

CHAPTER - III

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DELIMITATION OF SPHERE OF INFLUENCE

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3.1 INTRODUCTION

The relationship between an urban settlement and its surrounding is described as urban hinterland. It is more important to delimit the zone of influence. An analysis of the rural area served by a market town gives some indication of the relationship between town and country. Which is of practical application in examining the provision of goods and services in an urban centre.

There have been two approaches to the identification and delimitation of sphere of influence. The first has looked outward from the urban centre in order to identify the various areas which are served by it. The second has looked inward from the countryside and has been more concerned with consumer behaviour and the way in which the people used the various functions.

The study of growth and functions of Kolhapur city in the preceding chapter clearly indicates that, there exists a great relation, both economic and cultural between the city and it's surrounding countryside.

Kolhapur, being an important industrial centre of Southern Maharashtra has great influence over a considerable part of surrounding area, from which it receives men and material for its factories and supplies finished articles for consumption and trade. It is the major marketing and

commercial centre of the region inviting daily large number of buyers and sellers. It is also an important educational centre consisting of several distinguished educational institutions of different grades catering to the needs of not only the city dwellers but also of a vast countryside around it. In addition, the city is a great medical service centre providing medical services to the surrounding districts. The city is also the seat of district administration.

The surrounding region in its turn provides the city with the articles of daily use, such as fresh vegetables, milk and milk products, grain, fruits, labour force and raw materials. The city depends upon the surplus of essential production of cultivators, miners and foresters. But before the consumption of primary products, they are processed or manufactured. Therefore, a chain is welded in production, transportation, manufacturing and services. Thus, the city is linked both economically and culturally, with its surrounding region.

In this chapter an attempt has been made to delimit the sphere of influence (city services and countryside services) of Kolhapur city and to find out the area which is closely linked with the city in respect of social and economic bonds.

The sphere of influence of Kolhapur city has been delimited by empirical as well as theoretical method. For empirical methods the intensive field work has carried out

and the data of the following aspects have been collected.

- (i) Medical service zone
- (ii) K.M.T. bus service zone
- (iii) S.T. Bus service zone
- (iv) Shivaji University catchment area
- (v) Newspaper circulation zone
- (vi) Petrol and Diesel distribution zone
- (vii) K.D.C. Bank service zone
- (viii) Milk supply zone
- (ix) Vegetable supply zone

By the way of interviews, observations, questionnaire etc. the first-hand information and the statistical data for the above mentioned functions and services has been collected, these functions and services have been carefully selected to serve the purpose.

3.2 DELIMITATION OF SPHERE OF INFLUENCE OF KOLHAPUR CITY (THEORETICAL METHODS) :

In order to find out the zone of influence of Kolhapur city, the theoretical method of V.L.S. Prakash Rao and the breaking point model have been used.

(A) V.J.S. Prakash Rao's Method :

A theoretical method used in the present work is based upon Prakash Rao's mathematical equation. Rao's method (1961) calculates the degree of influence of urban centres by considering the total number of urban population of the area and the population of individual town and area under study.

Prakash Rao has calculated the sphere of influence of towns of Mysore state by using the following equation.

$$D = \frac{T \times A}{U}$$

$$R = \sqrt{\frac{T \times A}{U}}$$

Where,

D = Degree of urban influence

A = The total area of the region

U = The total urban population of the study region

T = Town population

R = Radius of the circle indicating the degree of urban influence

In the present study the area of Kolhapur district is 8047 sq.kms and the total urban population of the district

785,314 (1991) has been considered. The Kolhapur city population is 405,118 (1991). According to V.L.S. Prakash Rao's method the degree of urban influence is calculated as below.

$$A = 8047 \text{ sq.kms}$$

$$U = 785314$$

$$T = 405118$$

$$\begin{aligned} \text{Hence, } D &= \frac{T \times A}{U} \\ &= \frac{405118 \times 8047}{785314} \\ &= 4151 \end{aligned}$$

$$\begin{aligned} \text{Therefore } R &= \sqrt{\frac{T \times A}{U}} \\ &= \sqrt{\frac{405118 \times 8047}{785314}} \\ &= \sqrt{4151} \\ &= 64.42 \text{ sq./kms.} \end{aligned}$$

With the application of the V.L.S. Prakash Rao's model, the 'R' value has calculated. It is 64.42 sq./kms; which shows the general zone of influence of Kolhapur city. The calculated zone of influence has been represented in Fig.3.1. It clearly

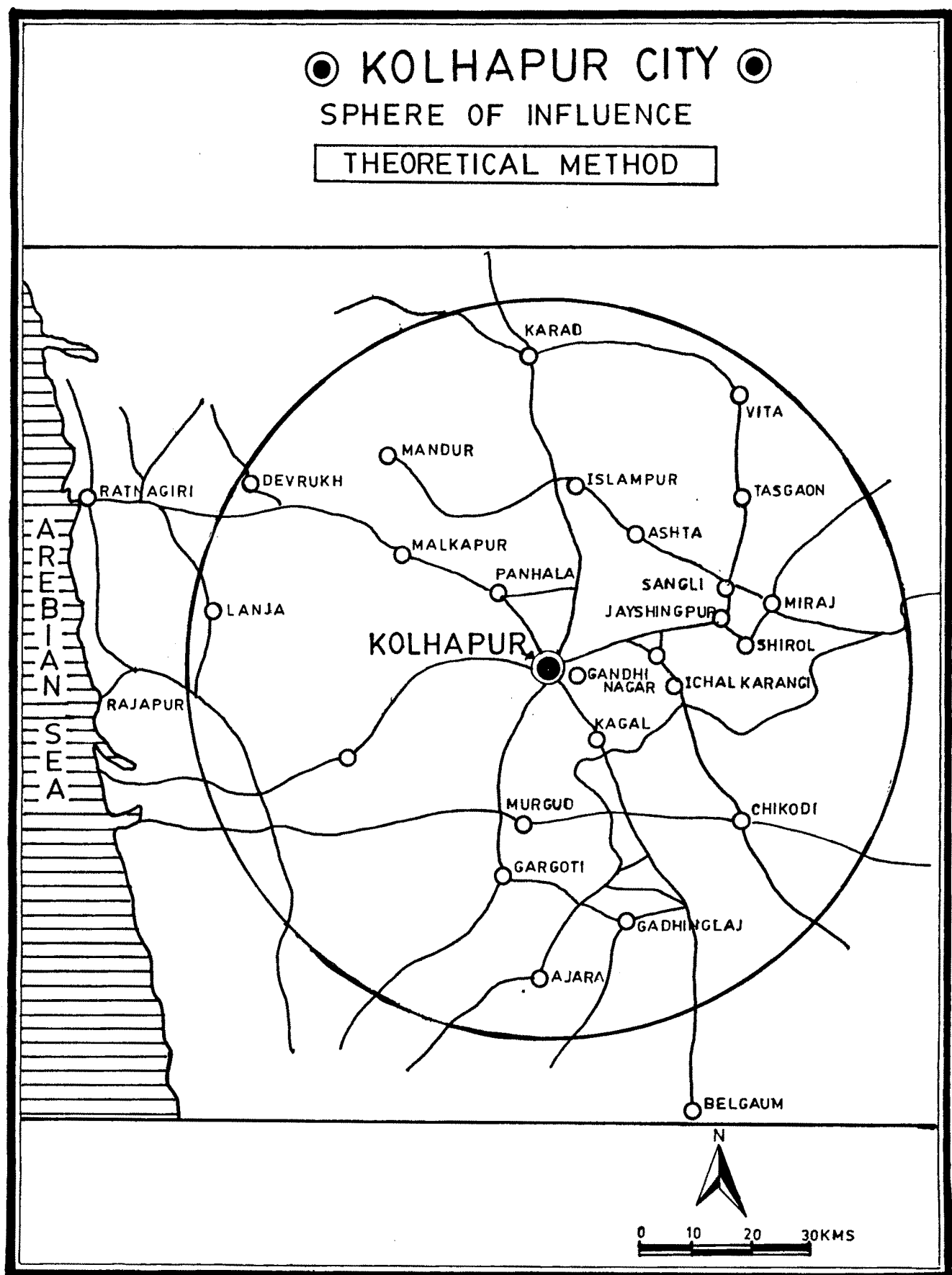


FIG - 3.1

indicates that Kolhapur city serves the entire Kolhapur district, some part of Karnataka state and partially the districts of Satara and Sangli. Kolhapur, being a regional centre of South Maharashtra, it serves very large area of South Maharashtra. Although it serves considerable area of Karnataka, due to political constraints, that area has only cultural and social contacts with Kolhapur city. Nearly 18 urban centres of small and medium size are served by Kolhapur city in which Ichalkaranji, Jaysingpur, Kagal, Gadhinglaj, Karad, Ashta, Islampur, Vita and Tasgaon are most important. The people of these urban centres visit Kolhapur for higher order of goods and services.

The degree of urban influence calculated by theoretical method reveals, the fact that there is a considerable dominance of Kolhapur city at 64.42 kms range.

(B) The Breaking Point Model :

Another theoretical method for delimiting the gravitational pull of Kolhapur is the breaking point model. This model has been applied with reference to the other important adjacent towns like Karad, Islampur, Miraj, Ichalkaranji, Belgaum and Ratnagiri. The influence of Kolhapur has been worked out in terms of distance units as under -

$$BP = \frac{d_{ij}}{1 + \sqrt{\frac{p_2}{p_1}}}$$

Where, BP = Distance from city 1 to
breaking point

d_{ij} = Distance between city 1 and
city 2

p_1 = Population of city 1

p_2 = population of city 2

Using this formula the BP between Kolhapur and Karad
is worked out as under -

$$\begin{aligned} \text{Hence, BP} &= \frac{d_{ij}}{1 + \sqrt{\frac{p_2}{p_1}}} \\ &= \frac{76}{1 + \sqrt{\frac{56705}{405118}}} \\ &= \frac{76}{1 + \sqrt{0.1399}} \\ &= \frac{76}{1 + 0.3741} \\ &= \frac{76}{1.3741} \\ &= 55.30 \text{ kms} \end{aligned}$$

Thus, the breaking point between Kolhapur and Karad is 55.30 kms from Kolhapur city. With the above methodology BPs for Kolhapur and Islampur, Miraj, Ichalkaranji, Belgaum and Ratnagiri urban centres have been computed and represented in Fig.3.2.

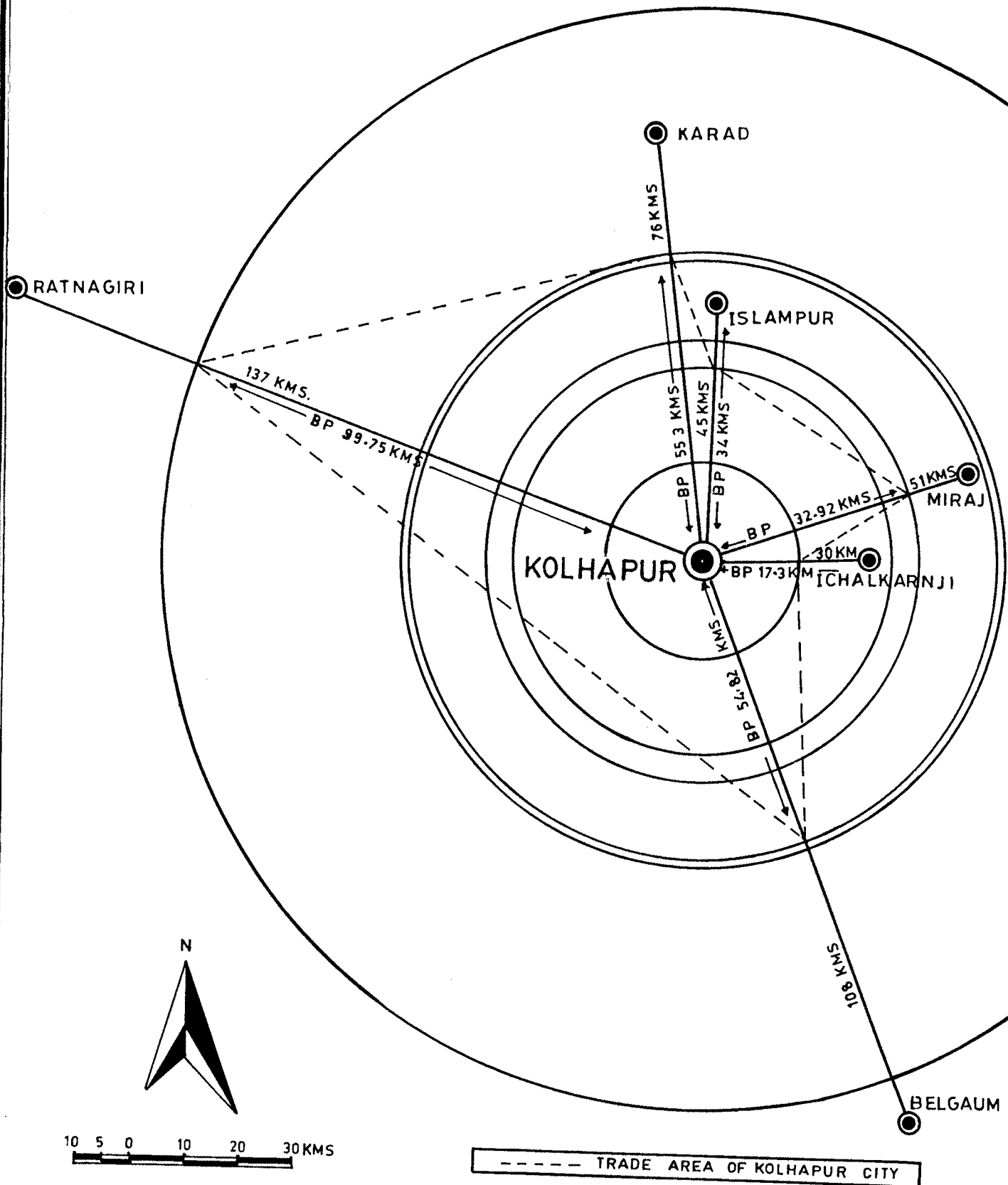
Table 3.1 : Gravitational pull of Kolhapur city in kms on the basis of population size.

Sr. No.	Distance in kms from Kolhapur	Total population	Breaking point (BPs)	Whether or not within the sphere of Kolhapur influence
1	2	3	4	5
1	Islampur (45)	42,101	34.03	Yes
2	Miraj (51)	121,564	32.95	Yes
3	Karad (76)	56,705	55.30	Yes
4	Belgaum (108)	359,290	54.82	Yes
5	Ratnagiri (137)	56,512	99.75	No

The interconnections of all BPs constitutes the trade area of Kolhapur city. It is noted that the trade area has expanded to a greater extent along the National Highway No.4 on which the urban centres like Karad and Belgaum are located; similarly along the state highway which connects Ratnagiri and

◎ KOLHAPUR CITY TRADE AREA ◎

BREAKING POINT MODEL



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FIG. 3-2

A

Miraj via Kolhapur. Table 3.1 indicates the distances, population, breaking point distance and the inclusion or exclusion of adjacent towns in the sphere of Kolhapur city. It is observed that Ratnagiri town of Konkan region is outside the gravitational pull of Kolhapur, whereas Karad town of Satara district, Miraj city of Sangli district, Belgaum city of Karnataka state have fallen under the domain of Kolhapur city.

3.3 DELIMITATION OF SPHERE OF INFLUENCE OF KOLHAPUR CITY (EMPIRICAL METHODS) :

Besides theoretical formulas applied for the delimitation of sphere of influence of Kolhapur city, the empirical methods are used to serve the purpose. In the present work the following parameters have been selected to determine the immediate sphere of influence of Kolhapur city. An intensive field work has been conducted to obtain the necessary statistical information.

(A) City services :

1) Medical service zone

Medical services are specialised and of higher order functions associated with city population. The countryside population avails the services of the city. Keeping in the mind that how far medical services are penetrated into the countryside, the important medical service establishments have been visited and two hundred outdoor patients have been interviewed at each establishment.

In this regard five major hospitals namely Chh. Pramilaraje Hospital, A Government Hospital, Savitribai Fule Hospital, Kolhapur Municiple Corporation Hospital, and Government Hospital at Bawada have been visited. The enquiry of the out-door patients pertaining to the distance that they have travelled to avail of the medical services has been conducted. It shows that generally 55 to 60 kilometers distance has been travelled by the medical facility users. It means that the villages within the radius of 55 to 60 kilometers have been served by Kolhapur city. It is worthmentioning that the entire Karvir taluka is under the dominance of Kolhapur city. So far as the medical services are concerned for higher order medical facilities and specialized medical services, countryside people prefer to visit Kolhapur city. Especially people from Chandgad taluka, Budhargad taluka, Radhanagari taluka have greater fraction over the distance of 80 kilometer to have medical facilities. The generalized medical service area of the city has represented in Fig.3.3.

ii) Kolhapur Municipal Transport
Bus Service Zone

The fringe zone and the immediate umland of a city is usually served by city bus transport. City bus transport have very important role in the interaction between city and its

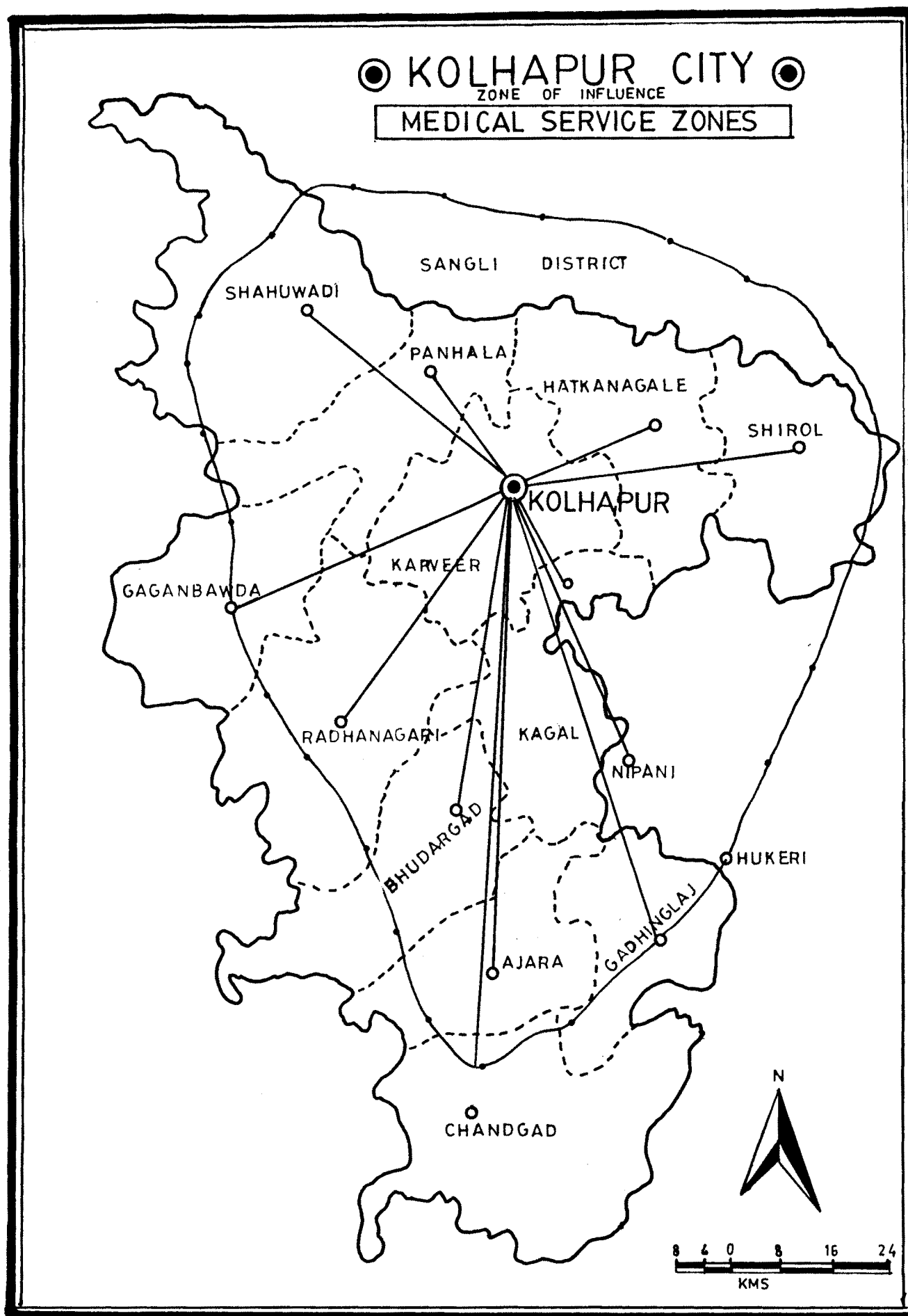


FIG. 3.3

region. This parameter is a good indicator of the relation that exist between the city and its surrounding. Considering the importance of K.M.T. bus service in this regard the data has collected from the K.M.T. office.

There are 55 villages covered by city bus transport service. They are as fallows :-

1 Kuditre goan	2 Kuditre factory	3 Vakare
4 Donawade	5 Sable wadi	6 Khupire
7 Shindewadi	8 Balinga	9 Koge
10 Padali Khurd	11 Singanapur	12 Hanmantwadi
13 Kerli	14 Kerle	15 Porle
16 Ambewadi	17 Wadanage	18 Warange padali
19 Nigave	20 Jatharwadi	21 Bhuye
22 Chikhali	23 Pirachiwadi	24 Washi
25 Kalamba	26 Kathyayani	27 Pachagaon
28 Morewadi	29 Kandalgaon	30 Kaneri Math
31 Gokulshiragaon	32 Ujalaiwadi	33 Nerli
34 Tamgaon	35 Saranobatwadi	36 Uchagaon
37 Mudashingi	38 Walivade	39 Chichawad
40 Gandhinagar	41 Herle	42 Halondi
43 Shirol	44 Nagaon	45 Shiye
46 Top	47 Manraychiwadi	48 Wathar
49 Sambhapur	50 Kini	51 Ambap
52 Chokak	53 Atigre	54 Rukadi
55 Kagal		

These villages are connected to Kolhapur city by city bus transport. The average distance covered by city bus transport is about 22 kilometers. The city bus transport serves 185,677 rural population of surrounding area. Kini village is 22 kms far off from the city comes under the K.M.T. bus catchment area. Generally eastern and northern countryside area of Kolhapur city are better served by K.M.T. services; whereas it is observed that relatively western and south areas are poorly served. The city bus operation zone has shown in Fig.3.4.

iii) State Transport Bus Service zone

In the present study the researcher has collected the data of S.T. buses departing to nearby villages after 8.30 p.m. and take night halt at the villages. All such locations have been considered for the zone of influence delimitation. All these places are closely associated with the social, economic and cultural activities of the city. As many as 133 villages are located at the average distance of 28 kms from the city where more number of buses are operated after 8.30 p.m. The interviews of people who travel by these buses explain that most of the people visit the city in the morning for their work and recreation or for attending social functions and return to their villages by night halt buses.

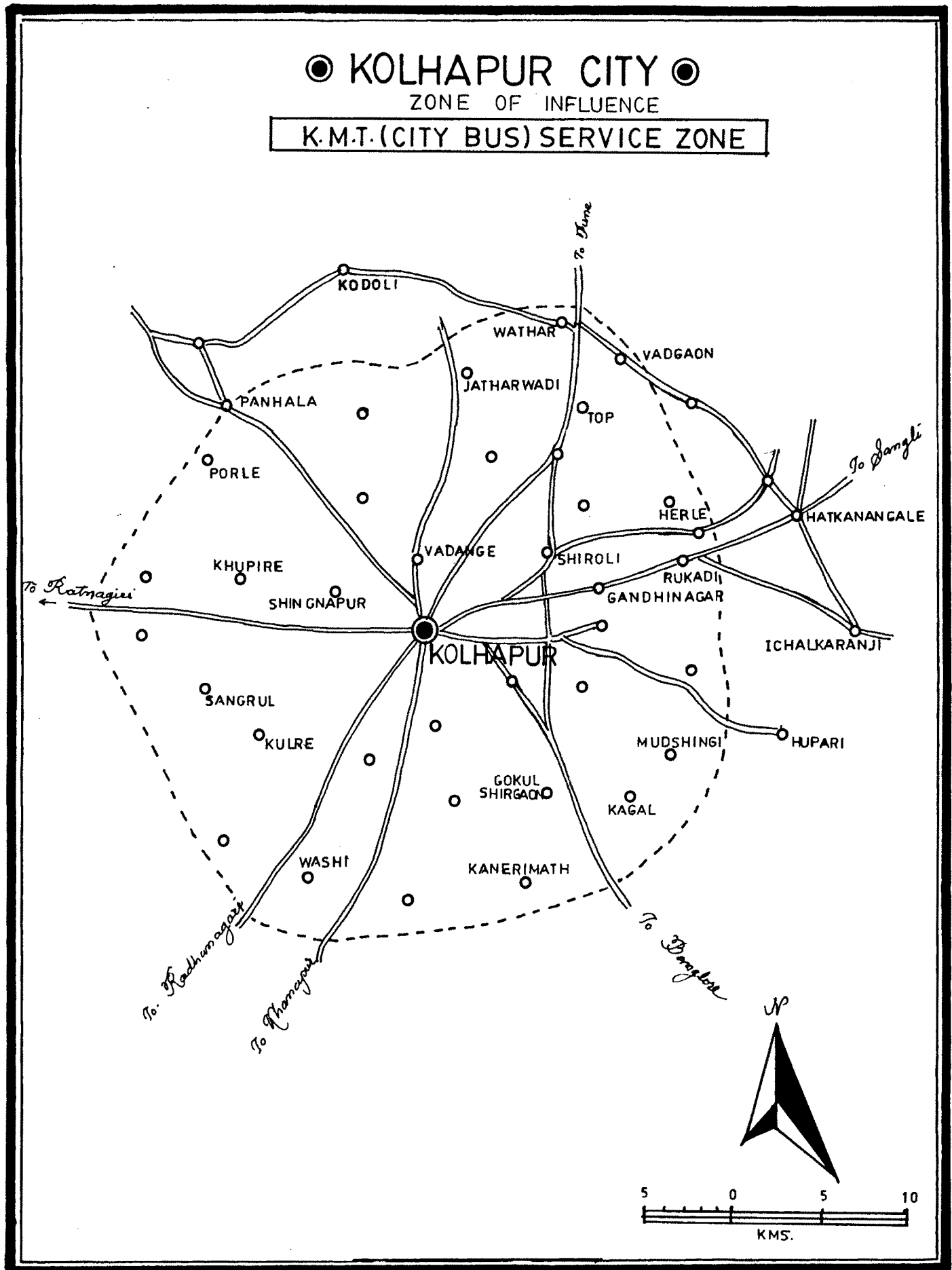


FIG. 3.4

The study of S.T. Bus zone of influence is essential because it helps in understanding the possibility of extending city bus services to some of the villages for efficient services (Fig.3.5).

iv) Shivaji University Catchment Area

Kolhapur city is the headquarters of Shivaji University, which comprises colleges and other higher educational institutions spread out in the districts of Kolhapur, Solapur, Sangli and Satara. Thus, this is the largest area served by the higher order educational facilities provided by Kolhapur city. The area with 200 kms radius from the Kolhapur is served by this higher educational institute (Fig.3.6). Some students from adjacent states of Karnataka and Goa are also attracted to this educational centre.

v) Newspaper Supply zone

The circulation of newspaper published from Kolhapur city is another attribute. The effective circulation range has been delimited by collecting information from various publishing centres. From Kolhapur city five important daily newspapers are published. Out of widely circulated papers Daily Pudhari and Sakal have an effective range of 100 kms. The newspaper circulation range includes Southern Maharashtra region and some part of Karnataka state. The volume of leading

● KOLHAPUR CITY ZONE OF INFLUENCE ●

S.T. BUS SERVICE ZONE

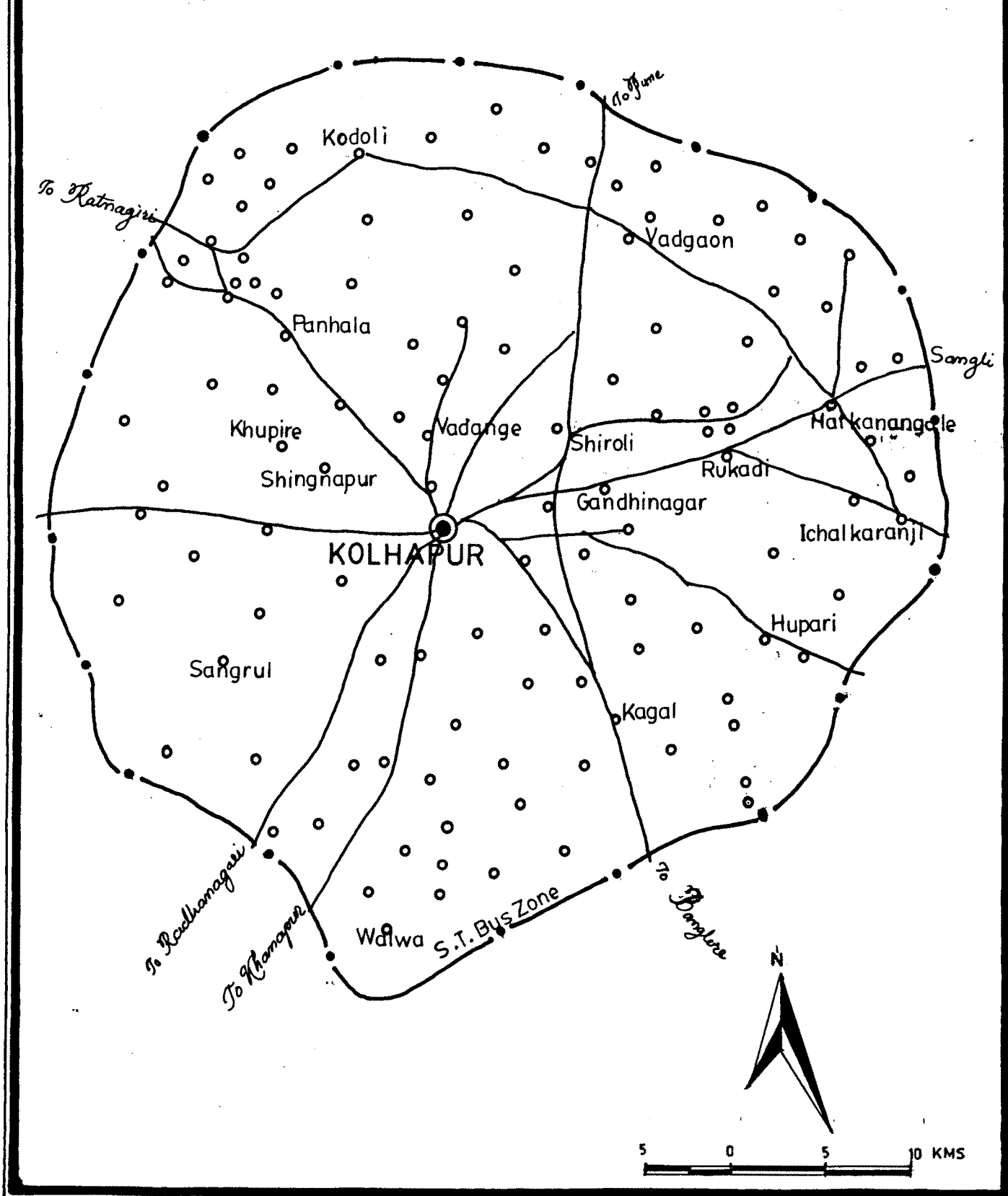


FIG 3.5

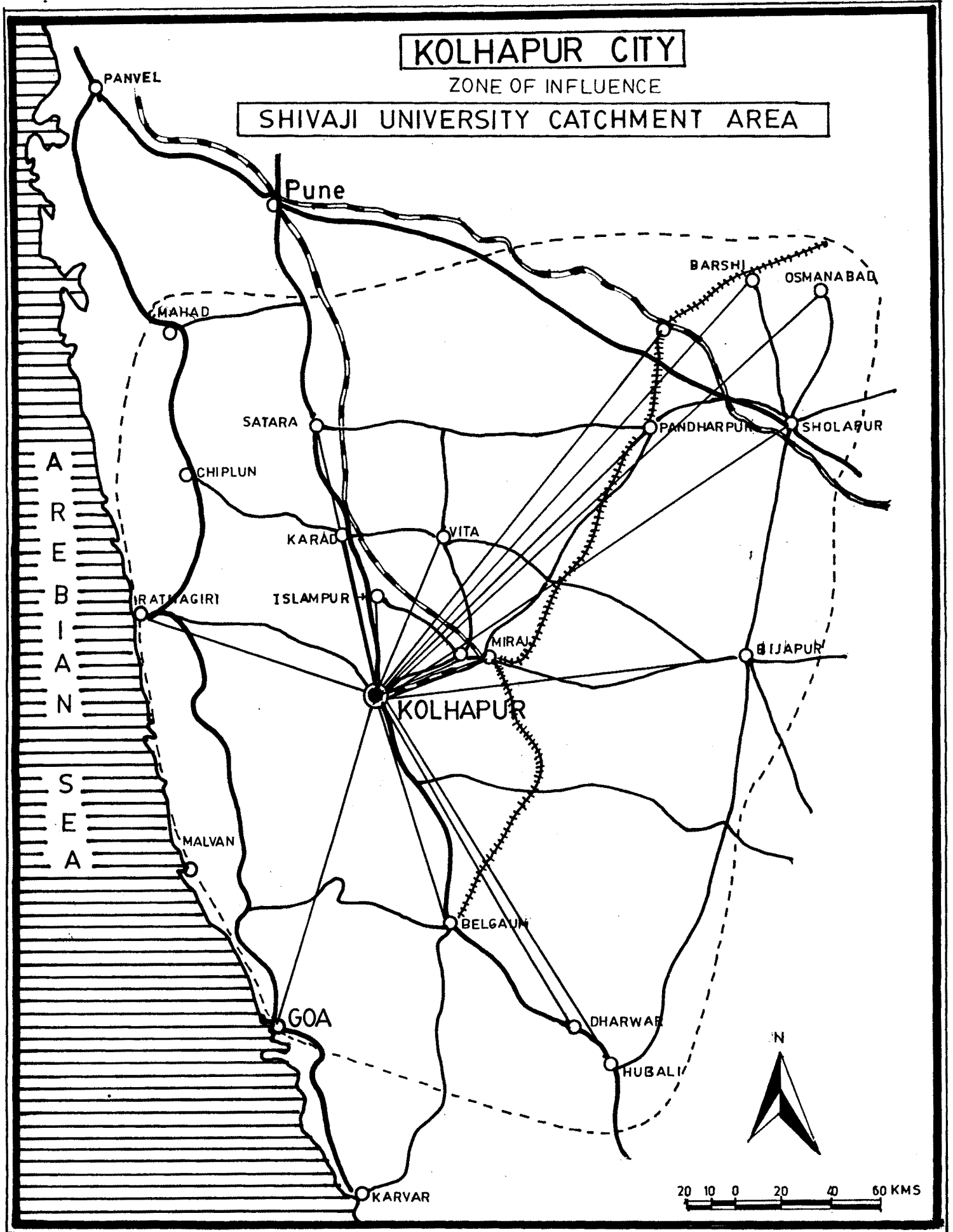


FIG 3.6

newspaper, daily pudhari is 75,000 per day and 95,000 copies on Saturday and Sunday. Kolhapur city records the daily sale of 39,000 copies of the daily pudhari. It is noted that the localities like Sangli receive - 17,000, Satara - 7,000, Belgaum - 6,000, Ratnagiri - 1,400, Sindhudurg - 1,300, Solapur - 1,100 copies per day. Daily pudhari is a regional paper widely circulated in Southern Maharashtra, Northern Karnataka and Goa state. Similarly another important weekly (Police Times) published from Kolhapur has well circulation through out Maharashtra state. Nearly one and half lakh copies of this weekly are circulated almost all over the districts of Maharashtra state. The generalized Daily Pudhari newspaper circulation area has been shown in Fig.3.7.

vi) Petrol and Diesel Distribution Zone

Kolhapur, being an important railway station on South Central Railway line, plays a significant role as a centre of petrol and diesel collection and distribution. Petrol and diesel are non local products. The supply of such fuel is from the areas of fuel production. Kolhapur and its environs are the consumption areas of the such fuel. There are many petrol and diesel distribution establishments in the city. The statistical information pertaining to petrol and diesel distribution area has been collected from the main distribution agencies. A close examination of petrol and diesel distribution

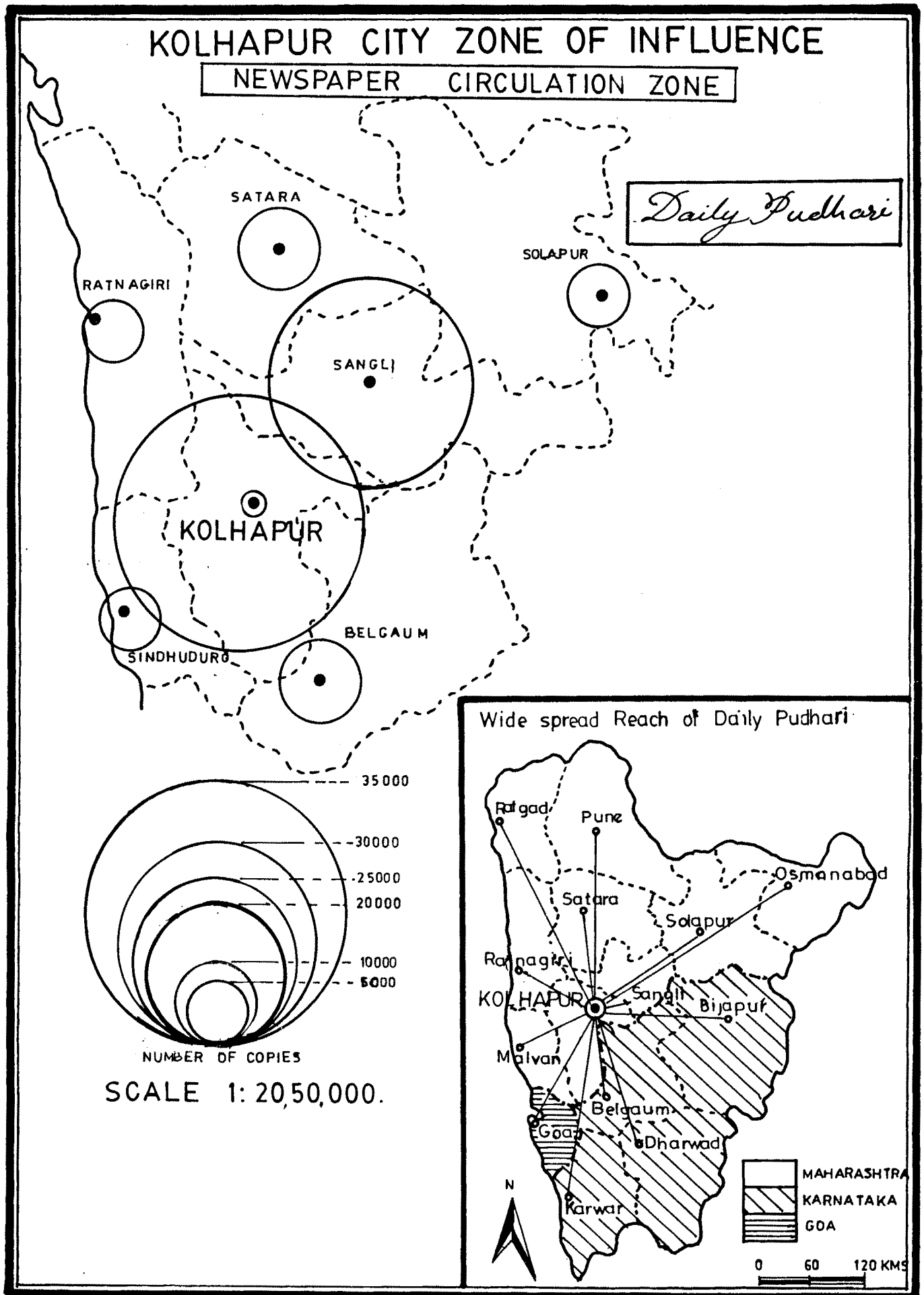


FIG. 3.7

shows that the localities like Gargoti, Gadhingalaj, Radha-nagari, Chandgad which are at a distance of more than 70 to 80 kilometers received petrol and diesel supply from Kolhapur. Certain Konkan localities like Chiplun, Khed, Sawantwadi also receive petrol and diesel supply from Kolhapur city and these localities are at a distance of 100-150 kms from Kolhapur city. Thus, the areas within 100 kms radius from Kolhapur city is dependent area of petrol and diesel. It is mapped in Fig.3.8.

vii) Kolhapur District Co-operative

Bank Service Zone :

The Kolhapur District Co-operative Bank has its head office at Kolhapur city having 3891 shareholders. It has 130 branches spread all over the district. This bank has established in the year 1938 and has a good linkage with the branches of its own located at taluka headquarters and branches within the different eleven talukas. Entirely Kolhapur district is the service area of this banking facilities. It is noted that 50 kilometers is the range of the Kolhapur District Co-operative Bank service (Fig.3.3).

(B) Countryside Services :

i) Milk supply zone

The milk supply to the city population is an important service from countryside. The milk is needed to all the members

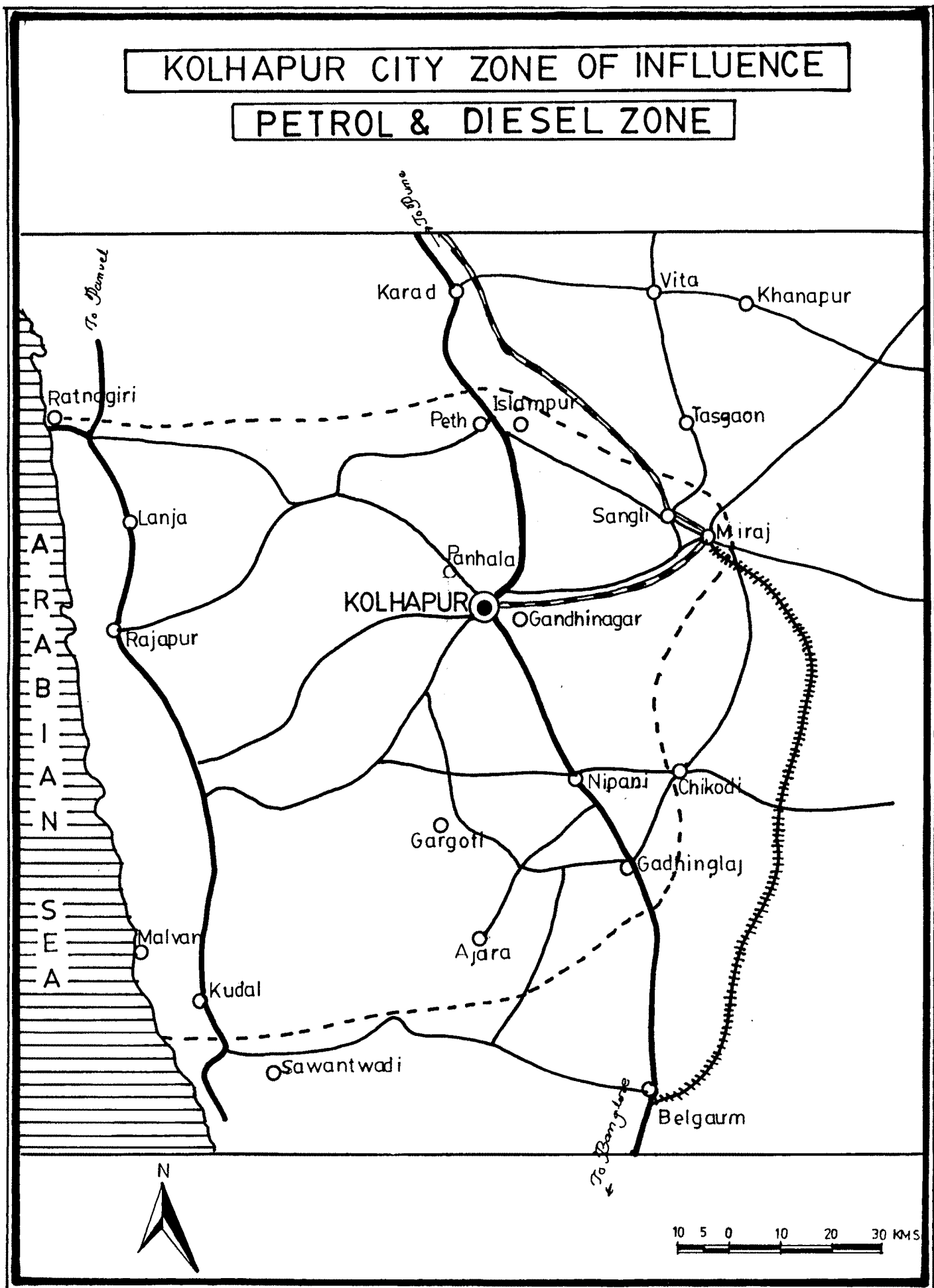


FIG. 3-8

of the society. The regular and adequate supply of the milk at a reasonable rate is one of the recent problems of the city population.

The information pertaining to the milk supply area has been collected by visiting different milk dairies located at different parts of Kolhapur city. The interviewed dairies includes Rajarampuri dairy, Sainath dairy, Mangalwar peth dairy, Bharat dairy, Mangalwar peth Radhakrishna dairy, Shivaji Statue Hanuman dairy and others. From the interviews of proprietors of these dairies, it has come to know that the farmers, milkmen and milktraders spread out in the nearby villages of Kolhapur city are daily milk suppliers to the dairies in the city, and these dairies redistributes the milk among the city dwellers.

It is observed that, milk is supplied by the farmers, traders and milkmen from the nearby villages located at the range of 20 to 25 kilometers. The milk supply zone resembles with the boundary of vegetable supply zone (Fig.3.9).

The co-operative milk societies at the taluka headquarters like Kagal, Budhargad, Radhanagari, Shahuwadi, Bavada, Panhala, Hatkanangale, and the societies at large sized villages supply the milk to the city population. The milk produced in Warana Valley has been collected, processed and utilised by Warana milk dairy. The places like Bavada, Radhanagari, Kagal, Gargoti, Malkapur etc. are well connected with Kolhapur by good

KOLHAPUR CITY ZONE OF INFLUENCE

COUNTRYSIDE SERVICE

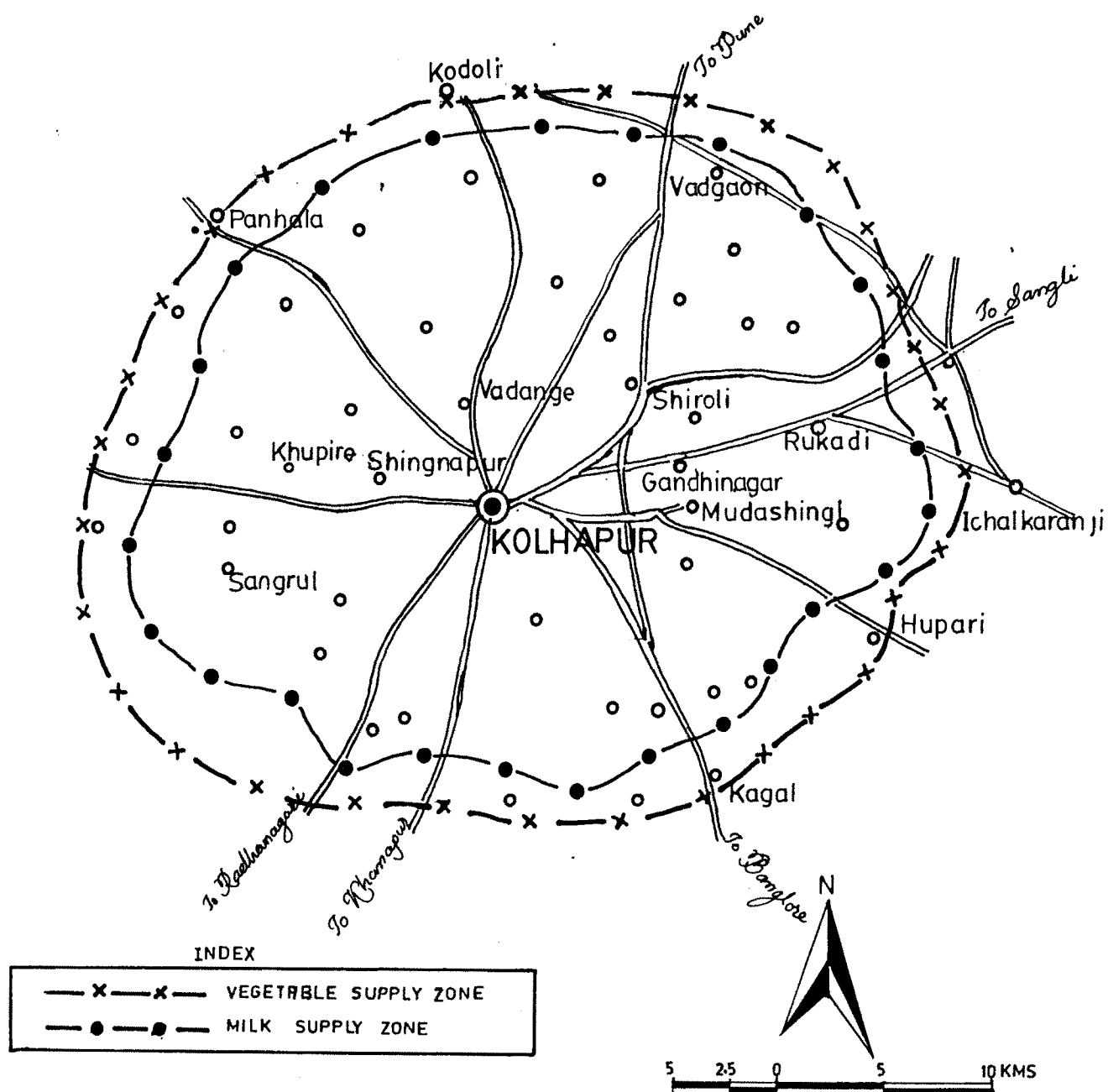


FIG 3.9

system of roads and the supply of milk has been done by trucks, milkvans, and motor buses. The use by bicycles is common within distance of 10 to 15 kilometers from the city. The Miraj-Kolhapur railway also used in the supply the milk. The milk is collected at the railway stations like Hatkanangale, Rukadi etc.

It is worth mentioning that a large number of buffaloes in the city provides the need of milk of the people in the city. The milk stands located at Gangaves, Shahupuri, Rajarampuri, and other parts of the city where fresh milk is served to the customers. This is a special feature of Kolhapur city.

ii) Vegetable Supply Zone

The factual information of vegetable supply to Kolhapur city has been collected from the daily and weekly vegetable markets of Kolhapur city. It shows that though distant places like Poona, Belgaum, Hubli etc. supply vegetables to the city, the main milk bulk of supply is drawn from the places within the range of about 30 kilometers from Kolhapur. The daily market localities like Kapiltirth vegetable market, Laxmipuri vegetable market, Shahupuri vegetable market, Shivaji vegetable market, Shahu market yard wholesale vegetable market have been visited by hundreds of vegetable marketers

(vegetable-growers-cum-sellers) of each market have been interviewed and it is found that nearly a hundred villages located within the range of 30 kilometer serve the vegetable need of Kolhapur city (Fig.3.9). Most of the vegetable-growers-cum-sellers use to visit either of the aforesaid market localities by bicycles and hired rickshwas. The vegetables are also brought to the city by motors-trucks and tmpos. The use of bullock-carts is common in case of places which are with the range of 10 to 15 kilometers.

3.4 THE DELIMITATION (INFLOW/OUTFLOW MODEL) :

The researcher has attempted to delimit the sphere of influence of Kolhapur city by theoretical methods and the empirical methods. Particularly in this connection the aforesaid inflows and outflows of goods and services have been used as parameters to measure the extent of city dominance. Table 3.2 summeries the parameters.

Table 3.2 : Inflow and outflow of goods and services.

Sphere of influence of Kolhapur city	Inflow /Outflow of goods and services	Kolhapur city
↓	OF/1 Medical services	←
↓	OF/2 K.M.T.bus services	IF/1 ----- ↓
↓	OF/3 S.T.Bus service	IF/2 ----- ↓
↓	OF/4 Shivaji University	←
↓	OF/5 Newspaper circulation	←
↓	OF/6 Petrol and diesel distribution	←
↓	OF/7 K.D.C. Bank Service	←
	Milk supply IF/3	----- ↓
(Sphere of influence of Kolhapur city)	Vegetable supply IF/4	(Kolhapur city) ----- ↓

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