CHAPTER VI
IDENTIFICATION OF
GROWTH CENTRES AND
LEVELS OF DEVELOPMENT

6.1 Introduction
6.2 Review of Literature
6.3 Three Basic Concept
6.4 Centrality of the Service Centres in the Study Area
6.5 Identification of Growth Centres
6.6 Methodology
6.7 Areal Settlement Pattern
6.8 Hierarchy of Settlements by Population Size
6.9 Hierarchy of Settlement by Scoring Technique
6.10 Locations of the Existing Growth Centres
6.11 Level of Development
6.12 Imbalance Development

References
CHAPTER VI
IDENTIFICATION OF GROWTH CENTRES
AND LEVELS OF DEVELOPMENT

6.1 INTRODUCTION

Settlements as cultural bearing units are mirror of the region, where the civilization originates, develops and spreads into the whole sphere of human life. There is an increasing outflow of classified information about economic life of villages and central places e.g. demographic features, occupational structure, financial assets and liabilities, production functions, cost and return and disposal of marketable surplus. Settlement is the spatial differentiation of the grouping of houses and highways on any landscape where social cohesion and cultural ties strengthened according to the needs of the society (Mandal, 1979). It is also regarded as the topographic expression of the grouping and arrangement of two fundamental elements of houses and highways (Brunhes, 1952).

The history of civilisation flashes light on particular site for settlement at certain ideal geographical point. Numbers of geographical points provides ideal environment for the location of settlement. In the early era, size and shape of the settlements were limited but time being population is increased and size of settlements is also expanded. In the common environment, the growth of settlements varies from place to place and time to time. A particular settlement grown very rapidly. The mid point located settlements, which are surrounded by various settlements show comparatively high growth, obviously such settlements remain big and they are surrounded by small settlements, these small settlements dependent on this central settlement for various facilities (Gophane, 1981).
The importance of settlement depends upon the number of functions, it possesses and generally, the maximum functions are located in the central settlement. Location is meant in the sense that one is identifying a certain place to put particular thing or activity in that particular place (Wanmali, 1972). The location of particular functions in a particular place, thus, depend on the centrality of space, level of development, demand from the consumers, standard of living of the consumers and easy accessibility through good transportation and communication network (Christaller, 1933).

The regional development is mostly concerned with their settlement patterns. A region having proper and ideal hierarchic than the non-hierarchic or moderate hierarchic region. The settlements are ordered according to their importance as centres for providing services to the population in the surrounding settlements (Misra, 1974). The pyramidal structure shows that at the apex there are very few settlements possess higher functions and activities. But, at the bottom, there are lot of small size settlements which have less number of functions and activities.

The process of development in India has been a matter of concern for scholars of almost all disciplines especially economists, geographers, sociologists, historians and other. They have taken different indicators for the assessment of the development. There are so many indicators and it is very difficult to take all the indicators to find out the levels of development and their imbalances. In the fifth chapter, various socio-economic aspects have been studied. In this unit, it is intended to study the areal variations of socio-economic development for the hilly area of Kolhapur district. Considering these aspects here attempt has been made to study the growth centres and levels of development.
6.2 REVIEW OF LITERATURE

6.2.1 REGARDING SERVICE CENTRE

The centrality of service centres is measured by various scholars through various ways. The study of centrality and hierarchy of service centre is very important for knowing the present situation of the area. The centrality of the region is measured by using various ways and things into consideration of single or several functions, which are available at place.

First of all, Christaller (1933) has formulated Central Place Theory on southern Germany. Dickinson (1934) has used wholesale sale of the places to centrality. Christaller theory modified further by Losch (1940). Christaller considered following good and services provided by central place. They are trade, banking, education, administration, commerce and transportation. He was assuming uniformity in physical and cultural landscape, unbounded unit area, equal accessibility in all directions and rational consumer travel behaviour. The two different approaches have been adopted for studying the hierarchies. Christaller considered the approach from higher to lower order central place, while as with Losch; it is from lower to higher order central place.

The other scholars are Smailes, A. E. (1944) who has used service frequency like banks, offices, shops, schools and hospitals by measuring area as a particular central place, Berry and Garrison (1958) have considered all important functions for calculating centrality. Singh, O. P. (1971) has taken population as a criterion engaged in commercial activities. Thus, the concept of centre place, in the words of V. L. S. Prakash Rao (1972), is the crystallization of mass around a nucleus, which may be a town and is the focal point for its
surrounding area. Davis (1977) has used retail establishment for calculating centrality index.

In India, several geographers have used various functions to measures the centrality of place. N. D. Bhattacharya, R. B. Mandal, R. C. Tiwari, A. P. Kumbhar, B. N. Gophane and S. S. Chaudhari have studied various aspects of settlements and service centres for their study region.

6.2.2 REGARDING LEVELS OF DEVELOPMENT

Sengupta and Sadasyuk (1968) presented a typology of population resource region in term of dynamic region, prospective regions and problem region in India. The Indian Economic Conference held at Patna, in 1969, and the Geographical Congress held in New Delhi, in 1972, adopted regional disparities in development as the main theme of discussion. Nath (1970) has examined both the levels and rate of economic development in various districts and states of India by making use of data on per capita income. Pal M. N. (1972) studied regional disparity in the levels of development in India. Smapath (1977) is of the opinion that our national economic policies must have regard not only to economy of the country as a whole but also to the disparities between various regional economies. The treatment of this them by Yadav and Prasad (1977) is more comprehensive. They have used a set of 10 selected indicators related to income, employment in non-primary sector, literacy and infrastructural variables. Gulati used 32 indicators belonging to different sectors. Raza (1978) analysed the regional disparities in level of development in India, in the context of political economy of the country.

Hemlata Rao (1982) has used the principal components method, which was suggested by Hoteling (Regional economic disparity in the Karnataka

As above discussion, here attempt has been made to study the identification of growth centres and levels of development and their imbalance development for the hilly area of Kolhapur district.

6.3 THREE BASIC CONCEPT

Three basic concepts are involved in the emergence of central places – (i) Centrality, (ii) Threshold and (iii) Range of central goods or Hierarchy.

6.3.1 CENTRALITY

The centrality means the ratio between the services provided and the local needs of its inhabitants (Chand and Puri, 1983). There are no standard
formula for measuring centrality. However, some of the measures used to measure centrality are as follows –

a. Population size of the settlement
b. Telephone calls weighted by telephone density
c. Number of automobiles entering in the settlement
d. Business turnover of shops in the settlement
e. Number of wholesale and retail stores in the settlement
f. Professional services located in the settlement

6.3.2 THRESHOLD

The minimum volume of demand for the goods, which ensures normal profit to seller, and referred, as the business activity is known as the threshold. No business activity can develop unless there is adequate demand for its goods and services. Thus, the threshold depends on the size of the population (demand) of the locality and also of its hinterland.

6.3.3 RANGE OF CENTRAL GOODS OR HIERARCHY

The hierarchy of settlement can be organised in various ways, with discrete and structurally distinct groups of centres. For convenience, the modes of expressions like hamlet, village and town can be used to identify them. The hierarchy and resting pattern on the basis of marketing principal results in the maximum number of central place has to be as near as possible to the consumer to satisfy the notion of movement minimisation. This particular system known as K=3 network. Christaller did postulate two other forms of hierarchical arrangements to take account of deviations from the marketing principal. They are the traffic principle (transportation) and the administrative principle. The traffic principle was proposed to account for situations in which costs of
transportation were significant. As per this if we add the hamlet of the functional structure of the village itself, each village serves 4 hamlets. Therefore, K=4 and K=7 network was proposed to take into account the administrative principle in which connections are made between a given order of central place and all six of the nearest immediately lower order places.

6.4 CENTRALITY OF THE SERVICE CENTRES IN THE STUDY AREA

An attempt has been made to identify the service centres, their centrality and hierarchy for the study area. In the study area, most of the rural settlements are small in size in relation to the various functions and their population. The hilly area of Kolhapur district is basically based on agrarian economy and having 99.55 per cent rural settlements.

To study the rural service centres, the region must have some important central places. The nature of settlements should be town or city, which provides various types of goods and services to the surrounding region. The centrality of settlements depends on the functions. A rural service centre is defined as a place, which supplies the social, economical and administrative needs of the region as well as itself.

6.5 IDENTIFICATION OF GROWTH CENTRES

For the identification of hierarchic systems of the study area, we have adopted central place theory. Based on it the growth centres are found out for integrated area development. The growth centres of the study area are key factor. So, growth centres are most important for regional development, the identification of areal service centres must be needful for prospective regional development.
In the present study, the following criteria have been used to identify the rural service centres. To identify a rural service centre, a settlement should have minimum 2000 population and any three following functions of lower orders.

- **Group A** - Education
- **Group B** - Health Service
- **Group C** - Weekly Market
- **Group D** - Communication
- **Group E** - Transportation
- **Group F** - Banking
- **Group G** - Electricity

### 6.6 METHODOLOGY

The centrality of a place can be measured by several ways by taking into account a single function or all functions available at the centre. Davis W. K. D. (1967) has used several functions and calculated locational index for each function. The method of Davis gives the total serving capacity of any rural service centre.

In the present study, various functions have been taken into account for the calculating centrality values. The centrality is calculated by using various methods. Centrality values are determined by using Davis W. K. D’s method (1967) by following formula –

\[
c = \frac{t}{T} \times 100
\]

where as –

- \(c\) = is a location of any region
- \(t\) = is a single function
- \(T\) = is a number of particular functions in the area
By using this method, the centrality score is determined. The centrality index of rural service centres is used to identify the growth centres (Appendix II).

6.7 AREAL SETTLEMENT PATTERN

Generally, the hilly area of Kolhapur district is known for rural settlements. The total study area has 880 settlements, out of this, 876 are rural and 04 are urban. The table 6.1 shows tahsil-wise distribution of rural and urban settlements.

Table 6.1 : Tahsil-wise Number of Rural and Urban Settlements (2001)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Tahsil</th>
<th>Rural</th>
<th>Urban</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shahuwadi</td>
<td>133</td>
<td>01</td>
</tr>
<tr>
<td>2</td>
<td>Panhala</td>
<td>130</td>
<td>01</td>
</tr>
<tr>
<td>3</td>
<td>Bavada</td>
<td>39</td>
<td>Nil</td>
</tr>
<tr>
<td>4</td>
<td>Radhanagari</td>
<td>118</td>
<td>Nil</td>
</tr>
<tr>
<td>5</td>
<td>Bhudargad</td>
<td>114</td>
<td>Nil</td>
</tr>
<tr>
<td>6</td>
<td>Ajara</td>
<td>96</td>
<td>01</td>
</tr>
<tr>
<td>7</td>
<td>Gadhinglaj</td>
<td>90</td>
<td>01</td>
</tr>
<tr>
<td>8</td>
<td>Chandgad</td>
<td>156</td>
<td>Nil</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>876</strong></td>
<td><strong>04</strong></td>
</tr>
</tbody>
</table>

*Source: Census of India, 2001*

The distribution of Rural and urban settlements of the study area is uneven. The tahsils like Bavada (39), Radhanagari (118), Bhudargad (114) and Chandgad (156) are cent per cent rural settlements. In the other hand, Shahuwadi, Panhala, Ajara and Gadhinglaj tahsils have one each urban settlement.
6.8 HIERARCHY OF SETTLEMENTS BY POPULATION SIZE

The population size of each settlement and its available functions are ranked, though this hierarchy of settlements. The seven functions (education, health, banking, market, transportation, communication and electricity) are the indicator of hierarchy. These functions are the basic requirements of the population. Therefore, these functions are considered as significant indicators for delineating the hierarchy of settlements of the study area. As per these, the study area has ordered into two major categories. The first category contains basic and general functions and the second category deals with distinguished functions. The table 6.2 shows view of the settlement hierarchy with their population size.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Size of Settlement</th>
<th>No. of Settlements</th>
<th>Divisions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>No of Functions Available</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>I</td>
</tr>
<tr>
<td>1</td>
<td>Below 500</td>
<td>137</td>
<td>126</td>
</tr>
<tr>
<td>2</td>
<td>500-1000</td>
<td>264</td>
<td>188</td>
</tr>
<tr>
<td>3</td>
<td>1000-1500</td>
<td>209</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>1500-2000</td>
<td>105</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>2000-2500</td>
<td>52</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Above 2500</td>
<td>113</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>880</strong></td>
<td><strong>314</strong></td>
<td><strong>269</strong></td>
</tr>
</tbody>
</table>

**Order of hierarchy**  
V IV III II I

**Source**: 1. Census of India, 2001  
2. Complied by Researcher
6.8.1 I - ORDER SERVICE CENTRES

I - order is the topmost hierarchy of the settlements. Under the first order of hierarchy, there are only seven settlements and these are Kotoli, Kale and Kodoli (Panhala taluka), Gargoti (Bhudargad taluka), Ajara (Ajara taluka), Gadhinglaj (Gadhinglaj taluka) and Chandgad (Chandgad taluka). Out of these, Ajara and Gadhinglaj are the urban centres and also taluka headquarters but other service centres are rural. All these service centres are characterised by higher quality of education, medical facilities, banking and easy accessibility of transportation network. Beside this, taluka headquarters provide administrative services. Kodoli is an industrial centre (Warana Udyog Samuha) and well know for educational functions. The population of hinterland frequently visit to complete the other higher order functions. These service centres are considered as ‘growth centres’ of the hilly area of Kolhapur district.

6.8.2 II - ORDER SERVICE CENTRES

In the second order service centres, there are 48 settlements. These all settlements are on the second place of hierarchy. Education (UG, PG and Professional), periodic market, medical facilities, financial services and network play significant role for these service centres. Second order service centres possess less number of functions and command area compared to first order service centres. Due to the availability of various services, people from surrounding area are attracted to fulfil their needs.

6.8.3 III - ORDER SERVICE CENTRES

There are 242 settlements, come under the third order of hierarchy. The periodic market is a significant function available at few settlements of this category. Education, health, communication and transportation, etc. are
important functions of these settlements. The third order service centres are providing limited services to fourth and fifth order service centres. The hinterlands of these service centres are smaller than the previous service centres (I and II order). Due to this condition and their limited functions, they serve limited number of neighbouring settlements.

6.8.4 IV - ORDER SERVICE CENTRES

The fourth order service centres in the study area are 269 settlements. In these settlements, there are four functions prominently available. But the availability of functions is differ from settlement to settlement. The most available functions education, medical, transportation, market and electricity. In all these functions electricity is common function throughout all settlements. Generally, market and banking services are not found or they are rare at these settlements. Due to the limitations of functions, the population of these settlements complete their needs from higher order service centres.

6.8.5 V - ORDER SERVICE CENTRES

At the bottom of the hierarchy, there are 314 settlements. These settlements possess less than four functions. The distribution of these settlements in the study area is uneven. The proportion of settlements is less in northern part compare to central and southern part, but these settlements are spread all over the area. The functions, which they possess, are very unequal, some time only single function is available. Number of settlements lack functions like education, health centre but grossary and kaccha road is available. Some settlements possess above-mentioned single or multi factions but they have their limitations to provide services and the lowest order functions are available in these settlements. Due to that, to get quality
functions, all settlements of this order are depend on first, second, third and fourth order service centres.

As mentioned above, there are five orders of settlements hierarchy in the study area, which is based on empirical method. The population size of settlements and number of functions available at unit level are considered. Such empirical method for settlements hierarchy is better for ranking of the settlements (as per available functions) but it has various demerits. Most outstanding difficulty of this method is that we consider only the number of basic functions available in each settlement and the quality of the functions is neglected. Therefore, sometime a settlement having maximum number of the lowest quality is also classified under the highest order and it gives a rather defective result for further planning for integrated area development (Gophane, 1981). To overcome the demerits and difficulties of this method, another method of Davis W. K. D. (1967) is applied for delineating the settlement hierarchy and locating the growth centres in the study area.

6.9 HIERARCHY OF SETTLEMENT BY SCORING TECHNIQUE

The centrality score of each settlement is calculated by considering the major seven groups of functions. The seven groups of functions have combinally content nineteen sub-functions. As per the availability of these sub-factions (numbers) at individual unit are scored (per group of function) and total score is calculated. For the present study, five groups of hierarchy and six groups of settlement size are assessed and growth centres are identified for integrated area development.
Table 6.3: Hierarchy of Settlements by Scoring Method

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Size of Settlement</th>
<th>No. of Settlements</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Below 4</td>
</tr>
<tr>
<td>1</td>
<td>Below 500</td>
<td>137</td>
<td>137</td>
</tr>
<tr>
<td>2</td>
<td>500-1000</td>
<td>264</td>
<td>264</td>
</tr>
<tr>
<td>3</td>
<td>1000-1500</td>
<td>209</td>
<td>209</td>
</tr>
<tr>
<td>4</td>
<td>1500-2000</td>
<td>105</td>
<td>105</td>
</tr>
<tr>
<td>5</td>
<td>2000-2500</td>
<td>52</td>
<td>47</td>
</tr>
<tr>
<td>6</td>
<td>Above 2500</td>
<td>113</td>
<td>48</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>880</td>
<td>810</td>
</tr>
</tbody>
</table>

Order of hierarchy: V, IV, III, II, I


6.9.1 I – ORDER HIERARCHY (Above 16)

The study area reveals 3 service centres with highest score, these service centres are also supposed the growth centres namely, Kodoli, Ajara and Gadhinglaj. These service centres provide various levels of education, different qualities health services, retail and wholesale shops, better networks, good communication, nationalised and local co-operative banking facilities as well as administrative offices, etc. These facilities are common at these centres. Therefore, the population of the complementary area frequently visit to complete their requirements.

6.9.2 II – ORDER HIERARCHY (12 to 16 Score)

In the study area, there are four settlements with their available functions reporting the second order service centres. These are Kotoli, Kale, Gargoti and Chandgad. All these settlements are rural and Chandgad is a taluka
place. The first two settlements (Kotoli and Kale) are in Panhala taluka, Gargoti is in Bhudargad taluka and Chandgad itself is a taluka place. The functions i.e. education, health, market, banking, transportation and communication with higher quality and quantity are present in these service centres. The Gargoti and Chandgad also provide administrative services to their hinterland. Though these four service centres of the study area.

6.9.3 III – ORDER HIERARCHY (8 to 12 Score)

There are 4 settlements of the study area belong to the third order of settlements hierarchy. The names of these settlements are Malkapur, Panhala, Radhanagari and Wadi Ratnagiri. The first three settlements are the tahsil headquarters but the last settlement is general settlement. On the basis of rural urban classification, Radhanagari and Wadi Ratnagiri are the rural settlements and Malkapur and Panhala are the urban settlements. The taluka place settlements provide administrative facilities as far as the common functions of these all-third order settlements are education, health, banking, markets, transportation and communication, etc. The range of functions, which are possessed by these settlements, is less than the first and second order centres. Panhala and Wadi Ratnagiri have distinguished characteristics. Panhala is a hill station as well as historical centre and Wadi Ratnagiri is a religious centre of God Jotiba. The people from the surrounding area visit these centres to fulfil their needs.

6.9.4 IV – ORDER HIERARCHY (4 to 8 Score)

There are 59 service centres of the study area falls in the fourth order hierarchy of settlements. The tahsil-wise distribution of these hierarchic settlements is as following Shahuwadi tahsil has 5 settlements (Bhedasgaon, Kapshi, Sarud, Bambavde and Pishavi), Panhala tahsil have 12 settlements
(Savarde T. Satave, Satave, Kakhle, Male, Jakhale, Borpadale, Borivade, Waghave, Punal, Majegaon, Padal and Yevaluj), Bavada tahsil has only one settlement (Tisangi), Radhanagari tahsil has 10 settlements (Mhasruli, Dhamod, Rashivade Bk., Kaulav, Tikpurli, Kasaba Walwe, Pungaon, Shirgaon, Avali Bk. and Phejiwade), Bhudargad tahsil has 11 settlements (Solankpur, Mudal, Waghapur, Koor, Madilge Bk, Pimpalgaon, Mhasave, Pushpanagar, Shengaon, Kadgaon and Patgaon), Ajara tahsil has one settlement (Uttur), Gadhinglaj tahsil has 16 settlements (Kadgaon, Karambali, Atyal, Inchanal, Kaulge, Hasurchampu, Dundage, Hitni, Kasaba Nool, Barsarge Bk., Halkarni, Terani, Bhadagaon, Harli Kh., Mahagaon-and Nesari) and Chandgad tahsil has 3 settlements (Mangaon, Kowad, and Halkarni). The settlements from fourth order hierarchy belong to the settlement size of more than 2000 habitats.

The services available in these centres are mostly education, health, market, transportation and communication, but their quantity and quality is very limited. Some settlements show weekly market and banking facilities present vary rarely. The settlements of this category can be considered as central settlements. The next order settlements are mostly depend on these service centres for their requirements.

6.9.5 V - ORDER HIERARCHY (Blow 4 Score)

The study area holds 810 settlements of this hierarchic order. The functions, which are available at these settlements, are very low level. The functions avail at these centres are primary or secondary schools, groceries, post offices and kaccha or pakka roads, etc. on the other hand, number of settlements have no medical facilities, bus transportations, poor communications and no banking services etc. Due to these service conditions, these settlements are connected with the higher order service centres for their requirements.
SETTLEMENT HIERARCHY AND EXISTING GROWTH CENTRES (BY SCORING)

INDEX
- I\(^\text{st}\) - Order
- II\(^{\text{nd}}\) - Order
- III\(^{\text{rd}}\) - Order
- IV\(^{\text{th}}\) - Order
- V\(^{\text{th}}\) - Order

Fig. 6.1
6.10 LOCATIONS OF THE EXISTING GROWTH CENTRES

The concept of growth centre is changes from one region to another region. Every region differs from other region. Therefore, every region has some distinguished characters, from other or surrounding regions. The general definition of growth centre is that ‘it is an urban core capable of growth or (having growth potential provided) government initiative is there and another important feature is that it serve its surrounding territory with services and provides employment opportunities to it (Wanmali, 1972)’. The concept of growth centre varies from scholar to scholar, but number of scholars consider growth centre, which hold higher-level functions and stand at higher hierarchic order. We have, therefore, treated centres, which have possessed maximum considered function, which serve vast surrounding area and from which the innovation waves are generated as growth centres.

The hierarchy of settlements through scoring technique reveal that there are only 3 settlements having more than 16 score, the range of score 12 to 16 and 8 to 12 show each 4 settlements. The score category 4 to 8 has 59 settlements and the last fifth hierarchy order having score less than 4 present 810 settlements (92.05 %) out of the total settlements of the study area and this hierarchy has the highest number of settlements.

The number of growth centres and their development reflect in the form of areal development. So, it is needful to push with integrated developmental planning. The considering this, the hierarchic score between 8 to 12, 12 to 16 reveal that the average available functions are good in number as well as good in quality. With the help of scoring technique, the hierarchic score i.e. more than 8 shows 11 settlements (rural and urban) and here, for the areal
developmental framework, these 11 settlements or service centres are considered as the growth centres of the study area.

These growth centres are in different tahsils as well as they avail different functions from one another. Based on the available functions (sub-functions), their number and quality the centrality score is identify. Therefore, the centrality score is classified into three groups, which are shown in table 6.4.

Table 6.4 : Hierarchy of Growth Centres

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Order of Growth Centre</th>
<th>No. of Centres</th>
<th>Name of the Growth Centre</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I</td>
<td>03</td>
<td>Kodoli, Ajara and Gadhinglaj</td>
</tr>
<tr>
<td>2</td>
<td>II</td>
<td>04</td>
<td>Kotoli, Kale, Gargoti and Chandgad</td>
</tr>
<tr>
<td>3</td>
<td>III</td>
<td>04</td>
<td>Malkapur, Panhala, Wadi Ratanagiri and Radhanagari</td>
</tr>
</tbody>
</table>

Source: Complied by Researcher

The first order growth centres include only three centres out of these Kodoli is the rural centre and other two centres (Ajara and Gadhinglaj) are the urban centres. These rural and urban growth centres are dominating the areal hierarchic pattern. The growth centre Kodoli is one of the industrial centres (sugar industry, dairy industry, fruit processing industry). It is also the educational centre (KG to PG, D. Ed., B. Ed., D. Pharm., B. Pharm, Dental, Medical and Engineering Colleges, etc.), The health services (various levels and all types number of hospitals), the market facilities (daily market, retail and wholesale shops, medical shops, grocery, jewellery and cutlery shops, etc.), banking services (nationalised and co-operatives), transportation facilities (higher level road network), communication services (post and tar office, well quality broadband internet) etc. are the prominent services available at Kodoli.
growth centre. It is located at north-east marginal part of the study area. The second growth centre Ajara is located at south-central part of the area and possess various higher order functions like, education from KG to PG level besides there is also this professional education like MBA, DBM as well as D. T. Ed., B. Ed. Colleges. Health facilities from public and private sectors are available in higher numbers. The market facilities in various forms and qualitative mode serve itself and hinterland. Well road network as well as communication and different types of banking facilities generate special importance. Ajara is a tahsil place so it provides administrative services. The growth centre Gadhinglaj is a third growth centre of the study area. It is located at south-eastern part. The Gadhinglaj also holds various higher order functions i.e. education, health services, market facilities (all types), banking services, good communication and road network and also administrative facilities in higher manner. Due to the higher order functions, these growth centres serve the all the study area.

The second order growth centres in the study area are Kotoli, Kale, Gargoti and Chandgad. These all growth centres are rural. In them, Chandgad is a tahsil place and Gargoti also provides all types of tahsil level administration facilities of Bhudargad tahsil. These growth centres also facilitated by higher education, medical, marketing, banking, transportation and communication services. This growth holds different types of higher-level functions and fulfils the requirements of neighbouring area.

Only four growth centres are included in the third hierarchical order of settlements and these are Malkapur, Panhala, Wadi Ratnagiri and Radhanagari. Panhala and Radhanagari are the tahsil headquarters. Therefore, they provide administrative services, Panhala is also a hill station as well as historical place
and Wadi Ratnagiri is a religious centre. Here, mentioned all these hierarchic settlements carry higher level of considered sub-functions, but the quality and number of these sub-functions are less than previous two orders growth centres. With this discussion, it is found that functional area of these growth centres is limited.

The over all observations and statistics reveal that all these growth centres have variety of potential i.e. tourism (agricultural, wildlife, religious, architectural) agro-based industries (oil mills, rice mills, Jaggary mills, power generation through biomass), resources like minerals, forests, etc. If we will utilised all these resources with proper planning, then the growth rate of these growth centres will become rapid and ultimately they have the ability to change the total setup of the study area.

After identification of centrality score, all settlements of the study area divided into five groups of hierarchic order. The hierarchic order revels that maximum number of settlements come under the group of fifth hierarchic order. Here, for integrated development purpose only 11 settlements are available as growth centres. Their ratio is 1 : 88 settlement. Though it is very difficult for the people of 88 settlements to fulfil their needs and wants from these one settlement. The proposed growth centres have availed different functions. Therefore, they have shown difference in importance. The rural growth centre like Kodoli, and urban growth centres Ajara and Gadhinglaj dominate in the area due to the higher number and quality functions.

The growth urban centres in the study area are less in numbers so far their geographical distribution is uneven. Out of these 11 growth centres, Panhala taluka contents 5 growth centres namely Kodoli, Kotoli, Kale, Panhala and Wadi Ratnagiri. The tahsils i.e. Shahuwadi (Malkapur), Radhanagari,
Bhudargad (Gargoti), Ajara, Gadhinglaj and Chandgad have one growth centre each but Bavada tahsil has not any growth centre.

For the proposed integrated area development plan, here attempt has been made to assess the settlement hierarchy and it is helpful to identification of growth centres. The hierarchy of growth centres also shows how far the imbalanced hierarchy of settlements has become an obstacle in the path of socio-economical areal development. The certain hierarchic settlement patterns are formed due to the emergence of existing socio-cultural and political trends. These emerged trends did not sustain balanced development. In this present condition it is necessary to identify the structural weaknesses in the present geographical distribution of growth centres. After the identifications of weaknesses and functional gaps, there after it is needful to indicate new centres or make spatial development strategy for existing growth centres in the respect of over all areal development.

6.11 LEVELS OF DEVELOPMENT

The word 'development' usually implies of 'growth' and 'change' especially for the betterment of the area. The disparities are result of unequal distributions of natural endowments and uneven distributions of benefits of economic change, it is happen at micro level to macro level (Patil, 2007). Disparities mainly occur due to uneven distribution of different resources, uncertain and uneven development process generates disparities in social, economical and cultural development has become matter of concern. In the study area, imbalance development is a serious threat that can generate various socio-economical, political and cultural problems.

Regional imbalance is, however, inherent in the every process of development. Economic development has not been uniformly distributed either
over space or over time and the favoured regions attracts productive resources and expertise form the lagging regions and there by regional imbalances accentuate with the economic development. The widening gap between regions may generate tension sufficient to inhibit the very process of development. There needs therefore a deliberate attempt to lessen (Mandal, 1987).

A study of planning commission published in 1967, gave the picture of inter-state variation in social and economic indicators of development. Regional disparities are apparent in the studies at state level. The studies devoted to identification of levels and imbalances of over all development; make use of large number of indicators belonging to agriculture, secondary occupation, infrastructure and socio-cultural attributes.

6.11.1 DATA COLLECTION

The data regarding to the 28 indicators for 8 tahsils are collected from various sources. The data for agricultural sector is collected through Socio-Economic Review of Kolhapur District (2006-07) and Z. P. office of Kolhapur district. The pertaining to human resources has been taken from census of India (Kolhapur District, 2001 CD). The information regarding to doctors beds and hospitals as well as veterinary, animal population have been collected from Z. P. office of Kolhapur district. The information about post offices and bus stops have collected through questionaries. The motor vehicles data is collected from R. T. O. office Kolhapur district, along with the data of roads from P. W. D (North, Central and Southern Zonal Offices) of Kolhapur district. The detailed information pertaining to various indicators is shown in Appendix III.

6.11.2 METHODOLOGY

The levels of development and imbalance of development in the study area have been identified for both the sectoral and socio-economical
conditions. There are 28 indicators have been considered and they are classified and examined in the terms of land resources (4), agriculture an livestock resource utilization (5), socio-institutional facilities (5), infrastructural facilities (5), human resources (5) and constraints of development (4). The indices of the level of development of 8 tahsils have been computed on the basis of data.

The levels of development have calculated with the help of Taxonomy recommended in 1968 by UNESCO as a tool of ranking, classifying and comparing countries by the level of development. It has been successfully applied to measure the levels of development and components of development of the developing countries in Asia, Latin America, Middle East Africa, Sub-Saharan Africa and developed countries in the different part of the world. It has been used by the perspective planning division of state planning institute of development at district level. This method makes an attempt to develop a single coefficient of composite index of development even for a taluka or a village if appropriate data are available. The method of Taxonomy (Singh, 1984) as follows –

A) Method of Taxonomy

Let a seat of points represent districts 1, 2, 3, ....... R for a group of indicators 1, 2, 3, ....... m. These can be represented by a matrix as follows –

\[
\begin{bmatrix}
X_{11} & X_{12} & X_{13} & \cdots & X_{1m} \\
X_{21} & X_{22} & X_{23} & \cdots & X_{2m} \\
X_{R1} & X_{R2} & X_{R3} & \cdots & X_{Rm}
\end{bmatrix}
\]

The indicator values may be standardized by the following formula –

\[
Z_{ij} = \frac{X_{ij} - \bar{X}_{ij}}{S_j}
\]

\(i = 1, 2, 3, \ldots R\)

\(j = 1, 2, 3, \ldots m\)
Where,

\[ X_{ij} = \frac{\sum X_{ij}}{R} \]

\[ S_j = \sqrt{\frac{\sum (x_{ij} - \bar{x}_{ij})^2}{R}} \]

\( X_{ij} \) is the value of \( j^{th} \) indicator for \( i^{th} \) region

The best or highest standardized (Zij) value is identified from set of indicators sector and form this deviations of the value for each such region are taken for all indicators in the following manner.

The pattern of development is obtained by the following formula –

\[ C_{io} = \sqrt{\frac{m}{\sum_{k=1}^{m} (Z_{ik} - Z_{ok})^2}} \]

Where,

\( C_{io} \) = Pattern of Development

\( Z_{ik} \) = Standardized Value

\( Z_{ok} \) = is the best or highest standardised value

The measure of development coefficient (Di) is given by

\[ Di = \frac{C_{io}}{Co} \]

Where,

\( Co = \bar{c}_{ij} + 2s_{io} \)

\[ \bar{c}_{ij} = \frac{\sum_{i=1}^{R} \frac{C_{io}}{R}}{R} \]

\[ S_{io} = \sqrt{\frac{\sum (cio - \bar{c}_{ij})^2}{R}} \]

The measure of development is always non-negative. It lies between 0 to 1. The closer the value of development coefficient to 0 (zero) the more developed is the region and closer 1 (unity), the less developed is the region.
B) Index of Imbalance

The index of imbalance of the region is calculated with the help of Index of Regional Imbalance method, which was recommended by Maharashtra Economic Development Council (MEDC) in 1977. For the identification of imbalance development in study area, here method of MEDC (1977) is applied, such method is as follow –

\[ R = \left[ \frac{1}{n} \sum_{i=1}^{n} (Y_{ki})^2 \right]^{\frac{1}{2}} \times 100 \]

Where,

- \( R \) = Index of regional imbalance of the region
- \( Y_{ki} \) = Balance ratio, i.e. the ratio of the relative indicator ‘i’ of the sub region I and corresponding norms
- \( n \) = Number of relative indicator

Balance Ratio

\[ Y_{ki} = \frac{X_{ki}}{X_{si}} \]

Where,

- \( Y_{ki} \) = Balance Ratio
- \( X_{ki} \) = The relative indicator ‘i’ of Ith region
- \( X_{si} \) = The relative indicator ‘i’ of the norm-region

TERM USED,

i. Balance Ratio – A ratio of relative indicator and the corresponding norm is a balance ratio.

ii. Region – A region is used here as a contiguous geographical and socio-economic entity delimited as a combinations of administrative sub-region.
iii. Norm Region – A norm region is a region selected for measurement and or comparison of imbalance.

6.11.3 INDICATORS OF DEVELOPMENT

In the present study, measuring the levels of development and their imbalance for the study area, following sector-wise indicators are considered:

A) Land Resource
   i. Percentage of area under forest
   ii. Percentage of area under follow land
   iii. Percentage of net sown area
   iv. Percentage of irrigated land

B) Agriculture and Livestock Resource Utilisation
   i. Fertilisers consumption per hector of total cropped area (in Kg)
   ii. Production of food grains per person (in Kg)
   iii. Area under commercial crops
   iv. Area under pulses per person
   v. Number of livestock per person

C) Socio-Institutional Facilities
   i. Number of Sr. Secondary Schools per lakh population
   ii. Number of Primary Health Centres per lakh population
   iii. Number of Hospital Beds per lakh population
   iv. Number of Doctors per lakh population
   v. Number of Veterinary per lakh animal population

D) Infrastructural Facilities
   i. Metalled roads per lakh population (in km)

199
ii. Density of metalled roads (in sq km)
iii. Number of Post offices per lakh population
iv. Number of commercial banks per lakh population
v. Number of motor vehicles per lakh population

E) Human Resources

i. Density of population
ii. Sex Ratio
iii. Percentage of urban population
iv. Percentage of literate population
v. Percentage of non-primary workers

F) Constraints of Development

i. Percentage of literate population
ii. Percentage of culturable waste land
iii. Village situated more than 5 km from sr. secondary school
iv. Village situated more than 5 km from primary health centre

6.11.4 COMPOSITE INDEX OF DEVELOPMENT OF STUDY AREA

The present work almost concerned to the composite index values and these are computed tahsil-wise separately and also computed sector wise for land resource, agriculture and livestock resources, socio-institutional facilities, infrastructural facilities and human resources. The computed composite index values are grouped into three categories i.e. high level of development, medium level of development and low level of development. The study of categories clearly shows that levels of development vary from tahsil to tahsil. Apart from this, four indicators have been constraints of development, and they also show
the difference among the various tahsils. On the basis of composite index (development index) value, which hold by the tahsil is shown in the table 6.5 and it reveals the clear idea about the sector-wise levels of development over the study area.

Table 6.5 : Composite Index of Development

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Tahsil</th>
<th>Index of Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shahuwadi</td>
<td>0.96</td>
</tr>
<tr>
<td>2</td>
<td>Panhala</td>
<td>0.91</td>
</tr>
<tr>
<td>3</td>
<td>Bavada</td>
<td>0.67</td>
</tr>
<tr>
<td>4</td>
<td>Radhanagari</td>
<td>0.85</td>
</tr>
<tr>
<td>5</td>
<td>Bhudargad</td>
<td>0.72</td>
</tr>
<tr>
<td>6</td>
<td>Ajara</td>
<td>0.87</td>
</tr>
<tr>
<td>7</td>
<td>Gadninglaj</td>
<td>0.76</td>
</tr>
<tr>
<td>8</td>
<td>Chandgad</td>
<td>0.75</td>
</tr>
</tbody>
</table>


Source : Compiled by Researcher

6.11.4.1 LAND RESOURCE

Land is the basic resource to everyone and its importance is high in determining men’s socio-economical and cultural progress. Landuse shows mostly complex pattern, which has resulted due to the centuries of human inhabitation and development. The landuse pattern of one tahsil differs to another tahsil.

Inspite of physical factors (hilly topography, climate, drainage, soil, forest, etc.) landuse pattern of the study area is changing due to the socio-
infrastructural facilities. Therefore, an attempt has been made in the present study to find out the levels of land resource development in the study area. For this purpose, the indicators i.e. percentage of area under forest, percentage of area under follow land, percentage of net sown area and percentage of irrigated land are considered.

As above, under the sector of land resource various indicators are dealt with detail. To assess the overall level of land resource development, a composite index or development index value is computed. On the basis of development index, the study area has been divided into three categories of land resource development. The categories are low development, medium development and high development. The table 6.6 and figure 6.2 give the clear view of the levels of land resource development of the study area.

**Table 6.6**  
Index of Development for Land Resource

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Categories</th>
<th>Development Index</th>
<th>Tahsils</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>High Development</td>
<td>Below 0.80</td>
<td>Bavada, Bhudargad, Chandgad and Gadhinglaj</td>
</tr>
<tr>
<td>2</td>
<td>Medium Development</td>
<td>0.80 to 0.90</td>
<td>Radhanagari and Ajara</td>
</tr>
<tr>
<td>3</td>
<td>Low Development</td>
<td>Above 0.90</td>
<td>Panhala and Shahuwadi</td>
</tr>
</tbody>
</table>

*Source: Compiled by Researcher*

A) **High Development Level (Below 0.80)**

The high development level belongs to the range of development index value less than 0.80. The index value less than 0.80 is dominated in Bavada (0.67), Bhudargad (0.72), Chandgad (0.75) and Gadhinglaj (0.76) tahsils and shows high level of development in land resource sector. These tahsils are located at central and southern vast portion of hilly area of Kolhapur district.
LEVELS OF DEVELOPMENT OF LAND RESOURCE

INDEX
DEVELOPMENT INDEX

Low (Below 0.80)
Medium (0.80 to 0.90)
High (Above 0.90)

Fig. 6.2
The changing pattern of irrigation, less area under follow land and maximum land brought under agricultural practice etc. show identical growth in land resources. Due to such land resource performance Bavada, Bhudargad, Chandgad and Gadhinglaj have high level of development in concerned sector.

B) Medium Development Level (0.80 to 0.90)

The medium level of development i.e. 0.80 to 0.90 occurs in two tahsils at central and southern part of study area. These tahsils are Radhanagari (0.85) and Ajara (0.87). Land resources like Net Sown Area and irrigated land belonging to this category are slowly increasing. Therefore, it reflects in the form of medium level of development in such tahsils.

C) Low Development Level (Above 0.90)

The developmental index less than 0.90 is observed in the northern tahsils of the study area. Particularly the tahsil Panhala (0.91) and Shahuwadi (0.96) show this category of development. The western Ghat and its fingure ranges played dominant role in respect of culturable land, low irrigated land and also more forest land put limits on land resource utilisation. Due to this condition, low level of development is observed in this tahsil.

6.11.4.2 AGRICULTURAL AND LIVESTOCK RESOURCES UTILISATION

Agriculture is a major occupation of the study area. Though, the rising of crops along with livestock forms the chief occupational pattern as well better threat for inhabitants of the study area for their socio-economic progress. But majority portion of the study area depend upon the rain. Uncertainty of rainfall makes agriculture dependent on irrigation. Due to lack of irrigation facilities most of the area is under rainfed crops. Beside this use of chemical fertilizers, new varieties of seeds and modern agricultural technology are also low manner.
Different physiographic and climatic conditions offer tremendous potential for the cultivation of various food crops, cash crops, fruit crops and also meditional crops. Agricultural landuse pattern reveals that cereals and pulses (foodgrains) occupy dominant proportion in kharip and rabbi season. The cash crop i.e. sugarcane occupies very little area.

At the present time, inspite of physical and climatical barriers, the agricultural landuse pattern has changing in the study area. Here, attempt has been made for the conformity of spatial variation in agricultural and livestock resource utilisation development at the tahsil level, have measured. The care has been taken to select such an indicator, which reflects the level of development. For this study, five indicators have been chosen and they are fertilizers consumption, per hectar of total cropped area, production of food grains per person, area under commercial crops and number of livestock per person. Here, an attempt is made to assess the over all level of agriculture and livestock development. Through, this development index has been calculated and finally three categories of development are formed. The table 6.7 and figure 6.3 give the detail idea about it.

### Table 6.7: Index of Development for Agriculture and Livestock Resource Utilisation

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Categories</th>
<th>Development Index</th>
<th>Tahsils</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>High Development</td>
<td>Below 0.80</td>
<td>Bavada and Radhanagari</td>
</tr>
<tr>
<td>2</td>
<td>Medium Development</td>
<td>0.80 to 0.90</td>
<td>Chandgad, Panhala, Ajara and Bhudargad</td>
</tr>
<tr>
<td>3</td>
<td>Low Development</td>
<td>Above 0.90</td>
<td>Shahuwadi and Gadhinglaj</td>
</tr>
</tbody>
</table>

*Source: Compiled by Researcher*
A) High Level of Development (Below 0.80)

High level of development in respect of agriculture and livestock resource utilisation is seen in these two tahsils. These are Bavada (0.77) and Radhanagari (0.79). Such developmental area is located at the central part of the study area. The rivers like Kumbhi, Dhaman, Tulasi, Bhogawati (Laxmi Dam) and Dudhaganga provide ideal conditions for irrigation facilities. Due to this most of the area of both Bavada and Radhanagari come under the existence of irrigation facilities, good quality of soil, use of modern agricultural technology. The favourable environmental condition and socio-cultural aspects promote the agricultural and livestock resource utilisation development. Due to this, the above-discussed factors and their indicators have high or medium index value and together it shows high index value and placed this sector, high level of development.

B) Medium Level of Development (0.80 to 0.90)

An account of developmental index value, the four tahsils of the study area have come under the medium level of development. The tahsils are namely, Chandgad (0.80), Panhala (0.82), Ajara (0.87) and Bhudargad (0.89). These tahsils are located at middle-southern, southern and middle-northern part of study area. The fertilizers consumption, area under commercial crops and with animal population supports the development in these tahsils. So, medium level of development has observed in above mentioned tahsils.

C) Low Level of Development (0.80 to 0.90)

Table 6.7 and figure 6.3 reveal both Shahuwadi and Gadhinglaj tahsils have each 0.96 development index value and it shows low level of development takes place mostly due to higher proportion of rainfed area, less area under commercial crops, little use of fertilisers are the basic reasons and simultaneously, the physical factors control the development of this sector.
LEVELS OF DEVELOPMENT OF AGRICULTURE AND LIVESTOCK RESOURCE UTILISATION

INDEX
DEVELOPMENT INDEX
Low (Above 0.90)
Medium (0.80 to 0.90)
High (Below 0.80)

Fig. 6.3
6.11.4.3 SOCIO-INSTITUTIONAL FACILITIES

An availability of socio-institutional facilities are closely related to the good life of people and also human resource potential. The socio-institutional development of any area is best reflected through the quality and improvement of life of its people.

Therefore, socio-institutional development has one of the significant aspect of development for planning. The present work is based on the proper selection of indicators for socio-institutional sector. The level of development are identified through the analysis of relationship between these indicators. For this purpose, five indicators have been selected and they are number of sr. secondary school per lakh population, number of primary health centres per lakh population, number of the doctors per lakh population and number of veterinary per lakh animal population. The socio-institutional levels of development have shown through table 6.8 and figure 6.4 as per composite index.

Table 6.8 : Index of Development for Socio-Institutional Facilities

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Categories</th>
<th>Development Index</th>
<th>Tahsils</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>High Development</td>
<td>Below 0.75</td>
<td>Radhanagari and Bhudargad</td>
</tr>
<tr>
<td>2</td>
<td>Medium Development</td>
<td>0.75 to 0.85</td>
<td>Ajara, Shahuwadi, Bavada and Chandgad</td>
</tr>
<tr>
<td>3</td>
<td>Low Development</td>
<td>Above 0.85</td>
<td>Gadhinglaj and Panhala</td>
</tr>
</tbody>
</table>

Source: Compiled by Researcher

A) High Level of Development (Below 0.75)

The high level of development i.e. less than 0.75 is observed in two tahsil, these are namely Radhanagari (0.62) and Bhudargad (0.71), which are located at central part of the study area. Such category of tahsils have good facilities of education and health and due this development index of these tahsils shows high level of development in this sector.
B) **Medium Level of Development (0.75 to 0.85)**

The medium level of development in the range of 0.75 to 0.85 development index value has found in four tahsils and these tahsils are Ajara (0.79), Shahuwadi (0.80), Bavada (0.83) and Chandgad (0.83). The socio-institutional facilities are at certain level developed in the recent years. The government policies in the respect of education have changed for hilly area. The new middle school and sr. secondary schools have been established and it is proved in this sector but the medical facilities are not grown to substantial level. Therefore, these tahsils may come in this category of development level.

C) **Low Level of Development (Above 0.85)**

The low level of socio-institutional facilities development is observed in Gadhinglaj (0.90) and Panhala (0.95). An agglomeration of education or technical education and medical facilities are almost found at Kotoli, Panhala and Gadhinglaj only, but diffusion of these services are poor in other parts of tahsil. So, the remaining area of these tahsils have lack of facilities. Due to this, it shows low level of development of socio-institutional sector.

6.11.4.4 **INFRASTRUCTURAL OR ECONOMIC FACILITIES**

An infrastructural development is one of the best components of development planning. Because the economic progress of any area is reflected through the present infrastructural facilities. The economic development is not possible without planned investment in any area. The basic infrastructural facilities like road, electricity, water, markets, banks, communication, etc. Therefore, in the present study, the five indicators have been considered.

They are as metalled roads per lakh population (in km), density of metalled roads (per sq km), number of post offices per lakh population, number
of commercial banks per lakh population and number of motor vehicles per lakh population. All these considered indicators are assessed for knowing the levels of development of this sector. The composite index value has been calculated for all tahsils. On the basis of index value of all considered indicators of this sectors, the levels of development are determined and it clearly reveals from table 6.9 and fig. 6.5.

Table 6.9: Index of Development for Infrastructural and Economic Facilities

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Categories</th>
<th>Development Index</th>
<th>Tahsils</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>High Development</td>
<td>Below 0.70</td>
<td>Bavada and Panhala</td>
</tr>
<tr>
<td>2</td>
<td>Medium Development</td>
<td>0.70 to 0.80</td>
<td>Bhudargad, Gadhinglaj and Ajara</td>
</tr>
<tr>
<td>3</td>
<td>Low Development</td>
<td>Above 0.80</td>
<td>Shahuwadi, Chandgad and Radhanagari</td>
</tr>
</tbody>
</table>

Source: Compiled by Researcher

A) High Level of Development (Below 0.70)

An account of high level of development i.e. less than 0.70 (development index) reveals from two tahsils and these are Bavada (0.40) and Panhala (0.65). The basic transportation facilities like roads, motor vehicles, communication facilities as well as banking show higher proportion as compared to other tahsils of the study area. The Panhala tahsil has two well-known tourist centres, first is historical and also hill station Panhala and second is religious centre for God Jotiba at Wadi Ratnagiri. Therefore, these centres are well connected with other parts of district and out side of the district (state).
The location of Bavada tahsil is ideal and it is central. The network between Desh and Konkan through Karul Pass. It belongs to Bavada tahsil. Therefore, network of roads shows good performance, sugar industries accelerate economic conditions, communication facilities and banking show high level of development in the study area.

B) Medium Level of Development (0.70 to 0.80)

Medium level of development for infrastructural sector is observed in Bhudargad (0.70), Gadhinglaj (0.71), and Ajara (0.75). The tahsils are Bhudargad and Ajara located at middle-south and Gadhinglaj at south east. The agricultural development also accelerates the infrastructural development at certain level (metalled roads, banking and communication) in recent past. The tahsil Gadhinglaj is located at transition zone between the state of Maharashtra and Karnataka. Therefore, these governments do not give prime importance towards the infrastructure. The physiographic structure economically put limit on road construction.

C) Low Level of Development (Above 0.80)

The low level of development for infrastructural sector has been observed in Shahuwadi (0.82), Chandgad (0.84) and Radhanagari (0.88). Majority of this part of these tahsils are hilly, scattered settlements particularly in western part, low agricultural development except Radhanagari and certain level socio-institutional facilities are the chief causes of low level of development. Particularly Chandgad tahsil is located on boundary of the state of Maharashtra and Karnataka. Though the issue of Maharashtra and Karnataka had badly affected on infrastructural facilities of Chandgad tahsil. Therefore, low level of development is found for infrastructural sector.
LEVELS OF DEVELOPMENT OF INFRASTRUCTURAL OR ECONOMIC FACILITIES

 INDEX DEVELOPMENT INDEX VALUE

\[\begin{array}{c}
\text{Low (Above 0.80)}\\
\text{Medium (0.70 to 0.80)}\\
\text{High (Below 0.70)}
\end{array}\]

Fig. 6.5
6.11.4.5 HUMAN RESOURCES

Man is producer and consumer for that he used mental and physical labour and it is key factor in the development of area. The both quality and quantity of human resources are more important for management, land development, agriculture, industry and also other resources. The population characteristics are vital in the whole process of socio-economic and cultural positive change. The study area has only 4 urban settlements and 876 rural settlements. Therefore, the dominance of rural economy and its associated activities are seen throughout the study area. Human resources with their quality and also man power are the core part of development, for that purpose, here attempt has been made to study the levels of human resources. For this purpose, five indicators i.e. density of population, sex ratio, percentage of urban population, percentage of literate population and percentage of non-primary workers to main workers are considered. Then with the help of these indicators composite index value is calculated to determine the levels of human development. The table 6.10 and fig. 6.6 give the clear picture of the study area for human resource development.

Table 6.10: Index of Development for Human Resources

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Categories</th>
<th>Development Index</th>
<th>Tahsils</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>High Development</td>
<td>Below 0.60</td>
<td>Gadhinglaj, Ajara and Panhala</td>
</tr>
<tr>
<td>2</td>
<td>Medium Development</td>
<td>0.60 to 0.70</td>
<td>Shahuwadi and Bhudargad</td>
</tr>
<tr>
<td>3</td>
<td>Low Development</td>
<td>Above 0.70</td>
<td>Radhanagari, Chandgad and Bavada</td>
</tr>
</tbody>
</table>

Source: Compiled by Researcher
LEVELS OF DEVELOPMENT OF HUMAN RESOURCES

Fig. 6.6

INDEX
DEVELOPMENT INDEX VALUE

- Low (Above 0.70)
- Medium (0.60 to 0.70)
- High (Below 0.60)

Fig. 6.6

215
A) High Level of Development (Below 0.60)

The high level of development in the human resource sector is seen in Gadhinglaj (0.35), Ajara (0.48) and Panhala (0.59) tahsils. The development index value become low due to mostly urban population. In these tahsils, Gadhinglaj, Ajara and Panhala are the urban centres. Numbers of educational institutions are established in these tahsils.

The Gadhinglaj has made identical progress not only in education but also in oil mills and rice mills. Ajara also makes progress in education. The -tahsil-Panhala-is-well-known for ‘Warana Udyog Samuha’ and it is only industrial zone of the study area. All these factors are responsible for shows more population density, high literate population, higher proportion of non-primary workers and except Panhala, Gadhinglaj and Ajara have more sex ratio because quality manpower is migrated out side of the tahsil. If this manpower is involved in local, various activities then these tahsil will make more development in short period.

B) Medium Level of Development (0.60 to 0.70)

Medium level of human resource development is seen from extreme north and middle-south. There are two tahsils of the study area, which have medium level of development in such sector, and these are Shahuwadi (0.61) and Bhudargad (0.67) tahsils. Basically, this lower medium population density, migration of male population and ultimately increase in the sex ratio, etc. are the barriers in the human resource development. These tahsils have made development taking the support of available infrastructure and socio-institutional facilities and come in the categories of medium development of this sector.
C) Low Level of Development (Above 0.70)

The development index value i.e. more than 0.70 has show low level of development for human resources sector in the study area. The tahsils namely Radhanagari (0.71), Chandgad (0.81) and Bavada (0.96) are included in this category. The socio-institutional, infrastructural and physical constraints have controlled the human resource development. The migration of male population remains the high sex ratio; low literary, very less workers engaged in non-primary activities reveals the low level of human resource development.

6.11.4.6 CONSTRAINTS OF DEVELOPMENT

Development is an important process, which is essential to give upliftment for poor and downtrodden people (Mishra, 1968). The better jobs will be available and along with better facilities i.e. hospitals, education, transportation and communication, etc. In present time, the level and growth of development vary from area to area due to the prevailing constraints. The constraints of the development not only push the growth of development but also they generate negative impact on it. The study area has number of constraints i.e. physical, social, economical and cultural. The present work is only concerned to the socio-economic constraints because availability of data at tahsil level. Here, four indicators are selected for understanding the level of development viz. percentage of illiterate population, percentage of culturable waste land, village situated more than 5 km from sr. secondary school and village situated more than 5 km from primary health centre. The table 6.11 and figure 6.7 reveal clear idea about development constraints in the hilly area of Kolhapur district.
<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Categories</th>
<th>Development Index</th>
<th>Tahsils</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>High Development</td>
<td>Below 0.60</td>
<td>Shahuwadi and Chandgad</td>
</tr>
<tr>
<td>2</td>
<td>Medium Development</td>
<td>0.60 to 0.70</td>
<td>Panhala, Radhanagari and Ajara</td>
</tr>
<tr>
<td>3</td>
<td>Low Development</td>
<td>Above 0.70</td>
<td>Bhudargad, Bavada and Gadhinglaj</td>
</tr>
</tbody>
</table>

*Source: Compiled by Researcher*

A) High Level of Development (Below 0.60)

High level of development constraints have been seen in Shahuwadi (0.40) and Chandgad (0.55). These tahsils are located extreme north and Chandgad tahsil has vast area of hilly topography, steep slopes, forest cover, scattered settlements, less or medium infrastructural facilities like education, health, banking, communication, transportation and also less area under not only irrigation but also cultivation are the major constraints in the way of development.

B) Medium Level of Development (0.60 to 0.70)

The medium level of development for the sector constraints of development i.e. 0.60 to 0.70 has observed in three tahsils, namely Panhala (0.63), Radhanagari (0.64) and Ajara (0.66). The major constraints of the development in these tahsils are utilisation of land resources, agricultural and livestock utilisation and infrastructural facilities. These are basic components of the socio-economical and cultural development. But all this developmental components prevailing less or moderately in the respective tahsils. Therefore, medium level of development for over all general levels of development in different sectors have been observed.
LEVELS FOR CONSTRAINTS
OF DEVELOPMENT

INDEX
DEVELOPMENT INDEX VALUE

- Low (Above 0.70)
- Medium (0.60 to 0.70)
- High (Below 0.60)

Fig. 6.7
C) **Low Level of Development (Above 0.70)**

The low level of development i.e. more than 0.70 for constraints of development have been observed in Bhudargad (0.79), Bavada (0.84) and Gadhinglaj (0.91). These are the central and south-eastern tahsils of the study area. No doubt, these are the hilly tahsils but in all sectors of development, they have done improvement in the recent past. Therefore, the present study reveals the considered all indicators and their respective sector placed on moderate or higher position. These tahsils have more chances of development by implementing the proper planning process.

6.12 **IMBALANCE DEVELOPMENT**

It is rightly observed that ‘no single country would be regarded as having a well integrated economy as long as glaring disparities persisted between the levels of development and standard of living in different areas within it’ (United Nations Economic Commission for Europe, 1961). It is an important to need of strong desire to maintain a balanced areal development. Promotion of balanced regional development is in the interest of national unity (Smt. Gandhi, 1984). Thus, balanced regional development means the maximum utilisation of the potentialities of an area and thereby giving its inhabitants the full benefits of possible economic progress in relation to overall economic growth (Bhattacharya, 1961). What ever we concern to study area, it have a dominance of agriculture, only few agro-based industries reveals but on the other hand neighbouring tahsils of Kolhapur district are well developed due to industries, prosperous agriculture, infrastructure, socio-institution, transportation and communication and prevailing various levels functions and services. Though, according to Mandal (1987), ‘the regions where polarisations take place attract labour, educated people, entrepreneur from other regions as they are able to provide better opportunities and remunerations.'
Considering the above-mentioned facts, here an attempt has been made to study the imbalance of development. It has been analysed at tahsils level. The study of imbalances at tahsil levels would throw light on the importance of area for consideration in planning.

6.12.1 IMBALANCE AT TAHSIL LEVEL

The hilly area of Kolhapur district has 8 tahsils. Therefore, these 8 tahsils are analysed with considering 28 indicators from different sectors for the study of imbalance development. These 28 relative indicators are taken from major five sectors i.e. land resource, agriculture and its allied activities, socio-institutional facilities, infrastructural facilities and human resources. An index of imbalance in studying each tahsil according to relative indicators those indicating common status of relative development and that relative development have been grouped together to offer causal and correlative analysis. In analysing each relative indicator, the tahsil have been grouped together according to the common status of relative development in respect of the concerned relative indicator to facilitate investigation of similarities and specifications. Though the table 6.12 and fig. 6.8 reveals relative information about tahsil-wise imbalance.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Tahsils</th>
<th>Index of Imbalance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shahuwadi</td>
<td>35.63</td>
</tr>
<tr>
<td>2</td>
<td>Panhala</td>
<td>31.04</td>
</tr>
<tr>
<td>3</td>
<td>Bavada</td>
<td>67.04</td>
</tr>
<tr>
<td>4</td>
<td>Radhanagari</td>
<td>35.70</td>
</tr>
<tr>
<td>5</td>
<td>Bhudargad</td>
<td>27.04</td>
</tr>
<tr>
<td>6</td>
<td>Ajara</td>
<td>81.22</td>
</tr>
<tr>
<td>7</td>
<td>Gadhinglaj</td>
<td>68.88</td>
</tr>
<tr>
<td>8</td>
<td>Chandgad</td>
<td>31.26</td>
</tr>
<tr>
<td></td>
<td>Study Area</td>
<td>50.65</td>
</tr>
</tbody>
</table>

Source: Complied by Researcher

221
A) **High Level of Imbalance (Above 45)**

The high imbalance in the range of more than 45 index of imbalance shows three tahsils, namely Bavada (67.04), Gadhinglaj (68.88) and Ajara (81.22). These tahsils are located at middle-north, middle south and south-eastern part of the study area. The study area also comes in this category due to 50.55 index of imbalance. Out of these tahsils including the study area, Ajara stands on higher level of imbalance development. The imbalance shows due to the improper land resource utilization, poor agriculture base, less or moderately prevailing socio-institutional and infrastructural facilities. It is more likely that of human resources (particularly in Gadhinglaj and Ajara urban population).

B) **Medium Level of Imbalance (35 to 45)**

The index of imbalance is in between 35 to 45 indicate medium level of imbalance. Such imbalance is identified from northern part and central part of the study area. It belongs to Shahuwadi (35.63) and Radhanagari (35.70) tahsils. The medium levels of imbalance occurs due to the sectoral values are less or moderate. Comparatively more imbalance is observed in land utilization, agriculture and infrastructural sector.

C) **Low Level of Imbalance (Below 35)**

The low level of imbalance has been observed in Bhudargad (27.04), Panhala (31.04) and Chandgad (31.26) tahsils. The fall in the imbalance pertaining to land resources, socio-institutional facilities, economic facilities and human resources etc., its availability and utilization go hand in hand. Therefore, there is low level of imbalances in these tahsils.
Fig. 6.8
On the basis of above analysis it is concluded that the imbalance development in land resource utilisation followed this the dominance of socio-infrastructural facilities. Imbalance in the respect of human resource, infrastructural facilities, land resources, socio-institutional facilities may be observed as having positive correlation with the overall imbalance found in the study area.

REFERENCES


Census of India, Kolhapur District, CD – 2001


Gandhi, Smt. Indria in her address to NDC, July, 1984


Ghophane, B. N. (1981) : ibid


224


P. W. D., Kolhapur District

R. T. O. Office, Kolhapur District


Socio-Economic Review of Kolhapur District (2008-09)


Wanmali, S. (1972) : 'Location of Existing and Potential Growth Centres, Reading on Micro-level Planning and Rural Growth Centres', Ed. Lalit, K. Sen, NICD, Hyderabad, pp.177-196

Z. P. Kolhapur, Agriculture Department