CHAPTER - IX  
A CO-RELATION MATRIX OF THE VARIABLES  
INFLUENCING THE LEVELS OF ECONOMIC  
DEVELOPMENTS IN SOLAPUR DISTRICT  

INTRODUCTION:  
The subject matter of Geography like that of other social and natural sciences has been going through changes during the last few decades. The traditionally held view, that Geography deals with distribution of the things on the earth is a challenge faced by contemporarily geographers. Advances in technology and scientific methods, have provided more accurate data and information about the various features of the geographical landscape, and this inturn has provided the geographers, an opportunity to search for the explanation about the patterns of distribution of physical, economic, socio-cultural and biological elements and the relationship among them. Thus, starting for qualitative description, the study of geography; now makes use of quantitative data in distribution analysis and interpretation of the spatial patterns and variations in socio-economic, biological and geographic elements. 

The measurement of association among the different elements of the geographical landscape and differences of the spatial patterns, require the application of appropriate techniques. Geographers are familiar with the techniques of mapping and tabular analysis of data, even then the explanation of the patterns of distribution and trends to be described the features observed. Where the explanation is provided, is likely to be based on a subjective judgment, for example given the maps of the distribution of rainfall and proportion of the area under forests to total
geographical area may be compared, the pattern usually found in areas of high rainfall. The richness of natural vegetation is influenced by the number of factors such as physical socio-economic and biological factor, have great bearing upon it. The theoretical aspects of any phenomena occurring over the surface of the earth may not sometimes give very authentic information, but when it is proved on scientific ground, then the facts and results become quite clear.

In Geography, most of the aspects are descriptive with the reasoning of how and why, are the most important enquiries. Because, how and why provide an answer and support the argument discussed theoretically. In Geography, both qualitative and quantitative aspects have its importance which denotes the quality and quantity of any component.

Now days, the geography is not merely the descriptive subject. The use of statistical techniques and quantitative methods by using computers have enabled geographers to bring out the most authentic and correct results from analysis of the data and information, associated with a particular region. Geographical Information System (GIS) has opened the new ways for geographers to interpret various kinds of socio-economic problems within the region under study. Geographical Information Systems (GIS) are applied to find out exact situation and position of the various geographical facts. The analysis by using the computers, with the help of soft ware programme, solves the different delicate socio, economic and geographical problems within a short period of time.

Since, the present attempt is associated with the various physical, socio-economic and cultural variables, therefore, we have to establish relationship between per capita income on the one hand, and other variables on the other hand. Now, let us take the variables one by one to
find out the relationship between the per capita incomes which is an indicator of levels of socio-economic development in Solapur district.

There are number of factors responsible for the variation in the levels of economic development in Solapur district. Among various socio-economic and physical factors, perhaps, per capita income is the most significant one to represent the levels of economic development. The per capita income is an indicator which represents the standard of living of the people, therefore, the per capita income on the one side and other variables on the other hand have represented the relationship between per capita income and the levels of socio-economic development.

1) Per Capita Income and Percentage of Area under Forest:

In order to understand the relationship between, per capita incomes, which is an indicator of the levels of economic development, and percentage of area under forest, a correlation of coefficient has been calculated. The value of 'r' is to be found quite insignificant and negative. This shows that with increasing per capita income in Solapur district, the percentage of area under to total geographical area declines. Now the question arises, that, why with higher percentage of area under forest is reflected in the lower per capita income in the region under study. The answer of this problem is very simple, it should be borned in mind that the activities associated with forest, come under the primary economic activities and it is quite clear that the forest based activities give low per capita income as compared to secondary and tertiary activities. This has been proved by the inverse relationship between per capita income and the percentage of area under forest to total geographical area for the Solapur district, the region under investigation.
2) Per Capita Income and Percentage of Area under Cultivation:

The relationship between per capita income and percentage of area under cultivation is also found negative, but to a certain extent significant (-0.45). With increasing percentage of area under cultivation, the per capita income declines. The cultivation also belongs to primary economic activity. It has been observed not only in case of Solapur district but also for Maharashtra and India, that the area predominated by primary activities like cultivation generally, have low per capita income in comparison to the areas predominated by the secondary and tertiary economic activities. This may be interpreted in other way, that in rural areas the number of people engaged in cultivation, are relatively higher in number, therefore total production from the agricultural sector is small, resulting in low per capita income. On the other hand, the worker engaged in secondary and tertiary activities get salary on monthly basis which is much higher than the income generated by the cultivators. This is the reason that per capita income and percentage of area under cultivation has a negative correlation.

3) Per Capita Income and Percentage of Irrigated Land:

The percentage of irrigated land is reflected in the agricultural activity. The primary activities have been found inversely related with the per capita income. The co-efficient of correlation between per capita income and percentage of irrigated land is quite insignificant and negative particularly in the rural areas of Solapur district, and joint families are found very common practicing agriculture. The percentage of irrigated land though, enhances the yield per acre of land, yet large size of householder divide the total production in low per capita income. As earlier discuss, in case of area under forest and the proportion of area under cultivation have also shown negative relationship with per capita income. (Table 9.1)
## Table 9.1

A CORRELATION MATRIX OF THE VARIABLES INFLUENCING THE LEVELS OF ECONOMIC DEVELOPMENT IN SOLAPUR DISTRICT

<table>
<thead>
<tr>
<th>Taluka</th>
<th>% of Area under forest to total Geog.Area</th>
<th>% of Area under Cultivation</th>
<th>% of Irrigated land</th>
<th>% of Urban Population</th>
<th>Density of Population</th>
<th>Literacy Rate</th>
<th>% of Workers in Manufacturing</th>
<th>Road Length over 100 Sq Km</th>
<th>% of Rural Population</th>
<th>% of Agriculture Labourers</th>
<th>Rainfall in mm</th>
<th>% of SC Population</th>
<th>% of ST Population</th>
<th>% of Area under grazing</th>
<th>No of Cattle</th>
<th>No of Village(s)</th>
<th>No of Sheep and Goat</th>
<th>No of Saw Mills</th>
<th>Avg Height from MSL</th>
<th>Per Capita Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karmala</td>
<td>3.72</td>
<td>72.05</td>
<td>28.5</td>
<td>9.4</td>
<td>145</td>
<td>68.7</td>
<td>1.89</td>
<td>202</td>
<td>90.6</td>
<td>27.3</td>
<td>541</td>
<td>14</td>
<td>1.3</td>
<td>9.1</td>
<td>180085</td>
<td>118</td>
<td>102243</td>
<td>26</td>
<td>525</td>
<td>3500</td>
</tr>
<tr>
<td>Madha</td>
<td>1.69</td>
<td>80.56</td>
<td>258</td>
<td>7.8</td>
<td>189</td>
<td>70.1</td>
<td>2.5</td>
<td>103</td>
<td>92.2</td>
<td>31.7</td>
<td>534</td>
<td>15.1</td>
<td>0.8</td>
<td>7.5</td>
<td>170416</td>
<td>116</td>
<td>91163</td>
<td>18</td>
<td>490</td>
<td>3400</td>
</tr>
<tr>
<td>Barshi</td>
<td>1.44</td>
<td>88.13</td>
<td>21.9</td>
<td>30.7</td>
<td>230</td>
<td>74.1</td>
<td>5.56</td>
<td>81</td>
<td>69.3</td>
<td>35.5</td>
<td>597</td>
<td>13.4</td>
<td>1.2</td>
<td>6.2</td>
<td>178014</td>
<td>137</td>
<td>78297</td>
<td>15</td>
<td>548</td>
<td>4000</td>
</tr>
<tr>
<td>North Solapur</td>
<td>3.12</td>
<td>63.09</td>
<td>27.8</td>
<td>90.8</td>
<td>1267</td>
<td>76.1</td>
<td>36.2</td>
<td>96</td>
<td>9.2</td>
<td>9.2</td>
<td>617</td>
<td>13.9</td>
<td>2.1</td>
<td>23.2</td>
<td>81252</td>
<td>40</td>
<td>37837</td>
<td>30</td>
<td>535</td>
<td>5000</td>
</tr>
<tr>
<td>Mohol</td>
<td>1.2</td>
<td>79.58</td>
<td>26.8</td>
<td>-</td>
<td>179</td>
<td>69.5</td>
<td>2.42</td>
<td>78</td>
<td>100</td>
<td>42.2</td>
<td>574</td>
<td>15.7</td>
<td>1.5</td>
<td>1.7</td>
<td>199870</td>
<td>101</td>
<td>114521</td>
<td>10</td>
<td>530</td>
<td>3400</td>
</tr>
<tr>
<td>Pandharpur</td>
<td>5.83</td>
<td>86.58</td>
<td>57.3</td>
<td>22.7</td>
<td>300</td>
<td>69.8</td>
<td>5.4</td>
<td>28</td>
<td>77.3</td>
<td>34.5</td>
<td>574</td>
<td>15.5</td>
<td>2.4</td>
<td>5.3</td>
<td>263780</td>
<td>100</td>
<td>125675</td>
<td>32</td>
<td>510</td>
<td>3500</td>
</tr>
<tr>
<td>Malshiras</td>
<td>0.21</td>
<td>70.2</td>
<td>43.7</td>
<td>-</td>
<td>278</td>
<td>71.7</td>
<td>5.24</td>
<td>151</td>
<td>100</td>
<td>39.5</td>
<td>463</td>
<td>17.6</td>
<td>0.7</td>
<td>12.7</td>
<td>426128</td>
<td>117</td>
<td>258048</td>
<td>40</td>
<td>530</td>
<td>3600</td>
</tr>
<tr>
<td>Sangola</td>
<td>0.42</td>
<td>81.6</td>
<td>28.2</td>
<td>10.3</td>
<td>175</td>
<td>66.3</td>
<td>2.9</td>
<td>49</td>
<td>39.3</td>
<td>30.2</td>
<td>463</td>
<td>14.1</td>
<td>0.7</td>
<td>9.6</td>
<td>324835</td>
<td>102</td>
<td>218237</td>
<td>35</td>
<td>535</td>
<td>3800</td>
</tr>
<tr>
<td>Mangalwedha</td>
<td>6.2</td>
<td>69.07</td>
<td>10.5</td>
<td>12.7</td>
<td>150</td>
<td>66.7</td>
<td>1.54</td>
<td>94</td>
<td>87.3</td>
<td>33.4</td>
<td>520</td>
<td>16</td>
<td>1.2</td>
<td>6.7</td>
<td>128112</td>
<td>81</td>
<td>75189</td>
<td>30</td>
<td>525</td>
<td>3400</td>
</tr>
<tr>
<td>South Solapur</td>
<td>1.52</td>
<td>90.05</td>
<td>26.2</td>
<td>-</td>
<td>178</td>
<td>67.4</td>
<td>5.3</td>
<td>60</td>
<td>100</td>
<td>19.9</td>
<td>617</td>
<td>15</td>
<td>4.8</td>
<td>3.6</td>
<td>118378</td>
<td>91</td>
<td>52056</td>
<td>8</td>
<td>500</td>
<td>3500</td>
</tr>
<tr>
<td>Akkalkot</td>
<td>1.14</td>
<td>90.3</td>
<td>25.3</td>
<td>0.5</td>
<td>209</td>
<td>67.7</td>
<td>2.82</td>
<td>65</td>
<td>99.5</td>
<td>48.1</td>
<td>676</td>
<td>17</td>
<td>3.4</td>
<td>5.5</td>
<td>154755</td>
<td>135</td>
<td>72905</td>
<td>12</td>
<td>510</td>
<td>3400</td>
</tr>
<tr>
<td>District Total</td>
<td>2.25</td>
<td>80.01</td>
<td>29.5</td>
<td>2.2</td>
<td>258</td>
<td>71.3</td>
<td>10.4</td>
<td>91</td>
<td>97.8</td>
<td>31.6</td>
<td>561</td>
<td>15.2</td>
<td>1.8</td>
<td>7.28</td>
<td>2E+06</td>
<td>1138</td>
<td>1226171</td>
<td>256</td>
<td>520</td>
<td>3681</td>
</tr>
</tbody>
</table>
Similarly the percentage of irrigated land, which also belongs to the primary economic activity, is associated with the low per capita income in Solapur district.

4) Per Capita Income and Percentage of Urban Population:

The correlation coefficient gives the highly significant value of 'r', which is (0.93) and positive. At the very outset it should be remembered that the degree of industrialization leads to the process of urbanization in a particular region. The high value of 'r' signifies that there is positive relationship between per capita income and percentage of urban population. The urban centres are the places of the concentration of secondary and tertiary economic activities. At the same time, the urban areas have high literacy rate than that of rural areas. The urban people are socially much aware than the rural people. The norm of family size is also smaller in urban areas. It has been observed that commonly urban people are engaged either in the manufacturing, transport and trade activities, construction area repair as well as in the various kinds of service sectors. Most of the professional, practitioner such as Doctors, Engineers, Lawyer and Charter Accountant are generally confined to urban areas. From all these points, it is concluded that with the higher proportions of urban population in a particular region the per capita income is enhanced, as it is proved by the correlation value between the two.

5) The Per Capita Income and the Density of Population:

The density of population is on index of the economic development, because the over density of population, optimum density of population and under density of population have its positive and negative implications, in a particular region. After all, the natural resources are over exploited by the high density of population. The optimum
population is expected to utilize maximum resources, which in turn gives the highest per capita income. On the contrary, the under population in a particular region is not able to exploit the resources fully, resulting in low per capita income.

The per capita income shows a positive co relationship (0.92) is quite significant with density of population in case of Solapur district. In other words it may be related that the high densities of population are generally confined with the areas which are highly urbanized. Now, the question arises why thick populated region have high per capita income. Most of the urbanized areas have concentration of different economic activities in the different economic sectors. The better employment opportunities are also available in the densely populated region of urban centers. As stated earlier in the head of per capita income and percentage of urban population that with rapid growing urbanization, the per capita income also increases rapidly. Similar pattern is also observed in the case of per capita income density of population. Finally, it may be concluded that with high density of population which is true in case of urban areas, the per capita income also rapidly increases due to the concentration of better employment opportunities.

6) Per Capita Income and Literacy Rate:

Literacy is an index of social, cultural and economic development in a particular region. Therefore, literacy is many times considered as a fairly relevant index of the socio-economic development. The variations in literacy many times indicate the place of which a region is getting transform. As a matter of fact, a level of literacy influences to a significant extent, the socio-economic and cultural development of a region. The literacy also influences fertility, maternity and economic condition of population. Any person who can read as well as write any
language of the world with understanding is classified as literate person. Levels of literacy vary enormously from one region to other region, even the levels of literacy vary between urban and rural areas, among males and females and also different occupational and social groups. A large number of socio-economic factors such as nature of economy, levels of urbanization, standard of living, place of females in society, educational opportunities and levels of technological development are responsible to influence the literacy pattern.

The correlation between literacy rate and per capita income furnishes a very significant, (0.75) and positive value. This clearly indicates that with higher proportion of literate people in any area, unquestionably leads to higher per capita income. The educated and literate people are generally absorbed in the secondary and tertiary sectors of the economy, resulting in the high per capita income. The literate people are socially, economically much aware and have a vision for future development by keeping small size of the family. Literate people have higher standard of living in comparison to illiterate people. Most of the literate people are engaged in the white-colour jobs, having better salaries, in comparison to illiterate people who are engaged in the work hardly hand to mouth. The relationship, therefore, between per capita income and literacy is computed white high and significant. This has been proved by the positive value of 'r' between per capita income and literacy.

7) Per Capita Income and Percentage of Worker in Manufacturing:

The percentage of workers in the manufacturing in the one hand and per capita income on the other give the value of coefficient of correlation positive and highly significant (0.929). It is quite surprising matter that such a high value of 'r' between per capita income and percentage of workers in manufacturing gives maximum per capita
income. This is because of the concentration of secondary manufacturing sector generally confined in the urban areas, resulting in the concentration of skilled and technologically advances people in such areas. The technical knowledge of the people bound to be paid high salary by the entrepreneurs. Therefore, the positive and significant relationship between per capita income and percentage of worker in manufacturing is found.

8) Per Capita Income and Road Length per 100 Square Kilometers:

The accessibility is considered as a lifeline of the economy in a particular region. The transportation facilities play a role like, 'venes' in human body, as the blood is circulated to the heart and brain by the venes, the goods of commodities including the accessibility of the people is mobilized through the means of transportation facilities in different parts of the region. Among the arious means of transportation, the road-network plays a vital role because it provides the door to door services. Road network system is responsible for the overall social and economic development in a region. It may be stated that the higher density of road network, socially economically is the better developed region.

The density of road per 100 square kilometer and per capita income shows a inverse relationship, in case of Solapur district. Through the value of coefficient of correlation is quite significant. This is against expectation as mentioned above, why it is so? In order to understand the negative relationship between per capita income and road length per 100 square kilometer in Solapur district, it is observed that the region under study is predominantly rural and agricultural. A sizable area in the construction of road as well as in broadening the roads particularly state and national highways, district highways as well as rural road network occupy a quite large area, otherwise it would have been under cultivation.
Thus, a loss of a sizable cultivable area for the road has inversely affected the production of agriculture in the region. It may be concluded that with high density of roads in the Solapur district the per capita income is adversely affected. It is shown by the value of 'r' between per capita income and roads length per 100 square kilometer of area.

9) Per Capita Income and Percentage of Rural Population:

As expected, the coefficient of correlation between per capita income and percentage of rural population is to be found negative and very highly significant. The value of 'r' has calculated to (-0.93) between per capita income and percentage of rural population. It clearly reveals that with increasing in percentage of rural population in any area of the Solapur district result in low per capita income. It is worth mentioning here that same value of coefficient of correlation was found for the urban population, but that was positive. Here though the coefficient of correlation is same but opposite of percentage of urban population. It clearly indicates that rural areas do not have enough economic opportunities in secondary and tertiary sectors. Secondly agricultural sector of rural areas provide employment for parts of the year particularly during Kharif and Rabi seasons. And rest of the months the agricultural workers do not have any opportunities to earn. On the contrary, in urban areas the earning opportunities are found throughout the year resulting in high per capita income while in rural areas much of the period of the year is wasted without earning, resulting in the low per capita income. This has been proved by the negative value of 'r' between per capita income and percentage of rural population (Table 9.2)
| % of Area under forest to total Gang Area | % of Area under Cultivation | % of Irrigated land | % of Urban Population | Density of Population | Literacy Rate | % of Workers in Manufacturing | Road Length over 100 km | % of Rural population | % of Agricultural labourers | Rainfall in mm | % of SC Population | % of ST Population | % of Area under grazing | No of Cattle | No of Villages | No of Sheep and Goat | No of Saw Mills | Avg Height from MSL | Per Capita income |
|------------------------------------------|-----------------------------|--------------------|-----------------------|----------------------|---------------|----------------------------|-----------------------|-----------------------|------------------------|----------------|----------------}|----------------|----------------|------------------|-----------------|---------------|------------------|----------------|------------------|----------------|
| 1                                        | -0.27465295                 | 1                  | 0.054194339           | 1.26749042           | 1             | -0.506614531               | 0.062207588           | 1                     | 0.131423559             | 0.331546812       | 771368311        | 0.71558492       | 0.734218          | -0.08134107 | -0.03176987   | 0.15707378      | -1706996         | 1                | 1               |
| 1                                        | -0.51621873                 | 0.06250294         | 1                     | 0.017578603          | 0.41783705     | 0.04018514                 | -0.09988811           | -0.62938672          | -0.709174               | -0.894740157     | 0.050794981      | 1               | -0.287142375     | 0.471857955       | 0.062593542   | -0.59422651      | 0.129587943      | 0.06868759      | 1                | 1               |
| 1                                        | -0.21244854                 | 0.06298770         | 0.062077701           | -0.08207771          | -0.62096687    | 0.04754368                 | 0.27155616             | -0.264299             | -0.31738418            | -0.25442147     | 0.047390103      | 1               | -0.121900342     | 0.416229871       | -0.15667902   | -0.29634376      | 0.006893643      | -0.05649648     | 1                | 1               |
| 1                                        | -0.08858554                 | 0.06857701         | 0.237243578           | -0.49065496          | -0.27155616    | -0.62096687                | 0.04754368             | 0.27155616             | -0.264299             | -0.31738418     | 0.047390103      | 1               | -0.212448548     | 0.06298770         | 0.062077701  | -0.08207771      | -0.62096687     | 0.04754368      | 1                | 1               |
| 1                                        | -0.05284367                 | 0.066022303        | 0.041312433           | 0.097265894          | 0.71986857     | -0.183264                  | 0.117054318            | -0.40056424          | 0.03870922              | -0.18564143     | 0.74372738       | 0.10462165      | -0.012190032     | 0.416229871        | -0.15667902  | -0.29634376      | 0.006893643      | -0.05649648     | 1                | 1               |
| 1                                        | 0.012746658                | -0.72549064         | 0.852988              | 0.882115849          | 0.854687989    | 0.30982992                | -0.79237694            | -0.62534857           | -1.13991                | -0.22057276     | 0.81683765       | 0.9088256        | -0.50515808      | -0.02190123      | 0.416229871 | -0.15667902   | -0.29634376      | 0.006893643      | -0.05649648     | 1                | 1               |
| 1                                        | 0.01266826                  | 0.007971910        | 0.06825434            | -0.3089741         | -0.06869386    | 0.1064227               | 0.06923486             | 0.225183585            | 23719388             | 0.916998787     | 0.15708575       | 0.9088256        | -0.50515808      | -0.02190123      | 0.416229871 | -0.15667902   | -0.29634376      | 0.006893643      | -0.05649648     | 1                | 1               |
| 1                                        | 0.03492410                 | -0.070527029       | 0.064442018           | -0.22189159        | -0.06144559    | 0.1678736               | 0.148687756            | 3382874                | -1243141              | -0.03501705     | 0.150599920      | 0.957885905     | -0.05649648      | -0.02190123      | 0.416229871 | -0.15667902   | -0.29634376      | 0.006893643      | -0.05649648     | 1                | 1               |
| 1                                        | -0.138260243               | -0.39595565         | -0.14440168           | 0.433014084         | 0.2578964793   | 0.40049098            | 0.2606701733           | 0.160986266            | -0.37818657             | -0.24134325     | -0.2129768       | 0.32232355      | -0.45696033      | -0.0050037       | 0.0230869 | 21769          | -0.0356699       | 0.03840324      | 1                | 1               |
| 1                                        | -0.039713756                | -0.450174324       | -0.3319414            | 0.63467784         | 0.9176409403   | 0.78327727            | 0.927947937            | -0.21355121             | -0.82961699            | -0.872377788    | 0.178301713      | 1               | 0.0471933        | 0.0193476       | 0.0230869 | 21769          | -0.0356699       | 0.03840324      | 1                | 1               |
10) **Per Capita Income and Percentage of Agriculture Labors:**

The correlation between per capita income and percentage of agriculture labors has an inverse relationship. It is common phenomenon that agriculture labors are the poor peoples, often hand to mouth because of temporally work in the agriculture sector. These are not permanent workers throughout the year, depends upon the daily wages. Therefore the value of coefficient of correlation is -0.69 between the per capita income and percentage of agriculture labor. In a country like India where more the two third populations depends upon agriculture for their sustenance the regional study namely, Solapur district is no exception to this rule. Even today, the daily wages are quite lower for agricultural labors, and the size of such worker is quite high not only in the case of Solapur district but also for the state of Maharashtra and India. This is the reason that in India the agriculture labors are known as the people of poor economic strata. It may be concluded that with increasing the proportion of agricultural labors, naturally the per capita income is adversely affected. It has been demonstrated by the inverse relationship between the two variables.

11) **Per Capita Income and Rainfall:**

The prosperity of a nation, generally depend upon the amount of rainfall. In a region like Solapur, which belongs to rain shadow area, is very true. The Rabi and Karif crops both are based on the enough supply of moisture or rainfall. The artificial supply of water from the reservoir of lake is also depends upon the amount of rainfall, which is used throughout the year for various purposes. It must be noted that water is the lifeline of the living things. It has been proved that life began from the water. Without water there is no possibility of prosperity in any region. Most of the communities have settled down along the sources of water,
particularly in the river valleys, where abundant supply of water was available. The per capita income and rainfall depicts the positive relationship though not very significant. It needs that with good amount of annual rainfall in a region like Solapur district, results in the high productivity in the agricultural sector. The high amount of rainfall is responsible for the storage of water which may be used throughout the year for irrigation as well as for drinking and industrial purposes, resulting in the good production both in agricultural as well as in the manufacturing sectors. The positive value of coefficient of correlation clearly indicates that with increasing annual rainfall in millimeter is resulted in higher per capita income in the study region.

12) Per Capita Income and Percentage of Scheduled Cast Population:

Scheduled cast population is the socially and economically, spiritually and culturally backward sect in India. This self has been deprived off various benefits by the upper class people. This sector of the lower class as considered by higher class people is exploited by masses in our country. Scheduled cast population in case of Solapur district is relatively large than many parts of the state of Maharashtra. Hence, the relationship between per capita income and proportions of scheduled cast population represent inverse and significant relationship as the value of ‘r’ is -0.51. This means that with increasing proportion of the scheduled caste population the per capita income decline. Scheduled cast population lack behind in the social and economic sectors because even today the high percentage of illiterate people are found in this group of society. In spite of efforts are being made for the uplift of this class by the government, this group even today could not get the momentum as expected. Though, there is provision of reservation in the educational, services as well as in political realms, yet scheduled cast population has
not reached up to the mark in the social and economic development. Even today large percentage of these people is engaged in the service of higher class people at the very wages from all these, points it may be concluded that with high percentage of scheduled cast population the per capita income of the people goes down, which is proved by the correlation value between the two factors.

13) Per Capita Income and Percentage of Scheduled Tribe Population:

The scheduled tribe population in the Solapur district is quite negligible. The scheduled tribe population particularly is associated with the forest and mountain region. In India schedule tribes population is found in north-eastern states of India such as in Jarkhand, Chattisgarh, Eastern part of Vidarbha in Maharashtra, Satpuda ranges of Dhule and Nandurbar and Nasik and Thane district of Northern part of Maharashtra. Socially, economically, culturally and educationally these tribes are very backward. The accessibility in forest and mountainous region where they reside is very poor. Generally they depend upon the primary activity based on forest, grazing and lumbering for their survival. In the case of Solapur district their proportion is quite low, hence the relationship between per capita income and percentage of scheduled caste population is not much increased, as the value of coefficient of correlation is -0.051, which shows inverse and most insignificant relationship. But one thing is clear from the fact that with increasing scheduled tribe population the per capita income decline. Like scheduled cast population these people are even poorer and backward sect of the Indian society and their per capita income is much lower than scheduled caste population. Because of low level of literacy, it has been shown by the 'r' value which is negative in case of Solapur district.
14) Per Capita Income and percentage of Area Under Grazing:

Grazing activity belongs to primary economic activity. On the basis of the factor associated with the primary activity it has been found that there was negative and inverse relationship. But, on the contrary the percentage of area under grazing gives positive and highly significant value of coefficient of correlation (0.85). The value of 'r' which is 0.85 signifies that in a region like Solapur the percentage of area under grazing boost up the rearing of animals like cattle, sheeps and goats for the masses in Solapur district. Due to low amount of rainfall in the region understudy, a large tracks of pasture, barren land and other uncultivable land are utilized by the people and the domestic animal are the source of milk, meat, skin, hide, wool and many other by products. It has resulted in the enhancement of income of the people on large scale in Solapur district. In this way the per capita income of the rural people in the district of Solapur has been raised, which has been testified by the value of coefficient of correlation, between per capita income on the one hand and percentage of area under grazing on the other hand.

15) Per Capita Income and Number of Cattles:

India stands in first rank as for as the number of cattle and other domestic animals are concerned. The coefficient of correlation between per capita income and number of cattle is quite insignificant and negative. Thus clearly reveals that there is a no significance relationship between these two variables. Unquestionably the number of cattle and animal is the chief source of income for large number of rural as well as for urban people, since these animal are used for the meat, milk, skin and many other bio-product in day to day life by the sizable proportion of the population. In case of Solapur district the number of cattle has influenced the per capita income in other way round. It may be interpreted that with
decreasing the number of cattle in the Solapur district. The secondary and tertiary sector is adversely affected, resulting in low per capita income. Secondly the degree of mechanization in agricultural sector is now being practiced by number of cultivators, getting maximum return from the agriculture. On the contrary the poor farmer are still practicing agriculture with the help cattle in old fashion and getting low return from the agriculture sector. It is very true in case of Solapur district, because value of 'r' between per capita income and number of cattle is negative and insignificant.

16) Per Capita Income and Number of Villages:

The numbers of villages represent the rural economy in any region. The correlation value between per capita income and number of villages is calculated to be -0.053. This is highly insignificant coefficient of correlation. As per the indication of the value there is decline trend in per capita income in Solapur district. The degree of industrialization and consequently urbanization is poor in rural dominated areas perhaps due to poor accessibility in terms of road network system as well as railway network system. The urban centers and industrial centres are the key source of high income. On the contrary, the rural sectors do not have better infrastructural facilities as well as better job opportunities. All these factors are responsible for the low per capita income in rural areas of the Solapur district. Therefore, the per capita income inversely influenced by the number of villages.

17) Per Capita Income and Number of Sheeps and Goats:

The per capita income and number of sheep and goat has also shown negative and quite insignificant value of 'r'. The number of sheep and goat also represent rural economy. The large numbers of the people,
who are engaged in the rearing of different goat, generally are illiterate and poor people. The grazing activity sometimes becomes highly profitable, but as stated earlier in the head of area under grazing and per capita income. This fact is not correct in the case number of sheep and goat, because with increase on number of sheep and goat the per capita income decline. The number of sheep and goat is high in rural areas of Solapur district. If we compare the income generated by the sheep and goat, with the income gained by secondary and tertiary sectors, then it is found much higher than the former income. That is why the relationship between per capita income and number of sheep and goat is negative and significant for the region under study.

18) Per Capita Income and Number of Saw Mills:

The number of saw mills shows a positive though insignificant relationship with the per capita income. The exploitation of the forest resources for the purpose of construction, of houses and industries is generally based on the wood. Saw mills are chief sources of manufacturing raw wood into finished products. The furniture and the other various products of lumbering are used particularly in the construction purposes in rural areas of the Solapur district. The proportions of land under forest have negative relationship with per capita income because of sizable area is not used for the purpose of agriculture, resulting in low per capita income in rural areas of the Solapur district. On the contrary number of the saw mill if increases, then the per capita income also increase. The raw wood from the forest directly does not have that much economic weight as the manufacture of furniture and construction gives manifold times economic value for the same goods. This has been supported by the positive value of coefficient of correlation between per capita income and number of saw mills.
19) **Per Capita Income and Average Height from Sea Level:**

The coefficient of correlation is calculated between per capita income and average height from sea level. It is positive relationship to a certain extent, and is significant. The general rule for the physiographic division of an area is that the land is categorized on the basis of height from the mean sea level, into plain, plateaus and mountains. It is believed that from the human settlement point of view, plain areas are more suitable. Since various kinds of economic activities due to better accessibility is quite easy hence, the plain areas support larger size of population. On the other hand of the scale, the mountain region is not suitable for human habitation because of poor accessibility and unfavorable climate and physical constraint. Therefore, high mountainous region do not support large size of population. The value of coefficient of correlation between per capita income and average height from the mean sea level depict the contrary picture as the average height from mean sea level in Solapur district increases, the per capita income also increases. This is a matter of contamination. Most probably the high areas from mean sea level to a certain extent are suitable for primary, secondary and tertiary activities resulting in high per capita income. Secondly, the high areas like plateau and mountains posses and mining activities are carried out in such region giving high per capita income. This is the reason perhaps for the high per capita income with average height from the mean sea level in case of Solapur district.