C H A P T E R [V]

THE CENTRALITY AND HIERARCHY OF MARKET CENTRES

5.0 INTRODUCTION

5.1 CENTRALITY

5.2 REVIEW OF METHODS OF CENTRALITY

5.3 CHOICE OF METHOD

5.4 SELECTION OF FUNCTIONS

5.5 REGIONAL ANALYSIS OF CENTRALITY

5.6 HIERARCHY OF MARKET CENTRES

5.7 REVIEW OF METHODS

5.8 CHOICE OF METHOD

5.9 REGIONAL ANALYSIS OF HIERARCHIC ORDER OF MARKET CENTRES

5.10 HIERARCHIC ORDER, SERVICE AREAS & LINKAGE ANALYSIS

5.11 METHOD FOR DEMARCATION OF MARKET LINKAGE

5.12.0 REGIONAL ANALYSIS OF LINKAGE OF MARKET CENTRES

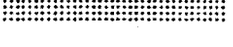
5.12.1 LINKAGE OF FIFTH HIERARCHIC ORDER OF MARKET CENTRES

5.12.2 LINKAGE OF FOURTH HIERARCHIC ORDER OF MARKET CENTRES

5.12.3 LINKAGE OF THIRD HIERARCHIC ORDER OF MARKET CENTRES

5.12.4 LINKAGE OF SECOND HIERARCHIC ORDER OF MARKET CENTRES

5.13. FUNCTIONAL LINKAGE ANALYSIS OF MARKET CENTRES WITH THEIR HIERARCHIC RELATIONSHIP.



C H A P T E R [V]

THE CENTRALITY AND HIERARCHY OF MARKET CENTRES

5.0 I N T R O D U C T I O N :

In the present chapter, an attempt has been made to study the centrality and hierarchy of market centres of Sindhudurg district. In the study of centrality and hierarchy of market centres, in the study region, it is observed that, most of the rural market centres are small in size in respect of their population and functional capacity. Though these small market centres holding very few functions and services play an important role as rural service centres in economic organization of land scape[1].

5.1 C E N T R A L I T Y :

Centrality is measure of importance of places in terms of its functional capacity to serve the surrounding region. Centrality depends upon the important central functions, which served the population of command area. It is a surplus function of the place, which serves the extra-population of the region.

The importance of a settlement is expressed in terms of the size of population or area of settlement. But the centrality or importance is manifestated by the quality and quantity of difference services or functions provided by the settlements or it is defined as the functional importance of a settlement over other settlements surrounding it. This important objective can only be achieved by taking into

account the functional character of a settlement. A settlement is central only in censes that, it performs the functions of a centre[2].

The functions of a settlement has got more importance to determine the centrality of a place, if the place has central place or not. The location of a settlement has a little to do with centrality because a location in space to attain the status of a centre only when it contains one or more centre functions or services to be provided to surrounding settlements.

5.2 REVIEW OF METHODS OF CENTRALITY :

The study of centrality and hierarchy of market centres is very important since they aid in the investigation of the significance of a market centres within its region. A centrality of a place measured by various ways and taking into consideration single function or several functions which are available at the place.

To calculate the centrality of a place Christaller, (1933), has used single function index, A.E.Smailes, (1944), has used bus service frequency as a measure or centrality. The whole-sale of a place as an indicator of centrality used by Dickinson, (1934), Multi-functional indices have been used by several geographers. A.E.Smailes, (1944), has used banks, shops, offices, schools, hospitals as the indicators of centrality. Bracey, (1953), has calculated centrality by measuring the dependant area on a particular central place. Berry and Garrison, (1958) have considered all important

functions for calculating centrality. Davies, (1977), has used retail establishments to calculate the Centrality.

In India, several geographers have been used various functions to measure the centrality of a place. O.P.Singh, (1971), has considered population engaged in commercial activities. Dutt and Bannarjee, (1970), have used transport index as a measure of centrality. Sudhir Wanmali, (1970), has used all important functions for measures of centrality where, Scalogram method has been used. N.G.Jain, (1975), has used telephone index as a measure of centrality.

Recently, Jaymala Diddee, (1978), in the analysis of central places of Bhima Basin has been used extra-population served index for calculating centrality. P.W.Deshmukh,(1979), in the analysis of central places in Upper Krishna basin has considered all central functions of the place and used surplus function index for calculating centrality. A.P.Kumbhar, (1982), has calculated the centrality scores for analysis of rural market centres in the Sangli district, by considering 40 selected functions[3].

5.3 CHOICE OF METHOD :

The centrality of the market centres has been measured by several ways by Geographers taking single function or several functions. In the present study, 52 various functions have been considered for calculating the centrality values. The centrality values have been obtained by using W.K.D.Davies's Method (1967).

$$\text{Formula} = C = \frac{t}{T} \times 100$$

Where,

C = location quotient of any function.

t = Single function

T = Total number of particular functions in the area.

With the help of above formula, a location quotient value of any single function has been determined and the available number of particular function is multiplied by the location quotient. In this way, functional importance of a place for a particular function has been determined and the summation of all the values calculated for various functions for a place gives aggregate centrality of the particular place.

5.4 SELECTION OF FUNCTIONS :

To determine the centrality values of the market centres, various functions have been considered. The required data of various functions have been collected with the help of intensive field work. For this purpose a thoughtful and thoroughly questionnaire was prepared for 52 various functions (Appendix No.I). The field survey was conducted for 53 market centres of the study region. The selection of functions has been done by careful observation because some of the villages has not single important function, even now so, most of the villages are depend on small market centre, where very few functions are available, but these functions are also very important from their point of view e.g. grocessary shops, grinding mills, kirana shops etc.

5.5 REGIONAL ANALYSIS OF CENTRALITY :

The centrality score for individual market centre has been calculated with the help of locational quotient method (Appendix No.II), shows centrality scores of individual market centre of the study region. Sawantwadi a taluka place has found very high centrality value, because it is a large town of the study region, which has very large service area and it serves more population of the study region.

Kankavli stands second in ranking of centrality, which obtain the centrality value of 381.78. It is also a large rural market centre of the study region, which serves more area and population surrounding it. It is situated on the National Highway No.17 (Bombay-Konkan-Goa), and its an important commercial and trade centre of the study region.

Kudal is a district place but it stands on third number in centrality score, because it has established newly. Its centrality score is 328.14. Vengurla, Malvan and Devgad are the taluka places and they stand fourth, fifth and sixth rank number in centrality score respectively. Other market places are grouped into various categories of centrality scores, then it is observed that, out of 53 places, 6 market centres (11.32%) have centrality value below 20. Nearly 22.64 percent of the total market centres have centrality values between 20 to 40. The centrality score between 40 to 60 and 60 to 120 have been observed in 14 market centres (26.42%) in each category. Seven market centres have centrality scores above 120. The table No.V-I gives detail about the centrality score and number of market centres in each category.

TABLE NO.V-I

SINDHUDURG DISTRICT

CENTRALITY SCORES AND NO.OF MARKET CENTRES IN EACH CATEGORY

Sr.No.	Centrality	No.of Market centres	Percentage to total
1.	Less than 20	06	11.32
2.	20 to 40	12	22.64
3.	40 to 60	14	26.42
4.	60 to 120	14	26.42
5.	Above 120	07	13.30
	Sindhudurg District	53	100.0

In the study region, it is observed that, all the urban places and taluka head-quarters, except Vaibhavwadi have higher centrality values. Out of the total 53 market centres nearly 32 market centres (i.e. 60.38%) have very low centrality values ranging from 13.74 to 60. It is clearly shows that, these market centres have poor functional organization, but these market centres also plays an important role to serve the rural population (Appendix No.II)

It is observed that, in the agriculturaly prosporous region where, the transportation network have developed gives rise to large size market centres, which have got higher centrality scores.

5.6 HIERARCHY OF MARKET CENTRES

Hierarchies of settlements as general service centres

have been described in many different parts of the world, in the more advanced countries and in a historical context as well as the modern day setting[4]. Losch (1954), explained the steped and ranked of hierarchy of central places in which he has given due importance to the study of characteristics of central places. The study of hierarchical class system is a very important part of the spatial model of central place. In the present study, an attempt has been made to find out whether the market centres have a hierarchic class structure which is explained by Christaller, (1933), and A.Losch,(1954)

5.7 **REVIEW OF METHODS** :

The hierarchy of central place has been determined by various methods. Berry and Garrison, (1958), have explained the hierarchy of central places into three classes of hierarchic orders such as hamlate, village and town. They have used the Scalogram analysis which is further used by Sudhir Wanmali, (1971), as an important method, R.E.Dickinson (1971), has also used moving averages of centrality to find out the trend of hierarchic order. Preston, (1971), has given a new method to find out whether a hierarchic arrangement of a central places is found or not in reality, where he has taken the moving averages to establish a trend. He has used the cummulative average of differences when plotted on a graph shows more than one slope.

In India, many geographers have studied the hierarchic order of market centres of various regions. Singh, (1962), Vishwanath, (1967), Mukharjee, (1968), Sinha and Mandal, (1974), Saxena, (1984), Srivastava, (1976),

Dixit, (1980) and Sharma, (1984), have made significant attempt in this direction. Kumbhar, (1982), has classified the rural market centres of Sangli district into four hierarchic orders.

5.8 CHOICE OF METHOD :

In the present study, an attempt has been made to deteremine the orders of hierarchy of market centres. The Zipf's, (1949), Rank-Size Rule has been adopted. All the market centres are arranged according to their centrality values and represented as points on the 'X' axis and centrality score 'Y' axis (semi-log scale), then it shows clear grouped distribution. The break-points have clearly marked and all the market centres have been grouped into five categories of hierarchic orders. (Figure No.5.1).

5.9 REGIONAL ANALYSIS OF HIERARCHIC ORDER OF MARKET CENTRES :

As stated above, with the help of semi-log graph the hierarchy of market centres were determined and they have grouped into five classes. Table No. V-II gives details about hierarchic order, centrality score, number of market centres and their percentage to total in each category.

SINDHUDURG DISTRICT

HIERARCHIC ORDER OF MARET CENTRES 1991.

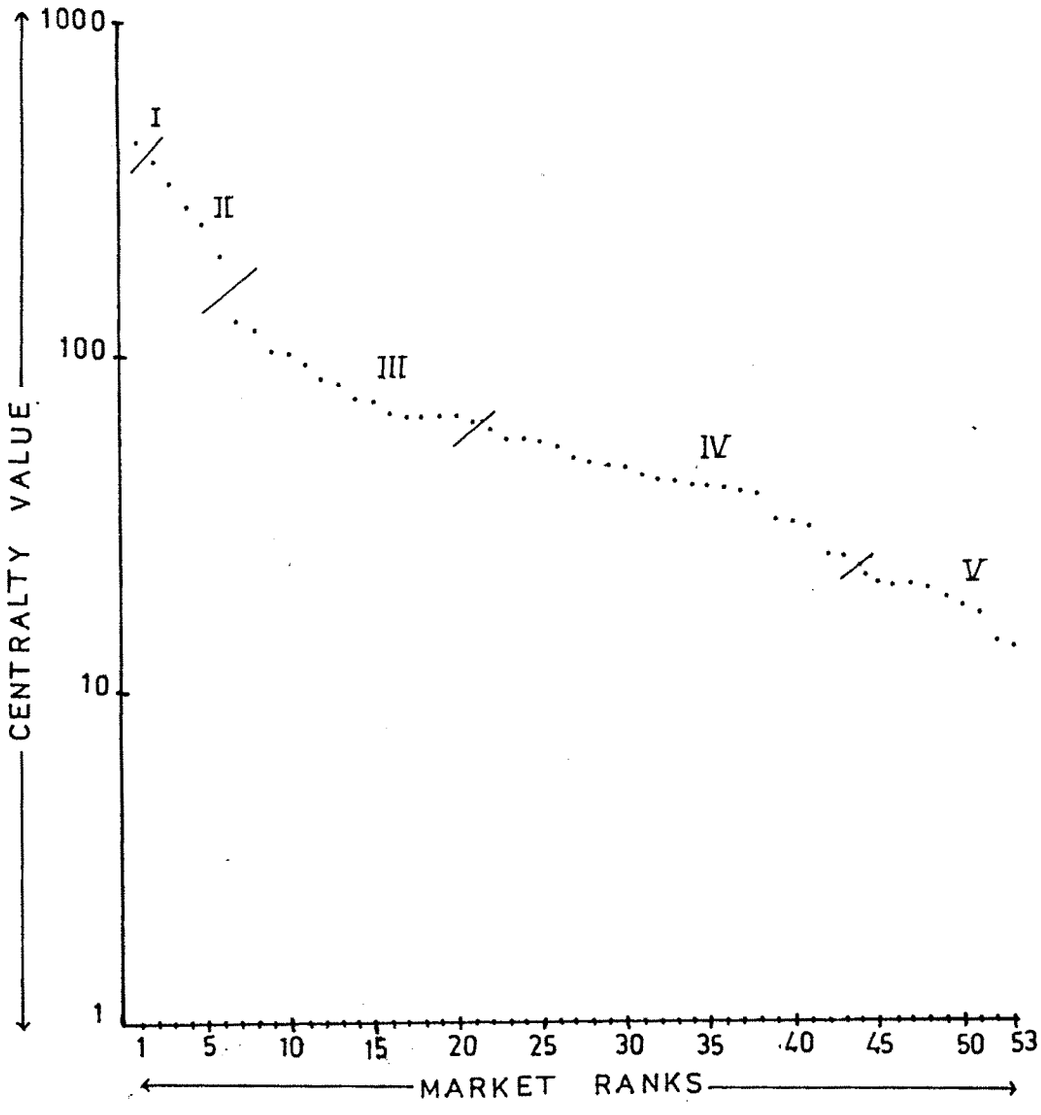


FIG.- 5.1

TABLE NO.V-II

SINDHUDURG DISTRICT

HIERARCHIC ORDER, CENTRALITY SCORE, NO.OF OF MARKET CENTRES AND THEIR PERCENTAGE TO TOTAL

Sr. No.	Hierarchic Order	Centrality score	No.of market centre	Percentage to total
1.	I	Above 400	01	1.89
2.	II	120 to 400	05	9.43
3.	III	60 to 120	15	28.30
4.	IV	25 to 60	22	41.51
5	V	Below 25	10	18.87
			53	100

In the study region, it is observed that, nearly 18.87 percent of the total market centres are grouped into fifth order of market centres and it is also observed that, nearly 41.51 percent market centres are grouped into fourth hierarchic order of market centres, it means that nearly 60.38 percent of the total market centres are grouped into fourth and fifth hierarchic order of market centres, which have low centrality values. These small market centres serve most of the rural population of the study region, which have got more importance because of their nearness.

Third order market centres, which have centrality value between 60 to 120, accounts for 28.3 percent of the total market centres of the study region. Second number market centres have centrality value between 120 to 400, which accounts for 9.4 percent of the total market centres (Table No.V-II).

Here, we have observed that, the regional distribution of hierarchic order of market centres in the study region but, if we observed talukawise distribution of hierarchic order of market centres, it gives a very different type of picture. The table No.V-III and Figure No.5.2 gives details about the talukawise and hierarchicwise distribution of market centres in the study region.

TABLE NO.V-III

SINDHUDURG DISTRICT

TALUKAWISE HIERARCHICAL ORDERS OF MARKET CENTRES

1991

Sr. No.	Taluka	< No.of market centres in Hierarchic orders					Total
		I	II	III	IV	V	
1.	Sawantwadi	1	-	3	3	1	8
2.	Vengurla	-	1	2	2	-	5
3.	Kudal	-	1	2	9	-	12
4.	Malvan	-	1	2	3	5	11
5.	Kankavli	-	1	4	-	3	8
6.	Devgad	-	1	-	5	-	6
7.	Vaibhavwadi	-	-	2	-	1	3
	Sindhudurg District	1	5	15	22	10	53

From the above table and figure No.5.2 it is observed that, the first order hierarchy is occupied by Sawantwadi town having highest centrality score, i.e. 431.84. Sawantwadi is a taluka headquarter, where most of the commercial, social and administrative district offices are found. Sawantwadi is

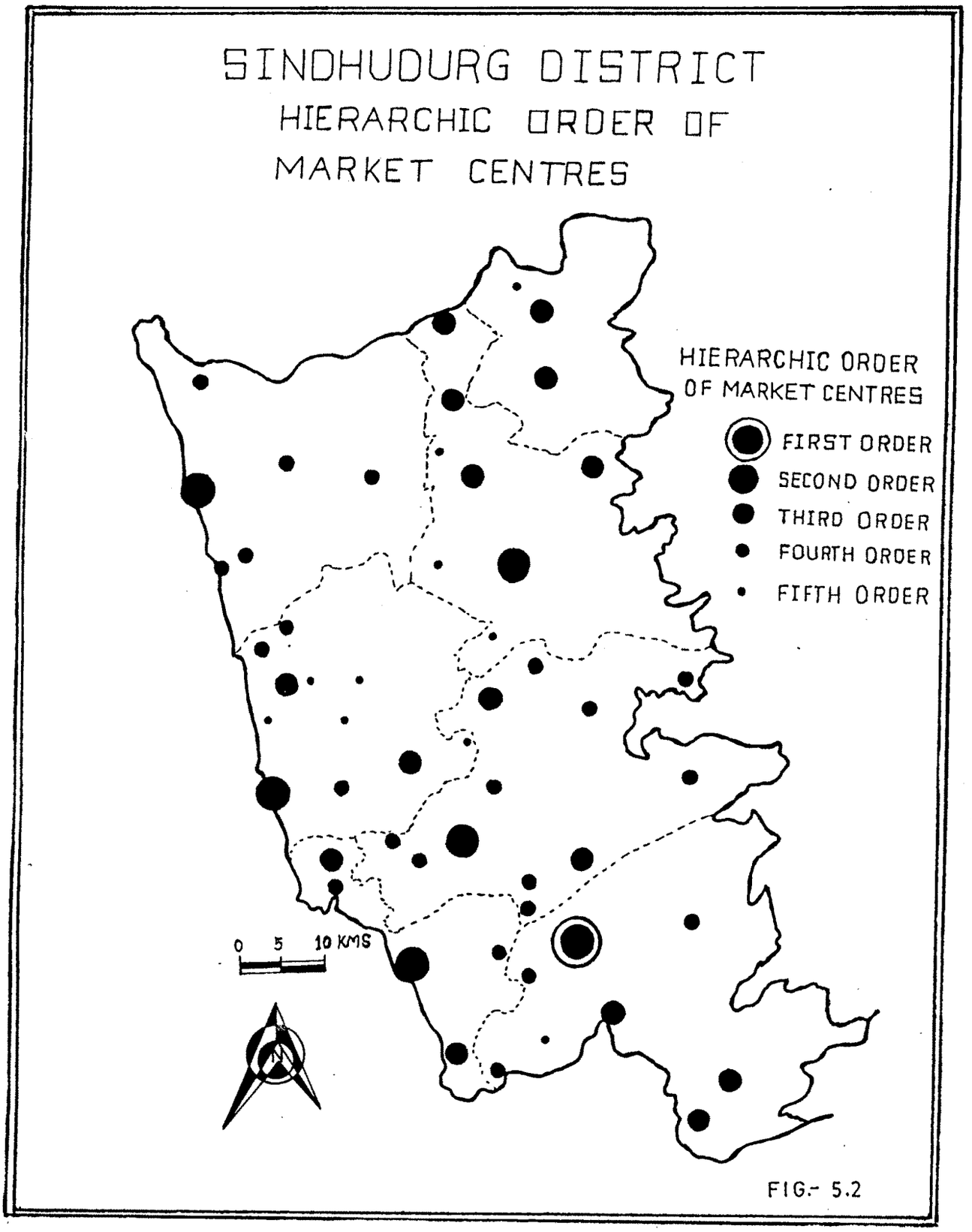

SINDHUDURG DISTRICT
HIERARCHIC ORDER OF
MARKET CENTRES
HIERARCHIC ORDER
OF MARKET CENTRES
FIRST ORDER
SECOND ORDER
THIRD ORDER
FOURTH ORDER
FIFTH ORDER
0 5 10 KMS
N

FIG.- 5.2

a historical town and it was also a historical capital (Sansthan) in the past.

Second order hierarchic market centres includes all the taluka head quarters except Vaibhavwadi. As compared to Sawantwadi, these market centres have few important functions. Devgad, Kankavli, Malvan, Kudal and Vengurla are the second order market centres, which are situated on the sea coast and national highway, Devgad, Malvan and Vengurla are the important fishing centres of the study region, which are linked with other market centres of the study region and also outside of the study region. Kankavli and Kudal market centres are situated on the national highway No.17, which are the important commercial tread centres of the study region.

There are 15 market centres in the third hierarchic order, out of which only one market centre is a taluka head quarter i.e. Vaibhavwadi, Kankavli taluka have four market centres of third hierarchic order. Sawantwadi taluka have three market centres of this hierarchic order. Vengurla, Kudal, Malvan and Vaibhavwadi talukas have two market centres each of third hierarchic order.

Fourth hierarchic order of market centres includes 22 market centres of the study region, out of which Kudal taluka accounts for 9 market centres. Devgad taluka have all market centres of fourth hierarchic order, except taluka head quarter. Sawantwadi and Malvan taluka have three market centres each, Vengurla taluka accounts only two market centres of this order.

The fifth order market centres includes remaining 10 market centres of four talukas of the study region, Malvan taluka have five market centres of this order. Kankavli taluka have three market centres and Sawantwadi and Vaibhavwadi talukas have one market centres each of this hierarchic order.

5.10 HIERARCHIC ORDER, SERVICE AREAS AND LINKAGE ANALYSIS

Here, an attempt has been made to study the areas which are served by market centres of different hierarchic orders. The service areas of the market centres are influenced by their functional importance. The spacing between market centres, size of market centres are the important factors which affects the zone of influence or service areas of the market centres. In the present study, the first order market centre, i.e. Sawantwadi town has been omitted from the study because it serves whole district area and population. All the market centres, except Sawantwadi have been studied in respect to their service areas and their functional linkages.

5.11 METHOD FOR DEMARCATION OF MARKET LINKAGE :

There are several methods, which have been used for identifying linkage of market centres by various Geographers. Brush, (1953), Green, (1950), Bracey, (1955), Carol, (1955), Carter, (1955), Reilly, (1931), Deshmukh, (1979), Kumbhar, (1982), and Dixit, (1988) have contributed in this direction. Some geographers have used quantitative methods for identifying the zones of influence, but most of the geographers have used empirical method for identifying the zone of influence.

In the present study, the empirical method has been used for the analysis of hierarchic linkage of market centres to the area served and population served by them. Though this work involved intensive field work still the result given by this method are more correct. The table No.V-IV gives the details about hierarchic order of market centres, spacing between market centre, average number of settlement served, average population served and average area served by these market centres.

TABLE NO.V-IV

SINDHUDURG DISTRICT

SPACING BETWEEN MARKET CENTRES, SETTLEMENT, POPULATION AND AREA SERVED BY EACH MARKET CENTRE

Sr. No.	Hierarchic order of market centre	No.of market centre	Spacing between market centre	Settlement served by each market centre	Population served by each market centre	Area served in sq.km by each market centre
1.	II	5	13.2	29.20	46150.80	173.7
2.	III	15	10.9	17.87	16303.46	119.4
3.	IV	22	9.0	10.18	11016.13	81.0
4.	V	53	7.2	9.10	7482.60	52.0

5.12.0 REGIONAL ANALYSIS OF LINKAGE OF MARKET CENTRES :

5.12.1 LINKAGE OF FIFTH HIERARCHIC ORDER OF MARKET CENTRES :

In the present analysis of market centres all 53 market centres have been considered. The fifth hierarchic order of market centres have average spacing of 7.2 km and

the average number of villages are served by these market centres account for 9 rural settlements and average population served by each market centre, accounts nearly 7483 persons. The average area served by fifth hierarchic order of market centre is 52 sq.km. In spatial distribution of market centres, it is observed that, in the eastern part of the study region, where the topography of the area is hilly and rugged, high rainfall, dense forest, low population density and small size market centres served large area than the average (Table No.V-IV).

Some market centres of the Kudal, Malvan and Sawantwadi talukas have less service areas than the average, because development of road network, irrigation facilities, agriculturaly prosporous area gives rise to more number of market centres in the region, so they served less area and more population than the average. (Figure No.5.3)

5.12.2 **LINKAGE OF FOURTH HIERARCHIC ORDER OF MARKET CENTRES**

There are 22 market centres, included in the fourth order of hierarchy. Out of the total, nearly 41.5 percent market centres are included in this order. The fourth order market centres have average spacing of 9 km, serves nearly 10 rural settlements and the average population served by these market centres is about 11016 persons. The average area serves by these market centres is nearly 81 sq. km.

The spatial analysis shows that, the higher concentration of fourth order market centre is found in Kudal taluka. In Vaibhavwadi taluka, there is not a single fourth order market

SINDHUDURG DISTRICT

FIFTH ORDER MARKET CENTRES

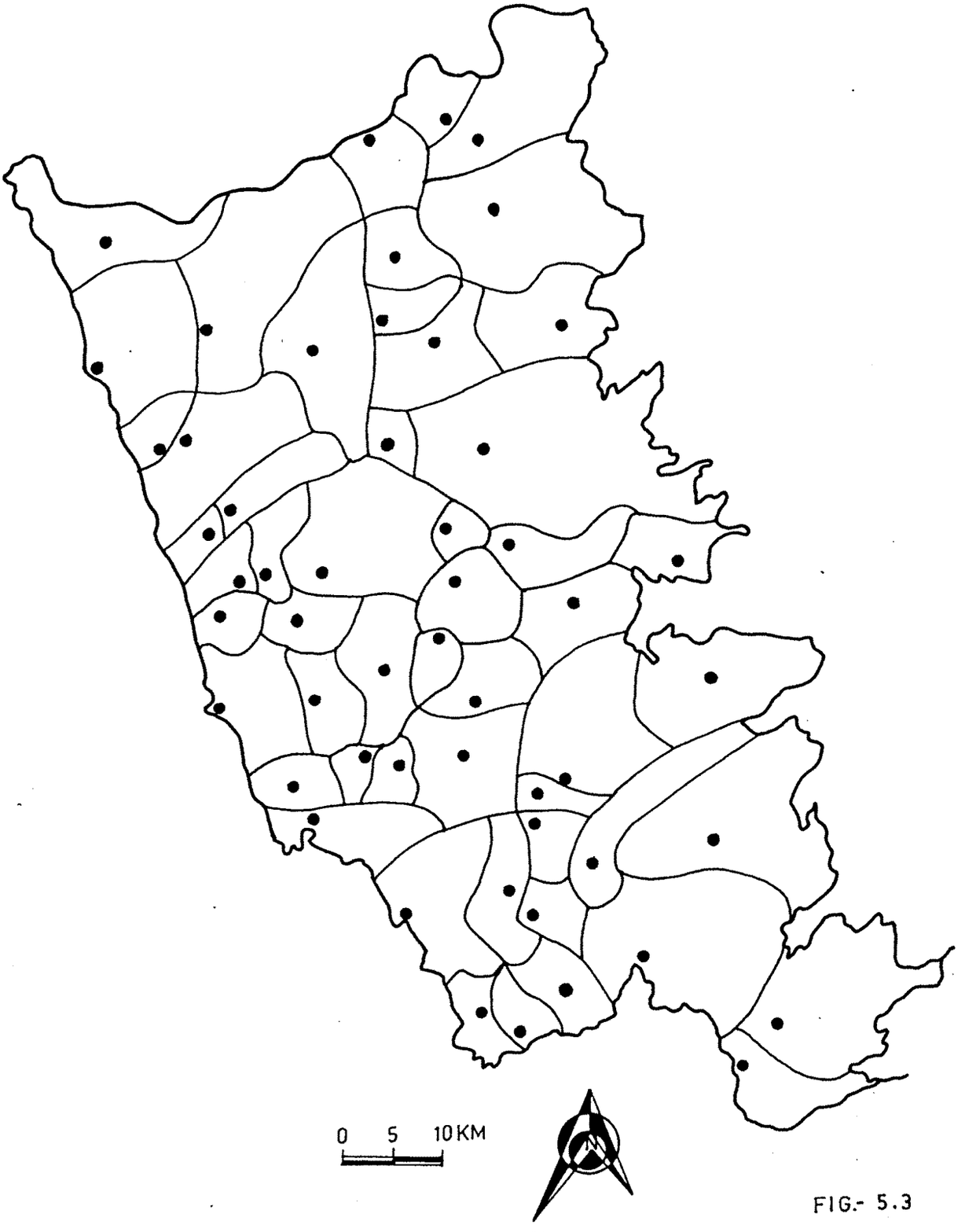


FIG.- 5.3

centre. In Devgad taluka all the market centres, except taluka head quarter are included in fourth hierarchic order of market centres.

In general, it is observed that, in the north-westeren part and south-central part of the study region have more number of market centres of fourth hierarchic order. These market centres are located along the road and sea coast (Figure No.5.4).

5.12.3 LINKAGE OF THIRD HIERARCHIC ORDER OF MARKET CENTRES

In the third hierarchic order of market centres, 15 market centres have been included. The third order market centres have average spacing of 10.9 km., and serves nearly 18 rural settlementss by eeach market centre. Each third hierarchic order of market centres serves average population of 16303 persons and average area of 119.4 sq.km. (Table No.V-IV).

It is observed that, the higher concentration of third order of market centres are found in the Kankavli taluka. There is not a single third hierarchic order of market centre in Devgad taluka. In the north-eastern part of the study region particularly Vaibhavwadi and north Kankavli taluka have more number of third order market centres. The market centres of Kankavli taluka's have located on road site. In the southern and western part of the study region the market centres are mostly found on the boundary of Maharashtra and Goa & along the road site.(Figure No.5.5).

SINDHUDURG DISTRICT

FOURTH ORDER MARKET CENTRES

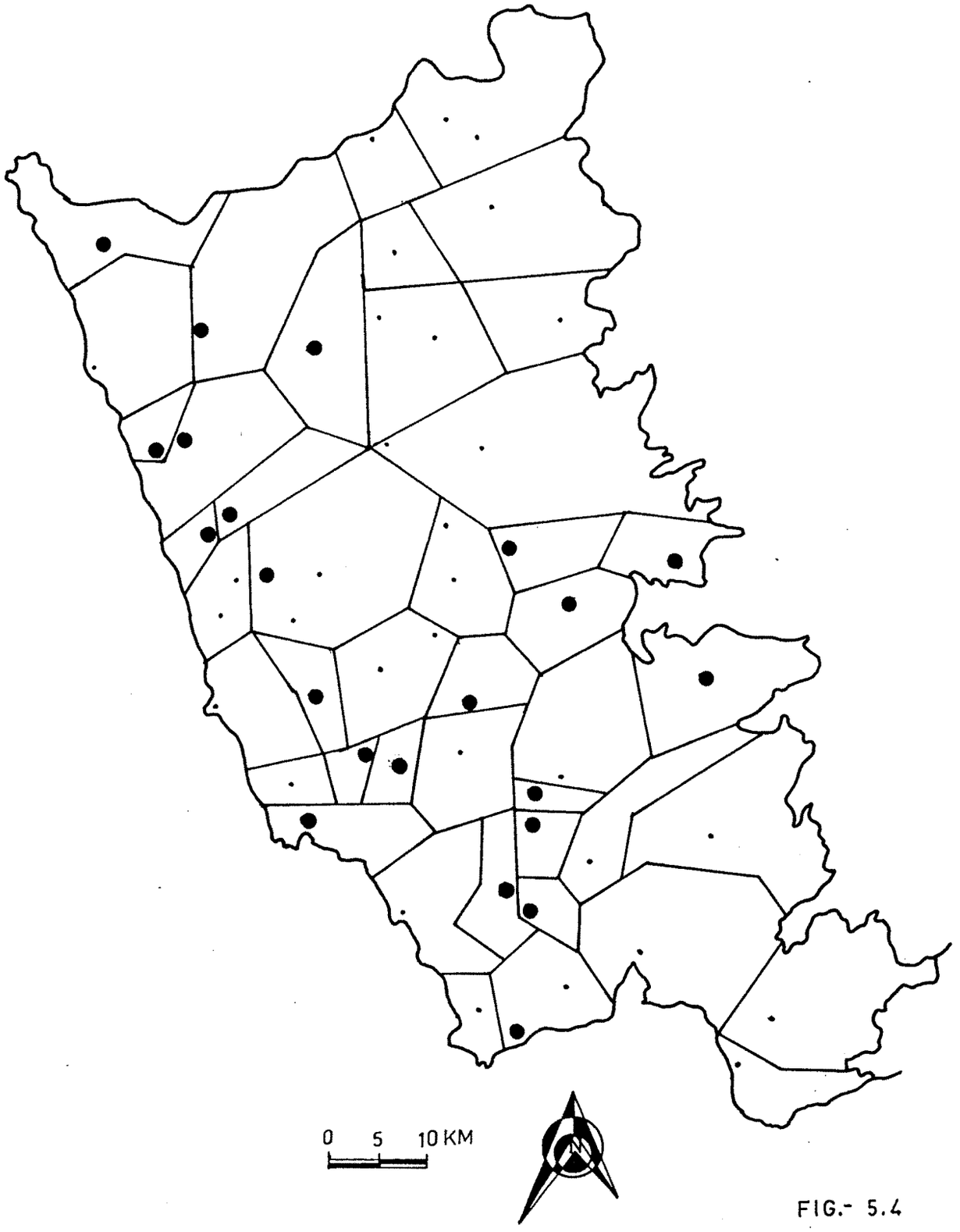


FIG.- 5.4

SINDHUDURG DISTRICT

THIRD ORDER MARKET CENTRES

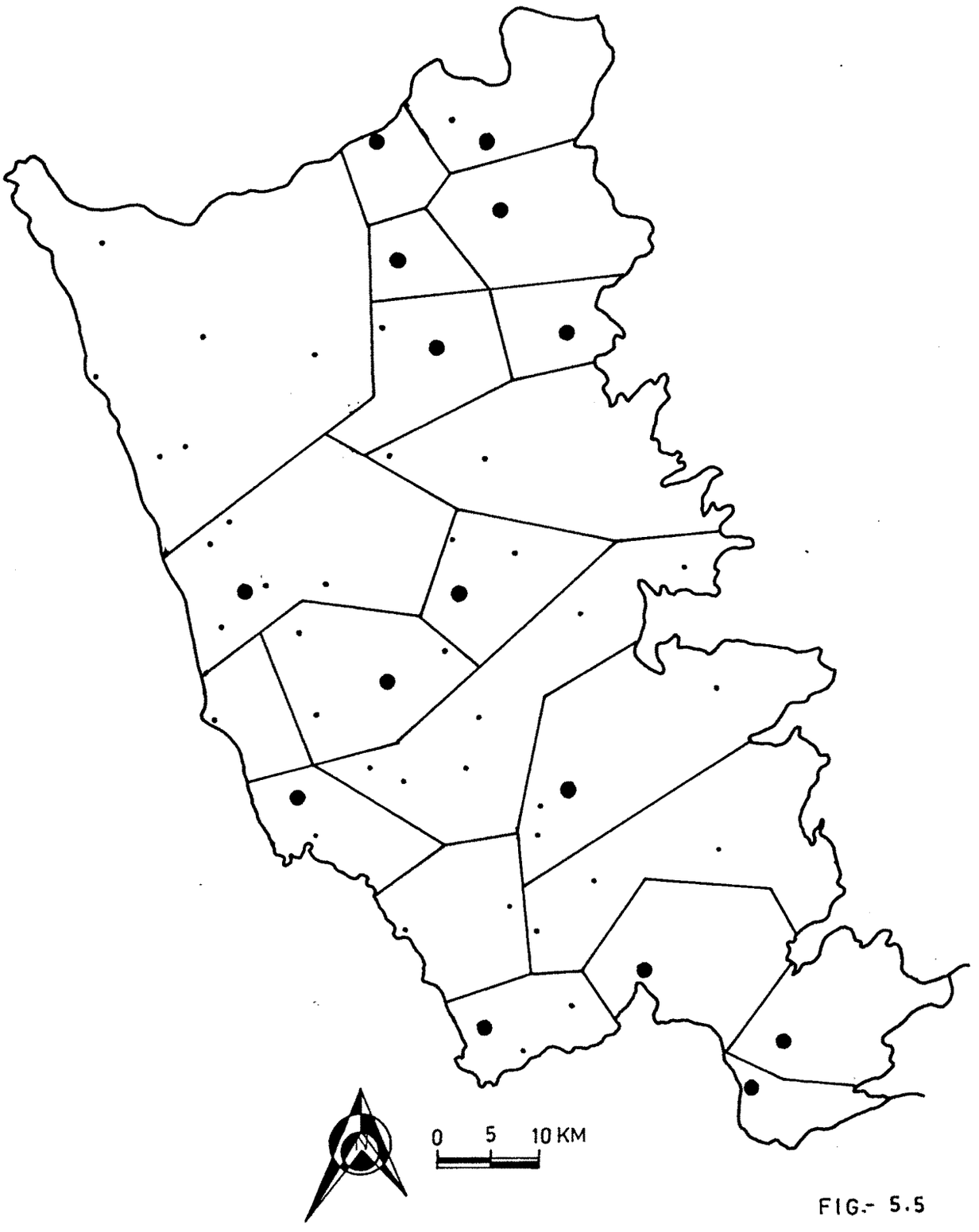


FIG.- 5.5

5.12.4 LINKAGE OF SECOND HIERARCHIC ORDER OF MARKET CENTRES

There are five market centres involved in the second order of hierarchy. These market centres served very large area and more population of the study region. The average spacing between the second order market centre is about 13.2 km. In this order each market centre served nearly 29 rural settlements, and 46150 population of the study area, they served an average area of 173.7 sq. km. (Table No.V-IV).

The spatial analysis shows that, in Vaibhavwadi taluka there is not a single second order market centre. It is observed that, in remaining talukas there is a one second order market centre (Figure No.5.6).

The appendix No.V-II gives details about centrality score, area served by each market centre, population served, settlements served and their ranks. The figure No.5.7 shows relationship between hierarchic order of market centres and area served, population served and settlements served.

5.13 FUNCTIONAL LINKAGE ANALYSIS OF MARKET CENTRES WITH THEIR HIERARCHIC RELATIONSHIP

Here, an attempt has been made to identify the areas, which are served by market centres of different hierarchic order. The area influenced by the markets are related to their functional importance. The distance between the two markets which affects the zone of influence of market centres.

According to functional capacity of market centres they served population and area. In the present study, the

SINDHUDURG DISTRICT

SECOND ORDER MARKET CENTRES

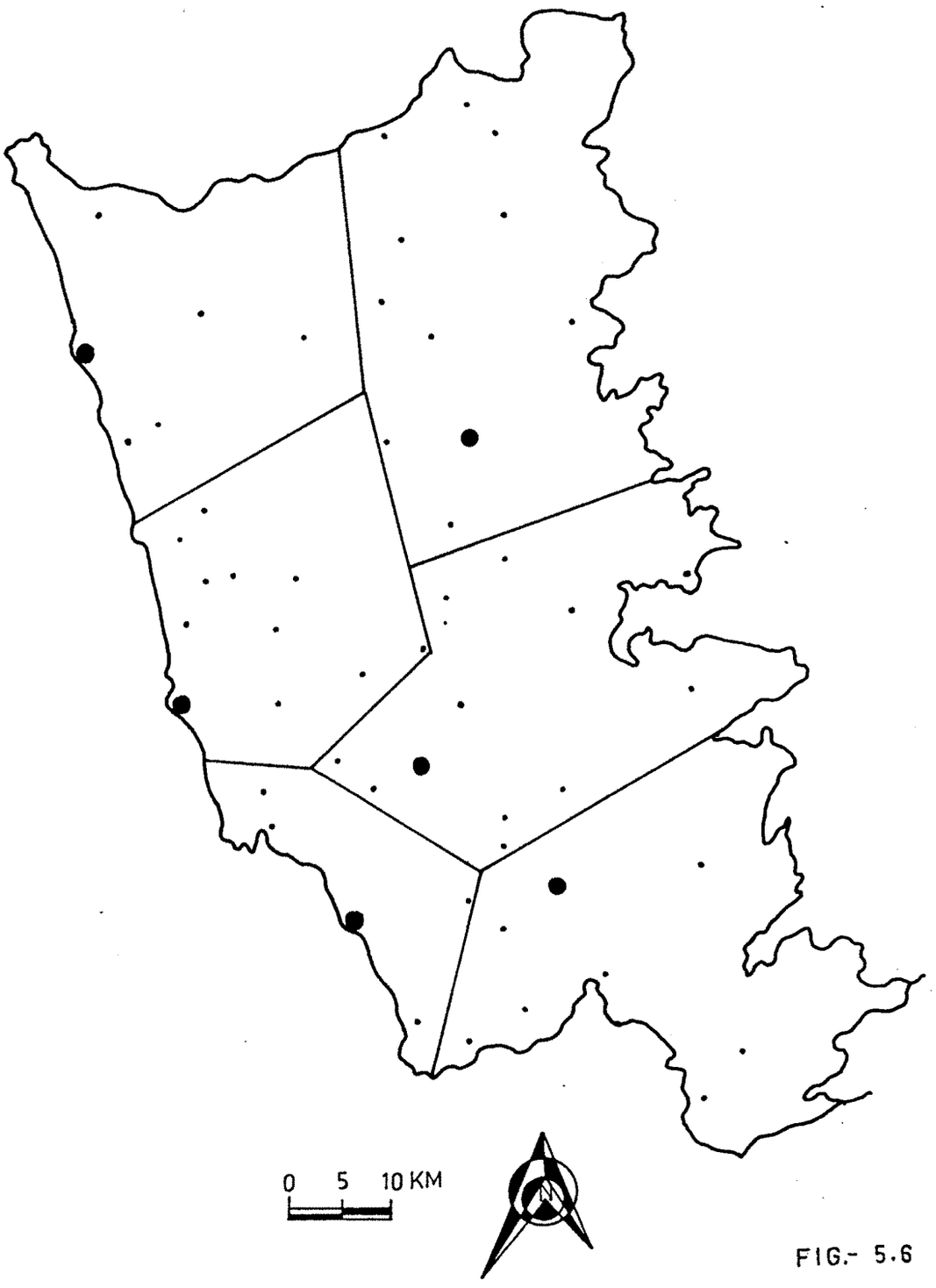
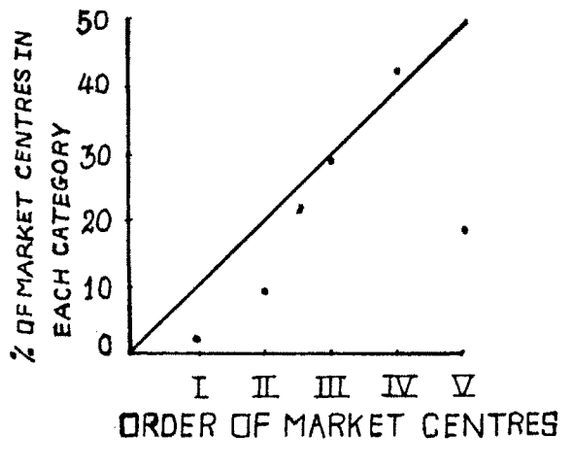
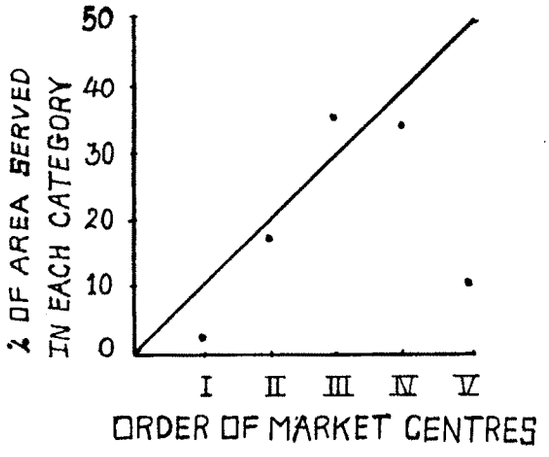


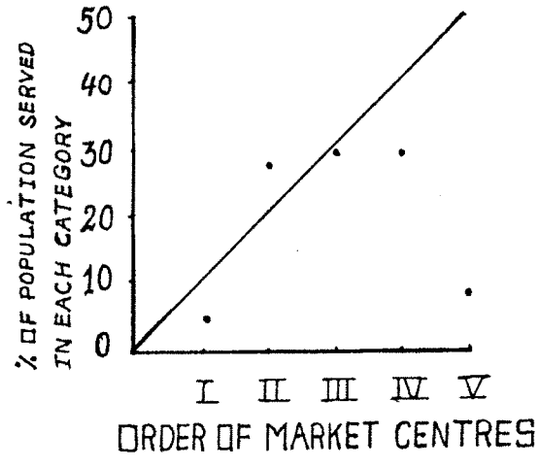
FIG.- 5.6

SINDHUDURG DISTRICT

RELATIONSHIP BETWEEN







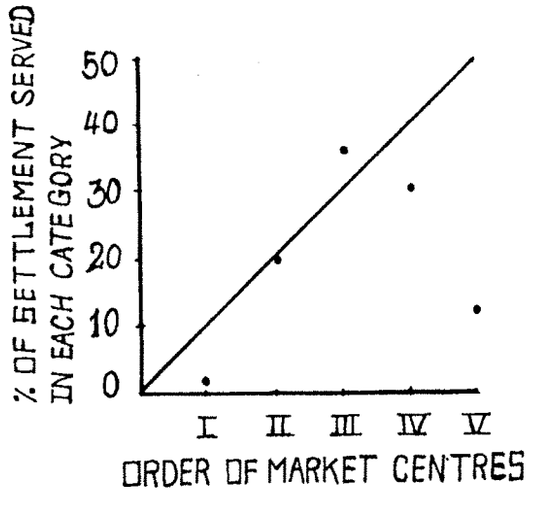


FIG.- 5.7

hierarchic relationship between the market centres and their functional linkages have been studied. The figure No.5.8 clearly indicates that, most of the lower and higher order of the market centres are more connected to Sawantwadi, an important first order market centre of the study region. The second order market centres have a moderate linkage with third order market centres. Third order market centres have their linkage with fourth and fifth order market centres located in the neighbourhood.

The Kankavli, second order market centre has more linkage to the third order market centres than the other second order market centres in the study area. The Devgad and Kudal market centres have their more linkages to fourth order market centres. The lower order market centre depend on higher order market centres for their functional needs. The lower order market centres i.e. fifth order, are also functionally linked with rural settlements. These market centres also served as a rural service centres for these settlements. The analysis of this functional linkage in the study region has been shown in the figure No.5.9.

SINDHUDURG DISTRICT

FUNCTIONAL LINKAGE OF MARKETS AND THEIR HIERARCHIC RELATIONSHIP

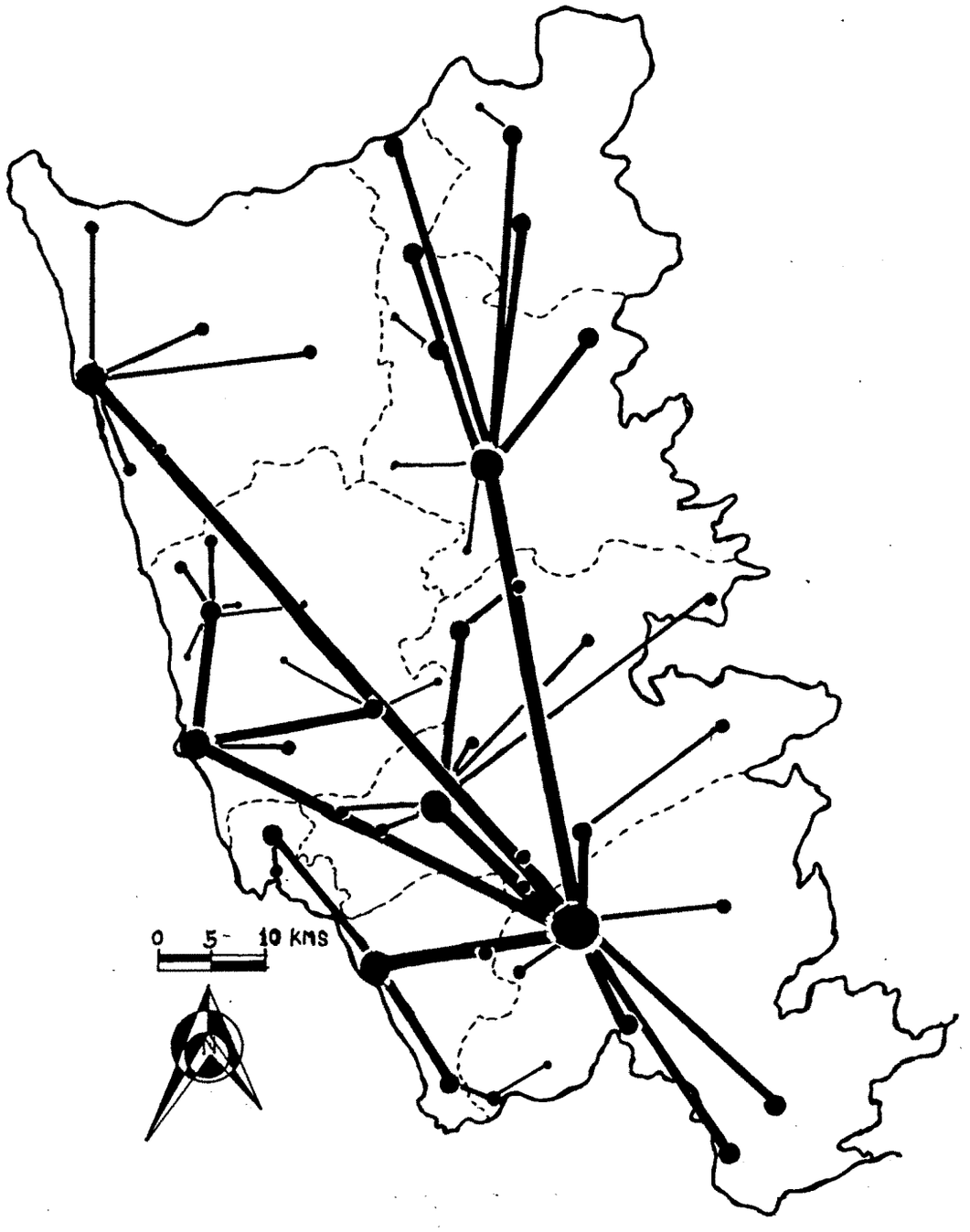


FIG.- 5.8

SINDHUDURG DISTRICT

THE LINKAGE OF RURAL SETTLEMENTS WITH MARKET CENTRES

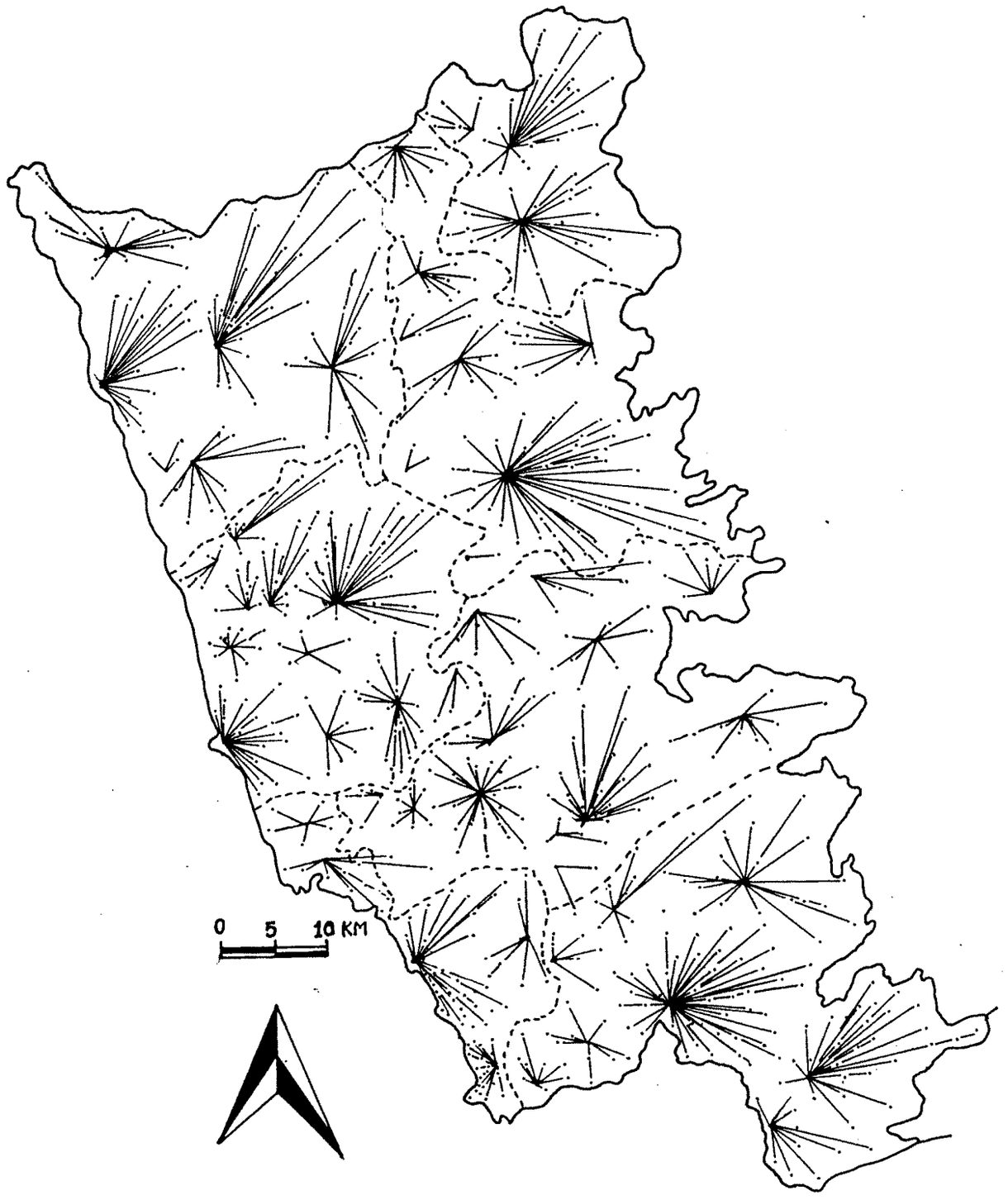


FIG.- 5.9

REFERENCES

1] Kumbhar, A.P. and Deshmukh, P.W. (1982): Traditional rural market centres and regional links : A case study of traditional markets and their spatial organisation in Sangli District: P.46.

2] Ibid P.46

3] Ibid P.46-47

4] Berry, B.J.L. And Pred, A. (1965): Central Place Studies, A Bibliography of theory and applications (Regional Science Research Institute).

5] Davies, W.K.D. (1967): "Centrality and Central Place hierarchy", Urban Studies, 4. PP. 61-79

6] Dixit, R.S. (1988): Spatial Organisation of Market Centres.

7] Zipf, G.K. (1949): Human behaviour and the Principle of least Effort , Cambridge.

8] Christaller, W.(1933): The Central Places of Southern Germany.

9] Losch, A. (1954): Economics of Location, New Haven.