no. 7.2).

Table 7.7. Levels of Fishing and Agricultural Development of Coastal Karnataka (2001)

<table>
<thead>
<tr>
<th>Levels of development</th>
<th>Score Values</th>
<th>Number of taluks</th>
<th>Name of the taluk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very low</td>
<td>More than 77.30</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Low</td>
<td>64.76 to 77.29</td>
<td>2</td>
<td>Karwar and Ankola</td>
</tr>
<tr>
<td>Medium</td>
<td>52.25 to 64.77</td>
<td>1</td>
<td>Bhatkal</td>
</tr>
<tr>
<td>High</td>
<td>39.73 to 52.24</td>
<td>3</td>
<td>Kumta, Honavar and Kundapura</td>
</tr>
<tr>
<td>Very High</td>
<td>27.21 to 39.72</td>
<td>2</td>
<td>Udupi and Manglore</td>
</tr>
</tbody>
</table>
Table 7.8. Levels of Fishing and Agriculture Development Based on Thirteen Indicators (2001) as per Kendal’s ranking method.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Taluk</th>
<th>X1</th>
<th>X2</th>
<th>X3</th>
<th>X4</th>
<th>X5</th>
<th>X6</th>
<th>X7</th>
<th>X8</th>
<th>X9</th>
<th>X10</th>
<th>X11</th>
<th>X12</th>
<th>X13</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Karwar</td>
<td>9.59</td>
<td>16.80</td>
<td>-</td>
<td>6.17</td>
<td>22.51</td>
<td>7368</td>
<td>3</td>
<td>13</td>
<td>17.10</td>
<td>10.34</td>
<td>0.79</td>
<td>988</td>
<td>49.26</td>
<td>49.26</td>
</tr>
<tr>
<td>2</td>
<td>Ankola</td>
<td>8.48</td>
<td>15.60</td>
<td>-</td>
<td>14.38</td>
<td>29.38</td>
<td>2824</td>
<td>3</td>
<td>7</td>
<td>53.63</td>
<td>25.01</td>
<td>0.31</td>
<td>2786</td>
<td>74.26</td>
<td>69</td>
</tr>
<tr>
<td>3</td>
<td>Kumta</td>
<td>14.43</td>
<td>31.27</td>
<td>-</td>
<td>17.29</td>
<td>40.03</td>
<td>6463</td>
<td>3</td>
<td>10</td>
<td>22.38</td>
<td>19.93</td>
<td>0.81</td>
<td>7553</td>
<td>76.33</td>
<td>52</td>
</tr>
<tr>
<td>4</td>
<td>Honavar</td>
<td>10.36</td>
<td>55.24</td>
<td>-</td>
<td>22.33</td>
<td>44.49</td>
<td>4762</td>
<td>2</td>
<td>15</td>
<td>16.98</td>
<td>12.21</td>
<td>1.36</td>
<td>13988</td>
<td>88.87</td>
<td>50</td>
</tr>
<tr>
<td>5</td>
<td>Bhatkal</td>
<td>16.32</td>
<td>28.74</td>
<td>-</td>
<td>28.59</td>
<td>102.37</td>
<td>6629</td>
<td>1</td>
<td>5</td>
<td>20.23</td>
<td>16.02</td>
<td>0.62</td>
<td>16654</td>
<td>71.76</td>
<td>54</td>
</tr>
<tr>
<td>6</td>
<td>Kundapura</td>
<td>26.24</td>
<td>29.26</td>
<td>43.29</td>
<td>18.34</td>
<td>42.66</td>
<td>15051</td>
<td>3</td>
<td>24</td>
<td>31.81</td>
<td>32.30</td>
<td>0.53</td>
<td>17728</td>
<td>92.42</td>
<td>43</td>
</tr>
<tr>
<td>7</td>
<td>Udupi</td>
<td>38.97</td>
<td>38.18</td>
<td>59.49</td>
<td>46.14</td>
<td>47.17</td>
<td>37474</td>
<td>8</td>
<td>54</td>
<td>17.59</td>
<td>16.78</td>
<td>0.56</td>
<td>19498</td>
<td>71.07</td>
<td>38</td>
</tr>
<tr>
<td>8</td>
<td>Mangalore</td>
<td>31.45</td>
<td>53.51</td>
<td>73.76</td>
<td>39.04</td>
<td>93.14</td>
<td>48338</td>
<td>19</td>
<td>-</td>
<td>4.67</td>
<td>4.27</td>
<td>1.29</td>
<td>38863</td>
<td>31.94</td>
<td>8</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>19.48</td>
<td>33.57</td>
<td>22.07</td>
<td>24.03</td>
<td>52.74</td>
<td>45.37</td>
<td>5.25</td>
<td>16</td>
<td>23.05</td>
<td>17.11</td>
<td>0.78</td>
<td>14757.25</td>
<td>69.49</td>
<td>52.25</td>
</tr>
</tbody>
</table>

Note: X1: Percentage of net-sown area to total geographical area, X2: Percentage of net-irrigated area to net-sown area, X3: Percentage of area under H.Y.V. to net-sown area, X4: Percentage of area sown more than once to net-sown area, X5: Fertilizer consumption per hectare of net-sown area (in Kg), X6: Number of tonnes of fish catch, X7: Number of cold storages, X8: Number of ice plants, X9: Percentage of cultivators to total main workers, X10: Percentage of agricultural labourers to total main workers, X11: Number of agricultural co-operative societies to per 1000 cultivators, X12: Agriculture loan advanced by agricultural co-operative societies to per cultivator (in rupees), X13: Percentage of rural population to total population.

Note: Figures in brackets show the ranks of the taluk based on their level of development in particular indicators.
COASTAL KARNATAKA
LEVELS OF FISHING AND AGRICULTURAL DEVELOPMENT - 2001
(As per Kendal's Ranking Method 13-Indicators)

- Very High (27.21 to 39.72)
- High (39.73 to 52.24)
- Medium (52.25 to 64.77)
- Low (64.76 to 77.29)
- Very Low (More than 77.30) Nil

Fig No. 7.2

COASTAL KARNATAKA
LEVELS OF INDUSTRIAL DEVELOPMENT - 2001
(As per Kendal's Ranking Method 10-Indicators)

7. Udupi  8. Mangalore

- Very High (19.81 to 28.27)
- High (28.28 to 36.74)
- Medium (36.75 to 45.22)
- Low (45.23 to 53.69)
- Very Low (More than 53.70) Nil

Fig No. 7.3
2. LEVELS OF INDUSTRIAL DEVELOPMENT IN COASTAL KARNATAKA

In this study, 10 indicators are considered (see table no. 7.10). Based on such indicators two taluks viz; Karwar and Mangalore appear as very high developed. In these two taluks the 10 indicators considered show very high share and as such these two taluks appear as very high developed in industrial development of Coastal Karnataka. In category of high industrial development, we noticed two taluks viz; Kundapur and Udupi while under medium development another two taluks viz; Ankola and Honavar are noticed. In the low industrial development the remaining two taluks i.e., Kumta and Bhatkal are identified. There are no taluks under very low development in industries (see fig no. 7.9 and fig. no. 7.3).

Table 7.9 : Levels of Industrial Development of Coastal Karnataka (2001)

<table>
<thead>
<tr>
<th>Levels of development</th>
<th>Score values</th>
<th>Number of taluks</th>
<th>Name of the taluk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very low</td>
<td>More than 53.70</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Low</td>
<td>45.23 to 53.69</td>
<td>2</td>
<td>Kumta and Bhatkal</td>
</tr>
<tr>
<td>Medium</td>
<td>36.75 to 45.22</td>
<td>2</td>
<td>Ankola and Honavar</td>
</tr>
<tr>
<td>High</td>
<td>28.28 to 36.74</td>
<td>2</td>
<td>Kundapura and Udupi</td>
</tr>
<tr>
<td>Very high</td>
<td>19.81 to 28.27</td>
<td>2</td>
<td>Karwar and Mangalore</td>
</tr>
</tbody>
</table>
Table 7.10. Levels of Industrial Development Based on Ten Indicators (2001)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Taluk</th>
<th>$X_1$</th>
<th>$X_2$</th>
<th>$X_3$</th>
<th>$X_4$</th>
<th>$X_5$</th>
<th>$X_6$</th>
<th>$X_7$</th>
<th>$X_8$</th>
<th>$X_9$</th>
<th>$X_{10}$</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kanwar</td>
<td>0.09</td>
<td>1.91</td>
<td>12.87</td>
<td>7.23</td>
<td>7.24</td>
<td>-</td>
<td>-</td>
<td>3.86</td>
<td>780</td>
<td>1.46</td>
<td>27</td>
</tr>
<tr>
<td>2</td>
<td>Ankola</td>
<td>0.11</td>
<td>1.20</td>
<td>2.98</td>
<td>3.17</td>
<td>3.34</td>
<td>-</td>
<td>-</td>
<td>1.07</td>
<td>118</td>
<td>2.49</td>
<td>44</td>
</tr>
<tr>
<td>3</td>
<td>Kumta</td>
<td>0.09</td>
<td>2.23</td>
<td>2.35</td>
<td>2.39</td>
<td>4.78</td>
<td>-</td>
<td>-</td>
<td>0.71</td>
<td>180</td>
<td>0.62</td>
<td>48</td>
</tr>
<tr>
<td>4</td>
<td>Honavar</td>
<td>0.06</td>
<td>1.32</td>
<td>3.83</td>
<td>2.61</td>
<td>6.38</td>
<td>-</td>
<td>-</td>
<td>1.24</td>
<td>263</td>
<td>1.12</td>
<td>40</td>
</tr>
<tr>
<td>5</td>
<td>Bhatkal</td>
<td>0.05</td>
<td>2.01</td>
<td>1.40</td>
<td>1.43</td>
<td>6.00</td>
<td>-</td>
<td>-</td>
<td>0.37</td>
<td>160</td>
<td>1.69</td>
<td>51</td>
</tr>
<tr>
<td>6</td>
<td>Kundapura</td>
<td>0.20</td>
<td>4.94</td>
<td>4.01</td>
<td>8.56</td>
<td>8.09</td>
<td>223.15</td>
<td>3.46</td>
<td>1.32</td>
<td>319</td>
<td>0.36</td>
<td>30</td>
</tr>
<tr>
<td>7</td>
<td>Udupi</td>
<td>0.17</td>
<td>9.73</td>
<td>2.45</td>
<td>13.80</td>
<td>18.31</td>
<td>568.35</td>
<td>10.23</td>
<td>0.95</td>
<td>540</td>
<td>0.57</td>
<td>32</td>
</tr>
<tr>
<td>8</td>
<td>Mangalore</td>
<td>0.48</td>
<td>50.84</td>
<td>7.60</td>
<td>26.87</td>
<td>39.02</td>
<td>81.03</td>
<td>1.24</td>
<td>3.15</td>
<td>3334</td>
<td>0.42</td>
<td>22</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>0.16</td>
<td>9.27</td>
<td>4.69</td>
<td>8.26</td>
<td>11.73</td>
<td>109.06</td>
<td>1.87</td>
<td>1.58</td>
<td>711.75</td>
<td>1.09</td>
<td>36.75</td>
</tr>
<tr>
<td>S.D.</td>
<td></td>
<td>0.14</td>
<td>18.11</td>
<td>2.01</td>
<td>9.52</td>
<td>12.77</td>
<td>344.58</td>
<td>6.35</td>
<td>0.89</td>
<td>1169.07</td>
<td>0.79</td>
<td>8.47</td>
</tr>
</tbody>
</table>

Note: $X_1$. Number of industrial units per 1000 population, $X_2$. Number of industrial units per 100 sq.km. area, $X_3$. Percentage of Industrial workers to main workers, $X_4$. Percentage of workers engaged in house-hold industries to total main workers, $X_5$. Percentage of workers engaged in other-than house-hold industry to total main workers, $X_6$. Electric city consumption per industrial unit (power in 1000 units), $X_7$. Electricity consumption per capita of industrial workers (power in 1000 units), $X_8$. Percentage of industrial workers to total population, $X_9$. The number of industrial workers to per 100 sq.km of area, $X_{10}$. Percentage of workers engaged in mining and quarrying activity to total main workers.

Note: Figures in brackets show the ranks of the taluk based on their level of development in particular indicators.
3. LEVELS OF DEVELOPMENT OF INFRASTRUCTURE FACILITIES IN COASTAL KARNATAKA

In this study as many as 21 number of indicators are considered (see table no. 7.12). The study reveals that the Karwar taluk as very high developed in the infrastructure facilities. In the high developed category three taluks i.e., Mangalore, Udupi and Kumta appear while under medium development category, two taluks viz; Ankola and Honavar appear. In the category of low development of infrastructure facilities, two taluks viz; Bhatkal and Kundapur have appeared. There are no taluks under very low development (see table no. 7.11 and fig. no. 7.4).

Table 7.11. Levels of Development of Infra-structure Facilities of Coastal Karnataka (2001)

<table>
<thead>
<tr>
<th>Levels of development</th>
<th>Score values</th>
<th>Number of taluks</th>
<th>Name of the taluk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very low</td>
<td>More than 125.12</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Low</td>
<td>107.69 to 125.11</td>
<td>2</td>
<td>Bhatkal and Kundapura</td>
</tr>
<tr>
<td>Medium</td>
<td>90.25 to 107.68</td>
<td>2</td>
<td>Ankola and Honnavar</td>
</tr>
<tr>
<td>High</td>
<td>72.82 to 90.24</td>
<td>3</td>
<td>Kumta Udupi and Mangalore</td>
</tr>
<tr>
<td>Very high</td>
<td>55.39 to 72.81</td>
<td>1</td>
<td>Karwar</td>
</tr>
</tbody>
</table>
### Table 7.12. Levels of Infra-structural facilities Based on Twenty one Indicators (2001)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Taluk</th>
<th>X1</th>
<th>X2</th>
<th>X3</th>
<th>X4</th>
<th>X5</th>
<th>X6</th>
<th>X7</th>
<th>X8</th>
<th>X9</th>
<th>X10</th>
<th>X11</th>
<th>X12</th>
<th>X13</th>
<th>X14</th>
<th>X15</th>
<th>X16</th>
<th>X17</th>
<th>X18</th>
<th>X19</th>
<th>X20</th>
<th>X21</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kanvar</td>
<td>3.55</td>
<td>4.51</td>
<td>14.21</td>
<td>4.78</td>
<td>35.85</td>
<td>21.64</td>
<td>22.32</td>
<td>11051.66</td>
<td>195.48</td>
<td>27.73</td>
<td>6.76</td>
<td>0.68</td>
<td>44.64</td>
<td>396.37</td>
<td>2.70</td>
<td>8.12</td>
<td>40.58</td>
<td>18.26</td>
<td>26108.95</td>
<td>12038.53</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Anikola</td>
<td>2.61</td>
<td>7.51</td>
<td>0.00</td>
<td>6.85</td>
<td>39.39</td>
<td>16.74</td>
<td>16.74</td>
<td>4513.49</td>
<td>259.01</td>
<td>20.68</td>
<td>1.97</td>
<td>0.00</td>
<td>49.24</td>
<td>165.45</td>
<td>1.97</td>
<td>2.95</td>
<td>31.51</td>
<td>11.82</td>
<td>10439.24</td>
<td>4397.28</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Kumta</td>
<td>4.46</td>
<td>5.32</td>
<td>10.81</td>
<td>12.01</td>
<td>30.10</td>
<td>28.13</td>
<td>28.13</td>
<td>6429.90</td>
<td>239.41</td>
<td>17.15</td>
<td>2.74</td>
<td>0.69</td>
<td>41.16</td>
<td>107.02</td>
<td>1.37</td>
<td>3.43</td>
<td>30.18</td>
<td>15.09</td>
<td>14131.66</td>
<td>6673.43</td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Honavar</td>
<td>4.11</td>
<td>9.54</td>
<td>0.26</td>
<td>11.13</td>
<td>26.20</td>
<td>25.58</td>
<td>25.58</td>
<td>7285.80</td>
<td>273.86</td>
<td>18.09</td>
<td>0.62</td>
<td>0.00</td>
<td>49.91</td>
<td>157.21</td>
<td>1.87</td>
<td>1.87</td>
<td>25.58</td>
<td>14.35</td>
<td>9419.90</td>
<td>3858.96</td>
<td>95</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Bhatkal</td>
<td>6.88</td>
<td>7.74</td>
<td>0.00</td>
<td>12.61</td>
<td>18.75</td>
<td>14.73</td>
<td>14.73</td>
<td>5945.31</td>
<td>195.23</td>
<td>12.05</td>
<td>2.68</td>
<td>0.67</td>
<td>31.48</td>
<td>120.55</td>
<td>2.68</td>
<td>2.68</td>
<td>22.10</td>
<td>8.04</td>
<td>8907.58</td>
<td>7008.66</td>
<td>108</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Kundapura</td>
<td>3.32</td>
<td>3.39</td>
<td>5.76</td>
<td>12.66</td>
<td>29.41</td>
<td>0.26</td>
<td>8.74</td>
<td>5522.93</td>
<td>55.40</td>
<td>14.04</td>
<td>1.06</td>
<td>0.00</td>
<td>41.67</td>
<td>110.77</td>
<td>1.85</td>
<td>1.59</td>
<td>27.29</td>
<td>129.09</td>
<td>11961.67</td>
<td>6429.99</td>
<td>121</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Udupi</td>
<td>5.28</td>
<td>5.82</td>
<td>5.65</td>
<td>32.84</td>
<td>29.76</td>
<td>0.38</td>
<td>7.96</td>
<td>10805.40</td>
<td>63.31</td>
<td>17.63</td>
<td>2.08</td>
<td>1.14</td>
<td>41.51</td>
<td>578.52</td>
<td>1.52</td>
<td>2.27</td>
<td>23.31</td>
<td>261.75</td>
<td>78031.39</td>
<td>7146.99</td>
<td>84</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Mangalore</td>
<td>9.11</td>
<td>10.83</td>
<td>8.35</td>
<td>33.07</td>
<td>19.05</td>
<td>0.34</td>
<td>3.50</td>
<td>11428.10</td>
<td>51.81</td>
<td>17.00</td>
<td>1.93</td>
<td>1.36</td>
<td>27.32</td>
<td>221.77</td>
<td>1.25</td>
<td>1.93</td>
<td>26.98</td>
<td>2811.46</td>
<td>40799.27</td>
<td>14214.61</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>4.91</td>
<td>6.53</td>
<td>5.63</td>
<td>15.74</td>
<td>29.99</td>
<td>13.47</td>
<td>15.96</td>
<td>7881.83</td>
<td>171.81</td>
<td>18.05</td>
<td>2.48</td>
<td>0.57</td>
<td>40.89</td>
<td>232.21</td>
<td>1.90</td>
<td>3.10</td>
<td>28.44</td>
<td>400.29</td>
<td>1601.96</td>
<td>7726.08</td>
<td>90.25</td>
<td></td>
</tr>
<tr>
<td>S.D</td>
<td></td>
<td>2.23</td>
<td>2.54</td>
<td>4.39</td>
<td>10.67</td>
<td>8.39</td>
<td>15.17</td>
<td>12.65</td>
<td>3496.13</td>
<td>55.84</td>
<td>2.83</td>
<td>0.79</td>
<td>0.56</td>
<td>8.39</td>
<td>167.90</td>
<td>0.47</td>
<td>0.66</td>
<td>3.40</td>
<td>1802.91</td>
<td>5.55</td>
<td>14008.93</td>
<td>3386.48</td>
<td>17.43</td>
</tr>
</tbody>
</table>

**Note:** 
- X1: Railway route length per 100 sq.km. of area, X2: National highway road length per 100 sq.km. of area, X3: State highway road length per 100 sq.km. of area, X4: District road length per 100 sq.km. of area, X5: Number of post-offices per 1,00,000 population, X6: Number of telegraphic offices per 1,00,000 population, X7: Number of telephone exchange offices per 1,00,000 population, X8: Number of telephones per 1,00,000 population, X9: Number of vehicles (including motor-cycle, cars, commercial vehicle, etc.) on the road per 1,00,000 population.

**Note:** Figures in brackets show the ranks of the taluk based on their level of development in particular indicators.
COASTAL KARNATAKA
LEVELS OF DEVELOPMENT OF INFRASTRUCTURE FACILITIES : 2001
(As per Kendal's Ranking Method 21-Indicators)

Very High (55.39 to 72.81)
High (72.82 to 90.24)
Medium (90.25 to 107.68)
Low (107.69 to 125.11)
Very Low (More than 125.12) Nil

Fig No. 7.4

COASTAL KARNATAKA
LEVELS OF DEMOGRAPHIC DEVELOPMENT - 2001
(As per Kendal's Ranking Method 12-Indicators)

7. Udupi 8. Mangalore

Very High (31.00 to 42.49)
High (42.50 to 53.99)
Medium (54.00 to 65.50)
Low (65.51 to 77.00)
Very Low (More than 77.01) Nil

Fig No. 7.5
4. LEVELS OF DEMOGRAPHIC DEVELOPMENT OF COASTAL KARNATAKA

Here, an attempt has been made to know the factors influencing the demographic development. In this study, 12 indicators are considered (see table no. 7.14). Under very high development of demographic aspects two taluks i.e., Udupi and Mangalore are identified. Under high development category only one taluk i.e., Karwar is identified. In the category of medium development as many as four taluks viz; Ankola, Kumta, Bhatkal and Kundapur have appeared. Under low category of demographic development one taluk i.e., Honavar is identified. There are no taluks under very low development of demographic aspects (see table 7.13 and fig. 7.5).

Table 7.13. Levels of Demographic Development of Coastal Karnataka (2001)

<table>
<thead>
<tr>
<th>Levels of development</th>
<th>Score values</th>
<th>Number of taluks</th>
<th>Name of the taluk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very low</td>
<td>More than 77.01</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Low</td>
<td>65.51 to 77.00</td>
<td>1</td>
<td>Honavar</td>
</tr>
<tr>
<td>Medium</td>
<td>54.00 to 65.50</td>
<td>4</td>
<td>Ankola, Kumta, Bhatkal and Kundapur</td>
</tr>
<tr>
<td>High</td>
<td>42.50 to 53.99</td>
<td>1</td>
<td>Karwar</td>
</tr>
<tr>
<td>Very high</td>
<td>31.00 to 42.49</td>
<td>2</td>
<td>Udupi and Mangalore</td>
</tr>
</tbody>
</table>

COMPOSITE LEVELS OF REGIONAL DEVELOPMENT OF COASTAL KARNATAKA

The spatial distribution of overall levels of development is more comprehensive because it is based on 56 indicators (13 indicates of agricultural and fishing sectors, 10 indicators of industrial sectors, 21 indicators of infra-structural facilities and 12 indicators of demographic sector) (see table no. 7.16)
Table 7.14. Talukwise Levels of Demographic Development of Coastal Karnataka Based on Twelve Indicators (2001)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Taluk</th>
<th>X₁</th>
<th>X₂</th>
<th>X₃</th>
<th>X₄</th>
<th>X₅</th>
<th>X₆</th>
<th>X₇</th>
<th>X₈</th>
<th>X₉</th>
<th>X₁₀</th>
<th>X₁₁</th>
<th>X₁₂</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Karwar</td>
<td>202</td>
<td>(7)</td>
<td>75.36</td>
<td>(2)</td>
<td>71.04</td>
<td>(3)</td>
<td>81.93</td>
<td>(2)</td>
<td>68.56</td>
<td>(3)</td>
<td>30.01</td>
<td>(7)</td>
<td>13.65</td>
</tr>
<tr>
<td>2</td>
<td>Ankola</td>
<td>110</td>
<td>(5)</td>
<td>68.11</td>
<td>(5)</td>
<td>64.54</td>
<td>(7)</td>
<td>76.00</td>
<td>(5)</td>
<td>60.00</td>
<td>(7)</td>
<td>35.65</td>
<td>(3)</td>
<td>25.22</td>
</tr>
<tr>
<td>3</td>
<td>Kumta</td>
<td>250</td>
<td>(4)</td>
<td>70.97</td>
<td>(4)</td>
<td>68.98</td>
<td>(4)</td>
<td>77.73</td>
<td>(4)</td>
<td>64.01</td>
<td>(4)</td>
<td>30.14</td>
<td>(6)</td>
<td>22.94</td>
</tr>
<tr>
<td>4</td>
<td>Honavar</td>
<td>212</td>
<td>(6)</td>
<td>65.58</td>
<td>(6)</td>
<td>65.09</td>
<td>(7)</td>
<td>72.92</td>
<td>(7)</td>
<td>60.26</td>
<td>(6)</td>
<td>32.31</td>
<td>(5)</td>
<td>21.15</td>
</tr>
<tr>
<td>5</td>
<td>Bhatkal</td>
<td>428</td>
<td>(3)</td>
<td>63.31</td>
<td>(8)</td>
<td>58.59</td>
<td>(8)</td>
<td>69.64</td>
<td>(8)</td>
<td>57.12</td>
<td>(8)</td>
<td>26.80</td>
<td>(8)</td>
<td>15.67</td>
</tr>
<tr>
<td>6</td>
<td>Kundapura</td>
<td>242</td>
<td>(9)</td>
<td>67.56</td>
<td>(9)</td>
<td>66.63</td>
<td>(5)</td>
<td>74.48</td>
<td>(5)</td>
<td>61.51</td>
<td>(5)</td>
<td>32.61</td>
<td>(4)</td>
<td>25.30</td>
</tr>
<tr>
<td>7</td>
<td>Udupi</td>
<td>570</td>
<td>(2)</td>
<td>74.83</td>
<td>(3)</td>
<td>72.17</td>
<td>(2)</td>
<td>79.44</td>
<td>(3)</td>
<td>70.62</td>
<td>(2)</td>
<td>38.74</td>
<td>(2)</td>
<td>18.24</td>
</tr>
<tr>
<td>8</td>
<td>Mangalore</td>
<td>1057</td>
<td>(1)</td>
<td>76.18</td>
<td>(1)</td>
<td>73.08</td>
<td>(1)</td>
<td>82.51</td>
<td>(1)</td>
<td>73.98</td>
<td>(1)</td>
<td>41.50</td>
<td>(1)</td>
<td>7.32</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>383.87</td>
<td>(1)</td>
<td>70.61</td>
<td>(1)</td>
<td>67.51</td>
<td>(1)</td>
<td>76.83</td>
<td>(1)</td>
<td>64.52</td>
<td>(1)</td>
<td>33.55</td>
<td>(1)</td>
<td>18.71</td>
</tr>
<tr>
<td>S.D.</td>
<td></td>
<td>323.40</td>
<td>(5)</td>
<td>5.11</td>
<td>(4)</td>
<td>4.96</td>
<td>(4)</td>
<td>4.26</td>
<td>(5)</td>
<td>6.14</td>
<td>(5)</td>
<td>5.05</td>
<td>(5)</td>
<td>6.39</td>
</tr>
</tbody>
</table>

Note: X₁. Density of total population per sq. km. area, X₂. Percentage of literates to total population, X₃. Percentage of rural literates to total rural popular, X₄. Percentage of male literates to total male population, X₅. Percentage of female literates of total female population, X₆. Percentage of main working population to total population, X₇. Percentage of primary working population to total population, X₈. Percentage of secondary working population to total working population, X₉. Percentage of tertiary working population to total population, X₁₀. Percentage of marginal workers to total population, X₁₁. Percentage of S.C. population to total population X₁₂. Percentage of S.T. population in total population.

Note: Figures in brackets show the ranks of the taluk based on their level of development in particular indicators.
Table 7.15. Composite levels of Regional Development of Coastal Karnataka (2001) based on Kendal's ranking method

<table>
<thead>
<tr>
<th>Levels of development</th>
<th>Score values</th>
<th>Number of taluks</th>
<th>Name of the taluk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very low</td>
<td>More than 298.84</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Low</td>
<td>266.05 to 298.83</td>
<td>1</td>
<td>Bhatkal</td>
</tr>
<tr>
<td>Medium</td>
<td>233.25 to 266.04</td>
<td>3</td>
<td>Ankola, Honavar and Kundapur</td>
</tr>
<tr>
<td>High</td>
<td>200.46 to 233.24</td>
<td>2</td>
<td>Kumta and Karwar</td>
</tr>
<tr>
<td>Very high</td>
<td>167.67 to 200.45</td>
<td>2</td>
<td>Mangalore and Udupi</td>
</tr>
</tbody>
</table>

Out of eight taluks, two taluks viz; Mangalore, Udupi appear as very high developed in 56 indicators. Two taluks i.e., Kumta and Karwar are identified as high developed taluks. Three taluks viz., Ankola, Honavar and Kundapura are mediumly developed. Whereas, the remaining one taluk i.e., Bhatkal is under low level of overall development. (See Table No. 7.15 and Fig. No.7.6). There are no taluks under very low category of regional development of Coastal Karnataka.

The southern parts of the coastal taluks are more developed while the northern coastal parts are less developed. Therefore, the northern parts have failed to spread the impulses of development to grass root level. Prosperity along the natural favour is a primitive stage of development, while development against the natural favour is a sign of genuine potentiality and performance of human endeavours. The regional disparities in the levels of development have, by and large, stimulated the divergent force leading persistent depression of under-developed areas. On the whole, the taluks of the Coastal Karnataka convey a sense of vigorous diversities in sectoral and spatial development. Therefore, this study furnishes a base for planning programme by identifying the spatial disparities.
Table 7.16. Talukawise Levels of Regional Development of Coastal Karnataka (Based on composite rank values)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Taluk</th>
<th>$X_1$</th>
<th>$X_2$</th>
<th>$X_3$</th>
<th>$X_4$</th>
<th>Total rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Karwar</td>
<td>74</td>
<td>27</td>
<td>60</td>
<td>53</td>
<td>214</td>
</tr>
<tr>
<td>2</td>
<td>Ankola</td>
<td>69</td>
<td>44</td>
<td>92</td>
<td>59</td>
<td>264</td>
</tr>
<tr>
<td>3</td>
<td>Kumta</td>
<td>52</td>
<td>48</td>
<td>78</td>
<td>54</td>
<td>232</td>
</tr>
<tr>
<td>4</td>
<td>Honavar</td>
<td>50</td>
<td>40</td>
<td>95</td>
<td>73</td>
<td>258</td>
</tr>
<tr>
<td>5</td>
<td>Bhatkal</td>
<td>54</td>
<td>51</td>
<td>108</td>
<td>63</td>
<td>276</td>
</tr>
<tr>
<td>6</td>
<td>Kundapura</td>
<td>43</td>
<td>30</td>
<td>121</td>
<td>56</td>
<td>250</td>
</tr>
<tr>
<td>7</td>
<td>Udupi</td>
<td>38</td>
<td>32</td>
<td>84</td>
<td>39</td>
<td>193</td>
</tr>
<tr>
<td>8</td>
<td>Mangalore</td>
<td>38</td>
<td>22</td>
<td>84</td>
<td>35</td>
<td>179</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>52.25</td>
<td>36.75</td>
<td>90.25</td>
<td>54</td>
<td>233.25</td>
</tr>
<tr>
<td>S.D.</td>
<td></td>
<td>10.89</td>
<td>10.52</td>
<td>15.18</td>
<td>13.27</td>
<td>32.79</td>
</tr>
</tbody>
</table>

Note: $X_1$ - Levels of fishing and agricultural development, $X_2$ - Levels of industrial development, $X_3$ - Levels of infra-structural facilities, $X_4$ - Levels of demographic development
COASTAL KARNATAKA

COMPOSITE LEVELS OF REGIONAL DEVELOPMENT - 2001

Based on Kendal's Ranking Method

(13 - Fishing and Agriculture, 10-Industrial,
21-Infrastructure Facilities and
12-Demographic Indicators)

Very High (167.87 to 200.45)
High (200.46 to 233.24)
Medium (233.25 to 266.04)
Low (266.05 to 298.83)
Very Low (More than 298.84)

Taluks
1. Karwar
2. Ankola
3. Kumta
4. Honavar
5. Bhatkal
6. Kundapura
7. Udupi
8. Mangalore

Fig. No. 7.6
Correlation Study

Here an attempt is made to find out the correlation by selecting some of the variables for which the following formula of Spearman is used:

\[ r = 1 - \frac{6 \times \Sigma d^2}{n(n^2-1)} \]

The results of the above formula are analysed as below:

**RELATIONSHIP BETWEEN URBANIZATION AND REGIONAL DEVELOPMENT**

The results of the Spearman's correlation study reveal that there is **no correlation** between the composite levels of regional development and that of composite levels of urbanization, in Coastal Karnataka, where 'r' value is -0.95.

The correlation between the composite levels of regional development and levels of fishing and agricultural development **shows significant correlation** in Coastal Karnataka, where 'r' value is 0.54.

The correlation study between composite levels of regional development and levels of industrial development **show significant correlation** in Coastal Karnataka, where the result show significant correlation in Coastal Karnataka with the value of 0.75.

The correlation between composite levels of regional development and levels of infrastructural development **shows significant correlation** in Coastal Karnataka, where the 'r' value is 0.66.

The correlation study between composite levels of regional development and with that of the levels of demographic development reveal perfect correlation where the 'r' value is 0.94.
The correlation studies between composite levels of urbanization and levels of fishing and agricultural development reveal least correlation in Coastal Karnataka where ‘r’ value appears as 0.11.

The correlation between levels of urbanization and levels of industrial development reveal no correlation in Coastal Karnataka where the result value is -0.43.

The correlation between levels of urbanization and levels of infrastructural facilities shows no correlation in Coastal Karnataka where ‘r’ value is -0.37.

The correlation study between levels of urbanization and levels of demographic development in Coastal Karnataka reveal no correlation where ‘r’ value is -0.69.