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Rural Central Places in Karachi

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Abstract: Despite various criticisim on the application of Christaller's idea of Central places in the real world researchers still use it as a theoritical base to explain hierarchy of settlements, their functions and their service areas. Like urban places rural settlements also vary in size and functions . They are not only dwelling places but act as central places, provide goods and services to their population and also to their adjacent tributary areas. Their functional characteristics and service areas depend upon various factors like threshold population, centrality of settlements, government policies etc. The same is true to the rural areas of Karachi. It is quite interesting that inspite of this fact that a mega city is located adjacent to the rural areas of Karachi which is the ultimate source of goods and services for rural population, a hierarchy of lowest to highest order rural central places exist with varying range of goods, services and service areas.

Keywords: Central Places, Centrality, Threshold Population, Hierachy Of Rural Settlements

1. INTRODUCTION

A central place is a settlement that performs central functions specially distribution of goods and services for its local population and also its surrounding population, called tributary or service area. The goods and services central places offer vary in types, quantitity and characteristics of low to high order which eventually develop a hierarchy of central places. Von Thunen(1826) was the first who explained spatial arrangement between a large town, acted as a big market or large central place and surrounding agriculture land. He observed that a large town supplies its rural hinterland with manufactured goods and services and provides a market for agricultural surplus produced in the rural area.Despite its idealized framework of spatial arrangement of a market and its hinterland,Von Thunen's work inspired many other geographers and economists to study the spatial function of settlementsand their hierarchial structure. The three names; Galpin, Christaller and Losch are especially worth mentioning because of their classic works in the studies of central places.All of them presented their models in an idealized landscape underly four main postulates: i. uniformity of the physical and cultural landscapes ii. unbounded unit areas iii. equal accessibility of central places in all directions and iv. rational consumer behaviour. Galpin(1915) analysed central places from rural point of view, derived functional hierarchies empirically. From data collected in interviews maps were drawn showing the spatial range of various goods and services provided by specific localities. Christaller(1933) was the first who used the term of central place in his book entitled "the central places of southern Germany". Christaller's principal model is based on the marketing principle. Aplication of this principle results in hierarchical interrelations between central places eventually leads to a spatial pattern of the distribution of goods and services. in his study of economic landscape begins his central place from agricultural village. Losch was more concerned with the spatial pattern of markets and their service areas. He did not believe that every high order centres do not necessarially perform all functions of a lower order central place.

In the study of hamlets in southwestern Wisconsin observed that in rural landscape every settlement does not act as central place for example in the dispersed settlements a single house settlement does not have any central function like shop, school, mosque, clinic etc. Similarly every hamelet does not act as central place. He. identified that hamlets which were comprised of 12 houses and had population of 50 acted as central place usually had one central function i.e a general store. However those were located along the main transportation routes had more central functions like, petrol(gasoline) filling station. The specific types of centralized functions characterizing low order central places vary among different culture as well as within culture, depend upon social and economic nature of region , size of population they serve and location of central places. For example in United States two regions of same culture had two different types of low order central functions like in Iowa. Edwin Thomas (1960) identified , rank-order wise the 10 most commonly occuring functions were gasoline filling station, church,animal feed store, auto repair shop, insurance

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agency, food store, tavern, restaurant, bulk oil distributor and meeting hall. Similarly Howard Stafford (1963) in southern Illionis, pointed out the ten most commonly occuring functions were gasoline filling stations, church, food stores, taverns,restaurant, beauty shop,insurance agency, general store auto repair shop and meeting hall. In a different cultural setting, that of southwest Wales, United Kingdom. Carter, Stafford and Gilbert(1970) recognized the ten most commonly occuring functions in low order central places were place of worship(churches), post office, grocery shop/ general store, a public house, petrol/gasoline filling station, junior school, meeting hall auto repair shop, haulage/general carrier and confectioner/tobacconist. Brush and Bracey(1955) in their study of rural service centres in southwestern Wisconsin investigated the average distance of same order central places in two different regions: Southwestern Wisconsin and southern England . They found that average distance between high order centres was 21 miles in both regions whereas in low order centres the distance was 10 miles in southwestern Wisconsin and 8 miles in southern England. Berry and Tennant (1962) in their study on the location of trade centres indicated thatthe lowest order centres(villages) are located about 10 miles apart, the next high order(town) about 12 miles apart and the highest order(cities) about 35 miles apart. Neil Weber(1969) compared central place hierarchy pattern of Central Indian to the Christaller model and found the spacing of urban centres was found near to the Christaller's model. The study also revealed that, there is no fixed pattern or model that alies to each region because each region,with its own demographic characteristics, economic structure, and cultural traits, may suort functions different from those in other regions. Berry identified different central places in the United States on the basis of numbers and types of functions. For example village is a lowest order central place contain 10 to 25 functions, town is next order central place contain 28 to 50 functions. Central places with more than 55 central functions are identified as city. Each order of central place is associated with a given population called threshold and a maximum distance to which goods and services are distributed on regular basis called range. Village level centres serve apopulation of about 1500 to 2000 people and have a tributary area of about 100 square miles, meaning that the range of goods and services of such centres is about 10 miles.For town, the population served is in the range of 1500 to 5000 and the tributary areas include about 300 square miles, thus range is about 18 miles. City serves population of 5000 to 90,000, have trade areas of over 1000 sqare miles and range of goods and services of about 32 to 35 miles (Northan,1979 p.160). Forbes (1972) mathematically computed relationship between population and number of functions like meat shop, drug stores, departmental stores etc. of different central places and found a logarithmic linear relationship. A part from the above studies a large number of researchers used central place theory in their studies of rural and urban structure and planning like Prakash (2010) in Tanzania, Mangel (2011) in Bihar, India, Rolet (2013) in Brazil, Vong (2009) in Niger etc. In view of the significance of central place studies in rural planning, the present study of rural central places in Karachi is worthwhile particularly when none of studies focus on rural central places in any region of Pakistan. The study is significant for proper planning of the distribution of public services in rural areas like establishment of schools and colleges, rural health centres and hospitals etc. Similarly the study can be used to determine the profitable establishment of retail business and services in varying population size of settlements and their ranges of business areas.

2. RESEARCH METHOD AND SOURCES OF DATA

The study investigates following aspects:

a) to identify central places in rural Karachi and examine their functional significance.

b) to compute centrality index and location quotient of central places.

c) to examine this hypothesis that threshold population and range are two main factors that determine types and numbers of goods and services that cenetral places offer.

d) to examine relationship between population of central places and numbers of goods and services that central places offer.

e) to aply gravity model and delimit the service areas of central places.

f)to compute average distances in between central places of different orders.

g) to develop hierarchy of rural central places in Karachi.

To accomplish the aforesaid aspects of study following methods were used:

Data about population of settlements, number of houses, number and types of central place functions and range of centralized functions were obtained through questionnaire surveys of villages. Topographical maps of 1:50,000 scale, cadestral maps of Sindh Revenue Department and satellite images of Google-earth were used to identify location of settlements and to delinate service areas of central places. Location qutient and centrality index were computed to determine the classification of various orders of central places. Similarly number of shops in settlements and centrality index of settlements were used to aply graphical representation of cluster analysis.

Correlation and regression analysis were used to determine relationship between population and number of shops of central places.Finally a hierarchy of central places was developed and it was compared with Christaller's form of central places orders.

3. RESULT AND DISCUSSION

The rural areas of Karachi spread over large area of about 2000 sq.km which is about 60 percent of the total area of Karachi Division. In contrast the rural population accounts for only 5 percent of the total population of Karachi Division. Karachi city which is the largest city of Pakistan and 10th most populated mega city of the world is located in Karachi division. There are 321 registered villages where at least 250 inhabitants live **(Fig 1).** They are called *Goths* by native Sindhi and Balochi population. Because of arid climate, barren rocky topography, inadequate water supply, the vast rural areas are sparsely populated and poverty reflects in their livelihoods and settlements. Farming is practised in areas of Konkar-Gadap basin, Malir Valley and Kathor where ephemeral streams like Khadeji, Mol, Malir, Thaddo, Watanwari, Jorando, Langheji, Thaddo and Konkar provide sources of water through recharging of subsurface aquaifers. Fruits and vegetables are grown to earn money while wheat is

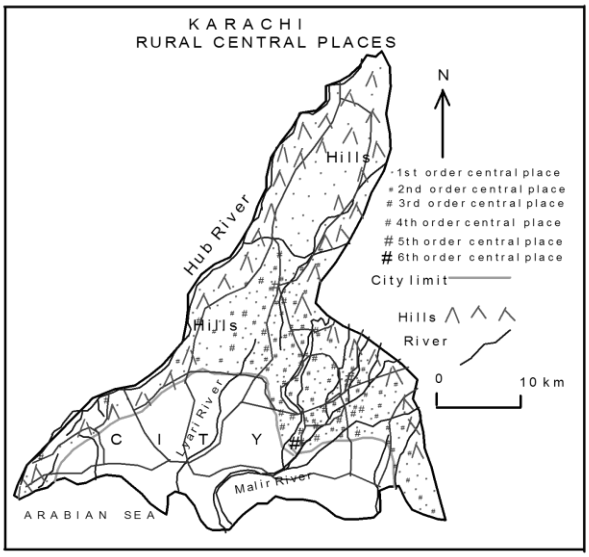

Fig 1: Relief, drainage and location of registered villages(central places) in Karachi

grown for their domestic purpose. Big land holders also grow cotton when price of cotton in market is high. Livestock is another source of income of villagers. Grasses, bushes and shurbs in basins and dry beds of streams provide good sources of fooder for animals A part from farming settlements fishing villages also exist, located along the coast of Arabian sea.

The rural landscape of Karachi is dominated by compact and agglomerated settlements. Farming settlements are centrated in three main areas; Gadap-Konkar basin, Malir Valley and Kathore, where subsurface aquaifers provide water and tubewells are the main source of irrigation. Despite low i.e 208 mm annual and highly variable rain in Karachi,surface runoff farming is an old and traditional method in rainfed farming areas like Langheji, Khadeji, Lal Bhakar etc. Rural settlements on the basis of number of houses can be categorized as single house settlement, hamlet, small village *(Gothoro*) and large village*(Goth).*

Hierarchy of Central Places

The study of rural central places in Karachi reveals that single house settlement and hamlets do not act as central places. They do not have any centralized function like shop, mosque, school etc. Only villages*(goths)* perform functions of central places. On the basis of breaking point of ranked population of villages and types of goods and services that central places offer,these rural settlements have been classified in six categories. The number of villages in each order of settlements have been computed by using Christaller K-3(market centres) scheme(table 1). Christaller used the term 'K" value to refer to the total number of settlements served by each central place in the assumed hexagonal form of service area. Hence in K-3 scheme, the total hexagonal trade area is 2 around a village(one third of six hexagon) plus one of its own market.In Christaller's K-3, scheme, the number of central places which are expected in each order can be derived theoretically by following method.

Total villages in Karachi = 321
1st order (K-3 scheme) = 321 – 321/3 = 214 (Expected villages)
2nd order = 321/3-321/9 = 71 (Expected villages)
3rd order = 321/9 – 321/27 = 24 (Expected villages)
4th order = 321/27 – 321/81 = 08 (Expected villages)
5th order = 321/81 – 321/243 = 03 (Expected villages)
6th order = 321/243 – 321/729 = 01 (Expected village)

It is obvious that expected number of villages in Christaller' model and actual number of villages would not be same because the model was based upon ideal conditions. However table 1 reveals that little differerences between computed result of expected number of villages and actual number of villages show that Christaller's model can be used to explain distribution of rural central places in Karachi. For example ,it comes out from the study that population of 750 is the breaking point of 1st order central places in which 226 villages lie which is close to 214, the Christaller's expected number of villages **(Table 1,2).**

Table 1: Christaller's Scheme of number of Central Places

	K-3 Christaller (Theoretical) scheme	Actual Number of villages	Rank-size Break Point Population of village
1st order settlements	214	226	750
2nd order settlements	71	65	1250
3rd order settlements	24	22	1750
4th order settlements	08	05	2250
5th order settlements	03	02	2750
6the order settlements	01	01	3750

Source: Computed by authors

Table 2: Relationship between population of village and number of shops

Average Population of Village	Average no. of shops in Village
250	1
750	20
1250	40
1750	60
2250	80
2750	100
3250	120
3750	140

Source: Field Surveys,conducted by authors

Rural settlements act as central places vary in poulation size, tributary area and functions. Christaller's developed a hierarchy of central places which comprises lowest to highest order. The lowest order or 1st order central place offer low order retail goods and services.Similarly the next high order central place offer goods and services of lowest order plus more goods and services. Similarly the highest order central place provide all goods and services of previous orders plus high order goods and services. Number of inhabitants residing in settlements is an important element used to determine the hierarchy of settlements. Christaller used term of centrality which refers the importance of central places in term of functions that they provide. Christaller used number of telephone and number of inhabitants in a central place for computing centrality. Various other elements like total sale of retail shops, number of shops etc. were used by researchers for computing centrality (Soja, 2005). In the present study location quotient and centrality index have been alied for determining hierarchy of central places in rural Karachi.Danish (2006) used location quotient to determine hierarchy of central places in Wales. The same method has been alied to determine hierarchy of central places in Karachi. Data about number of shops in each village were collected and used in the following formula.

$$L.Q = \frac{\textit{No.of Shops in a Village}}{\textit{Total number of Shops in Rural Karachi}}$$

Where L.Q isLocation Quotient of shops in a village. Computed values of location quotient of villages have been used in classifying central places of varying order.

It comes out from the study that number of shops in a village depends upon population size of village. To determine relationship between number of shops in a village and population size data about population of villages and number of shops were obtained and applied in regression model (**Table 2 and Fig 2).** The computed result of regression model and graph clearly indicate that strong positive linear relationship exist between population size and number of shops in central places which support this argument that central functions of central places depend upon the population size of settlements.

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The regression equation is
y = - 9.48 + 0.0408 x

Predictor   Coef    StDev    T      P
Constant   -9.484  4.207  -2.25  0.065
x    0.040833 0.001876 21.77   0.000

S=6.051  R-Sq=98.7% R-Sq(adj) = 98.5%

Analysis of Variance

Source DF SS    MS    F      P
Regression 117348 17.348 473.88 0.000
Error      6        220     37
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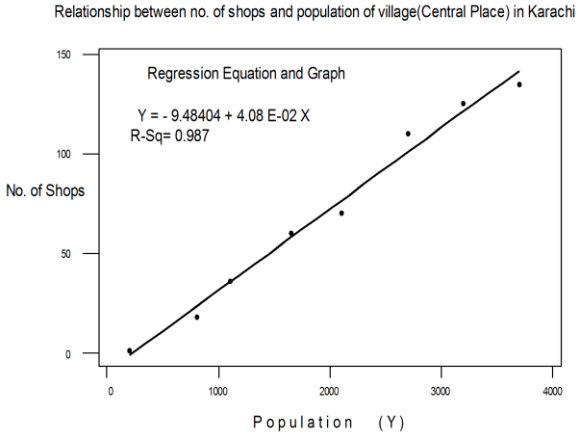

Fig.2: Regression graph to shop relationship between number of shops and Population size of central places in Rural Karachi.

Centrality

Centrality is an important measurement to determine hierarchy of central places. The centrality of a settlement refers to its importance in the provision of goods and services for tributary population. It is

provides and by the proportion of these services supported by the tributary population. There are several ways and elements used to calculate centrality. Jeans

(2003) in his study of rural central places and settlement pattern in England used formula which is based upon location quotient for calculating centrality. The same method has been alied to calculate centrality index for rural settlements(central places) in Karachi. It is mathematically expressed as follows **(Table 3)**.

$$C.I. = \left(\frac{PH}{SH} - \frac{PV}{PH/SH}\right)\left(\frac{100}{PH/SH}\right)(SV)$$

Where PH = total population of villages in Karachi
PV= population of village
SH = total number of shops in villages of Karachi
SV = shops in village
C.I = Centrality Index

Table3: Hierarchy of Rural Central Places in Karachi

Cluster Group	Range of Location Quotient of shops in a village	Range Centrality Index of Central Places	Number of Shops	Number of Villages
A	0.000016 to 0.00031	--50 to –29.9	01-- 20	226
B	0.00032 to 0.00095	--30 to 19.9	21-- 60	65
C	0.00096 to 0.00190	20 to 39.9	61-- 80	22
D	0.00191 to 0.095	40 to 59.9	81--100	05
E	0.096 to 0.0191	60 to 79.9	101--120	02
F	0.0192 to 0.022	80 to 100	121- 140	01

Source: Computed by authors

The result of the centrality index shows that out of 321 villages 226 villages lie in the lowest i.e. negative central index values ranging from –50 to –29.9 which shows deficiency in number of shops in the lowest order settlements. In the presence of sufficient population of these villages it seems that overall poverty and low purchasing power of the inhabitants of these villages are main reasons for the deficiency of shops in the lowest order central places. It is evident from the table 3 that rural landscape of Karachi is dominated by lowest order central places which have a few services for their tributary population. This is one of the indication of backwardness and unsatisfactory rural development in the area.

The computed values of centrality index has been used to determine the categories of rural central places in Karachi (Table 3). The graphical method of cluster analysis has been applied to categorize central places of rural Karachi in six categories that are A, B, C, D, E and F. The A category is the lowest order category where majority of central places(villages) lie while F is the highest category where only one central place lies **(Fig 3).**

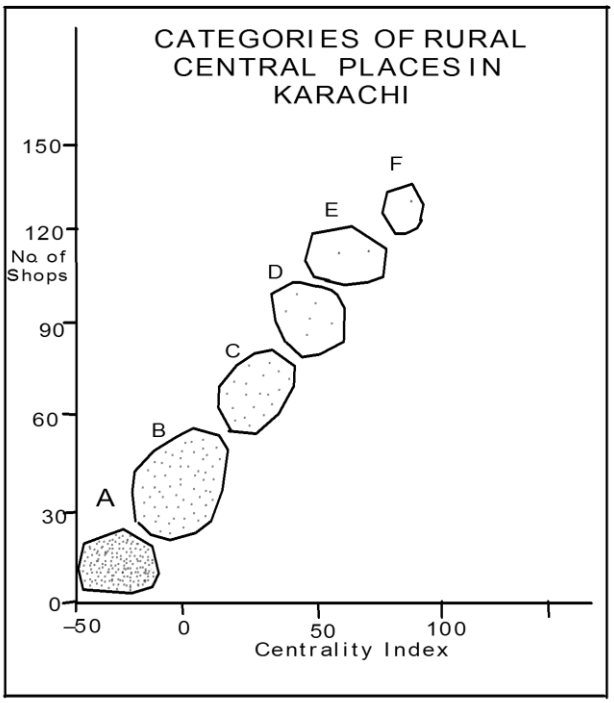

Fig 3 : Graphical alication of cluster analysis

Service areas of Rural Central Places

Threashold population

Population of settlements is a key element to determine the number and types of retail and service establishments. Each retail business like a small grocery shop, a small primary or a small mosque require minimum number of populat;ion for effective use of central place functions. The minimum population which is required for effective utilization of services and profitable retail business is called threshold population. The threshold population can be obtained theoretically by dividing the population of a village by the number of shops or services of that type. It was observed during study that theoritical computed average threshold population for different functions are different from the actual population of villages or central places where that functions exist. For calculating theoretical threshold population for different retail business and services, Goth Murad Memon, the largest village and highest order central place has been selected **(Table 4).** The

the basis of field survey data **(Tables 5 and 6)**.

Table 4: Theoretical threshold population

Retail business and services	Threshold Population (minimum population per establishment)
Grocery/ General store	47
Tea/ Betel shop	41
Cloth shop	130
Medical store	225
Fertilizer/pesticide shop	750
Primary School	580
Middle School	1125
Secondary School	2250
College	4500
Government health centre	2250
Post office	3000

Source: Computed by authors

It is evident from **(Tables 3, 4 and 5)** that theoretical threshold population for retail and service establishments is different from the actual threshold population. For example in case of general store business theoretically a settlement of 47 persons are required while actually minimum population of 250 inhabitants are required for running profitable business of a small general or grocery store **(Table 4 and 5).** Similarly theoritically 580 threshold population is required for a small primary school while its actual threshold population is 500 which means settlements having population less than 500 population are not appropriate for proper utiliztion of a primary school. Therefore threshold population is an important mean to determine the types of retail and services profitably and properly run in that central places.

Table 5: Actual threshold population required for retail business

Number of Shops in Village	Average Threshold Population for Grocery-General store	Average Threshold population for Tea/Betel(*Pan* shop)	Average Threshold population for Cloth shops	Average Threshold population for Medical store	Average Threshold population for Fertilizer/ Pesticide/ Seeds
1	250	250	1000		
5	800	750	2000		
10	1500	1500	3000	1000	2000
15	2000	2800	3500	2500	4500
20	2500	3500	4500	4500	----
25	3000	4500			
30	4500				

Source: Field surveys, conducted by authors in 2013

Table 6: Actual threshold population for Services

Number of Services	Average Threshold Population for Primary Schools	Average Threshold Population for Middle/Secondary Schools	Average Threshold population for Private/Govt. Clinic	Average Threshold population for Post office	Average Threshold population for college
1	500	1500	2000	3000	3000
2	1500	3000	2500		
3	3000	4500	3000		
4	4500		4500		

Sources: Field surveys, conducted by authors in 2013

Delimitation of Service Area

Central place provides goods and services to its service area which include its own population and population of surrounding settlements. The service area of central places varies with varying order of central places. Low order central places have small tributary area while high order central places have large service area. The service area of central places depend upon range of goods and services which is a maximum distance for persons to travel for obtaining goods and services from that central place. Christaller in his model introduced a hexagonal form of service area. However this form of service area was not found in the rural Karachi because of varying physical and cultural characteristics. Roads network which is not uniformly developed in the area plays key role in the movement of villagers towards central places.

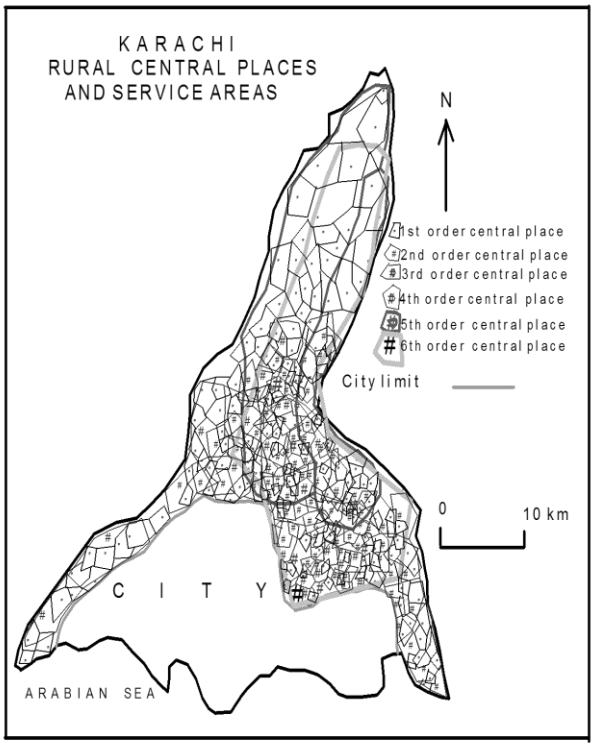

Fig 4: Service areas of rural central places in Karachi.

Therefore despite other factors like location of settlements, distance between settlements, relief etc. the shapes of the service areas of central places are influenced by road networks of the area. used gravity model to calculate retail gravitation and trade areas of retail centres. He used population and distance as inputs for computing breaking point or boundary of trade area. The same method was used to delimit the service areas of rural central places in Karachi. The formula is expressed by following mathematical expression:

$$BP = \frac{dij}{1+\sqrt{\frac{P2}{P1}}}$$

Where BP = Breaking point between two central places

dij = distance between two central places
P1 = population of central place 1
P2= population of central place 2

By using gravity model service areas of central places were drawn on map (Fig 4). Service areas, distances and range of central places were calculated with the help of map of service areas and results are shown in **(Table7)**.

Table 7: Service area, range and spacing of rural central place of different orders in Karachi.

Central Places	Service Area (sq.km)	Range in Km.	Distance between two central places of same order
1st order	1.56	1.25	2.5
2nd order	6.25	2.50	5.0
3rd order	16.0	4.00	8.0
4th order	36.0	6.00	12.0
5th order	100.0	10.0	20.0
6th order	400.0	20.0	---

It comes out from the study that the centralized function of 1st order settlements are a small grocery cum general shop , a small mosque, a Betel(*pan*) shop , a small mat- roof and mud-walled tea restaurant,a tire puncture shop and a two rooms primary school **(Table 8)**. The average distance between two first order settlements is about 2.5 km while average range of 1st order settlements is about 1.25 km. Its sevice area is small i.e about 1.56 sq.km The second order settlements provide functions of grocery shop, general store, betel(*pan*) shop, barber shop, carpenter, laundary, tire puncture shop , tea-food restaurant, mosque and a large primary school.Average distance between two 2nd order settlements is about 5 km while range is 2.5 km. The srvice area of 2nd order central place has increased to 6.25 sq.km. The functional characteristics of 3rd order settlements increase with increase in population size of villages include functions of 2nd order settlements as well new functions of iron smith and middle school. The distance between two 3rd order settlements is about 8 kms while range is about 4 kms.Its average service are has extended to 16.0 sq. km. In the 4th order settlements functions of government basic health unit, medical store, tractor workshop, big mosque, Union Council Office and secondary school. These settlements are located about 12 kms apart and their average range of supplying goods and services is about 6 kms.The service area of 4th order central place is about 36 sq.km. The 5th order settlements offer functions of all lower order central places as well as new functions of fuel filling station, police station, post office, central market, central mosque, jewelry shop, bank and college. The average distance of two 5th order settlements is 20 kms while their range is about 10 kms. The 5th order central place serves a large area of 100 sq.km.The 6th order stettlement is the largest central place which offer high order and long range functions like markets of cloth, garments, jwellery, fertilizer, farming implements, hospital, private clinics, government offices, offices of elected political representatives and animal markets. The range of 6th order central place extends to 20 kms while its servive area is largest i.e 400 sq.km.

Table 8: Types of central functions(goods and services) offered by central places of different orders.

Rural Central Places	Central Functions (retail goods and services)
1st order central place	Grocery shops/ general stores, mosque, Betel (pan) shop, thatched tea restaurant, tire puncture shop, one small primary school
2nd order central place	Grocery shops, Betel(pan) shops, general stores, Barber, carpenter, laundry, tire puncture shops Mosque, tea- food restaurant, one large primary school
3rd order central place	Grocery shops, Betel(pan) shops, general stores, Barber, carpenter, laundry, mosque, tea restaurant iron smith, tire puncture shops, tea- food restaurant, motorcycle mechanics, one large primary school, one middle school
4th order central place	One small market, goods and services of 3rd order settlement, secondary school, Government health care centre, medical stores, tractor workshops, big mosque, Union Council office
5th order central place	All goods and services available in 4th order settlement, petrol filling station, bank, pesticide and fertilizer shops, college, Police station, Post office, central market, central mosque, Jewelry shop.
6th order central place	All goods and services available in 5th order settlement, markets of different categories like fruits and vegetable market, cloth and garments market, Jewelry market, wholesale betel market, crops and poultry farming dealers, real estates, banks, Government hospital, private clinics, Government offices, Police station, Animals market etc.

Source: Field surveys conducted by authors.

Distribution of Central Places

The Rural areas of Karachi is divided in 51 smallest land revenue units called *Deh* **(Fig 5).** Rural central places in *dehs* of Karachi are not evenly distributed. The relief and topography, cultivated lands, water resources, accessibility in term of roads' density of *deh* and population density of *dehs* are factors that detmine the distribution of central places. Rural central places in category 1 includes *dehs* numbers 1, 2, 3 4, 5, 6, 7, 8, 9, 10, 11, 15, 43, 44, 45, 47, 48 and 50, 51 are located in areas of: i. barren hilly topography ii. poor

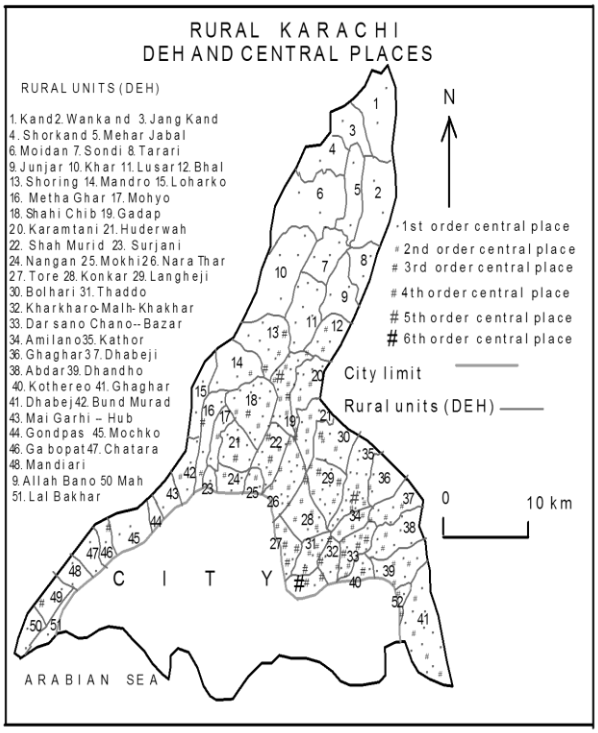

Fig 5: Distribution of rural central places of 1st to 6th order in dehs of Karachi.

surface and subsurface water resources iii limited cultivated lands where rain water farming is practised and iv road density is low i.e 0.4 km per sq. km. By virtue of these factors population density is low i.e about 40 persons per sq.km while central places are dispersely distributed.These dehs are poorest dehs of rural Karachi. All central places located in these dehs pertain to lowest order i.e 1st order. Rural central places in category 2 includes dehs 12,13,14,16, 17,23, 24,26,36, 37,38,39,40,41,42,46 and 49 are located in erosional valleys and plains. Surface and subsurface water resources are not good but relatively better than category 1. Cultivated lands are available but due to shortage of water mostly fallow. Rain water farming and tube well irrigated farming are practised. Roads density is relatively high i.e 1.2 km per sq. km. Eventually population density is relatively high i.e about 106 persons per sq.km.These dehs are occupied by 1st, 2nd and 3rd order central places.Rural central places in the 3rd category includes *dehs* 19, 21, 22 , 26, 27, 28, 29, 31, 32,33,34 and 35. These *dehs* have loamy soil, flat topography, good resources of surface and subsurface water , highest percentage of cultivated land and net sown area. Road density in these *dehs* is highest i.e.

3 km per 1 sq.km area. Because of these favourable factors population density is highest i.e. 308 persons per.sq.km. These *dehs* are dominated by 2nd, 3rd and 4thorder central places. The high order central places of 5th and 6th are also located in this category. A cluster pattern of central places has emerged in this region. It is economic and political core of rural Karachi, inhabited by rich landlords.

To explain the distribution pattern of central places, statistical technique of Nearest Neighbourhood Index can be used.

Nearest Neighbour Index$\mathbf{(NNI)} = \frac{Do}{Dr}$ **where** $Do = \frac{\sum r}{A}$ $Dr = \frac{1}{2\sqrt{N/A}}$

Where A is total area and r is distance between nearest neighbour settlements NNI values: 1 indicates absolute random, 0 represents absolute clustered and 2.15 indicates uniform pattern. The result of NNI for all central places located in rural Karachi is 0.52 which is in between random and clustered. In case of category 1 and category 2, NNI values are 0.92 and 0.74 which show random distribution while in case of category 3 it is 0.2 which is close to clustered. It is quite obvious that because physical and cultural characteristics of rural Karachi are not same, uniform pattern of central places is not found as indicated by Christaller in his idealized landscape.

4. CONCLUSION

Despite its close location of mega city which is the ultimate source of goods and services for entire region the rural landscape of Karachi has developed its own hierarchy of central places where *Goth Murad Memon* is the highest order(6th order) central place while *Gadap Shehar* and *Kathore Shehar* are two next high order(5th order) central places. There are large number low orders central places. These central places are located at varying distance and have different range and service area. It was found that range and service area of each next order (lowest to highest) central place is greater than the previous order central place. Similarly number of central functions also increases with increasing order of central places and population. The study also proves those centrality index and location quotients are good parameters to determine hierarchy of rural central places in Karachi. The study sets an example for government planners to use central place study in rural development particularly for the provision of services like schools, colleges, rural health care centres, public interest offices etc. at right location for proper utilization.

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