

CONCEPT OF UMLAND

Econtent For M.A IV , 2020, Urban Geography

Paper EC- 1 , Unit IV

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Every city performs certain functions for its surrounding area. The urban area or city provides services not only for people residing within its limit but to its periphery as well. The city pulsates as an organism which draws services of the surrounding areas for its existence and vitality . it performs functions for this area which is known as 'influence Area' and provides foodgrains ,milk ,vegetables ,fruits ,labour, raw materials, etc. and in turn the city provides education, recreation, transport and entertainment facilities . R.L Singh has postulated that 'A town does not exist in isolation rather it has to depend for its maintenance on the vast area surrounding it.'Taylor believes "there exists a socio-economic relationship between the city and its contiguous area ."

Umland is a German word which means the surrounding land. The term was first used by Daniel Saunders in 1883 but the term was highlighted by Andre Allix, a French geographer in 1914..According to E.W Gilbert the term umland has been derived from Swedish word 'Om land 'which means all sides .

Griffith Taylor (1949) "The umland of a town is that portion of surrounding country which is linked culturally with the town as centre "

Whittlesey (1937) "The Umland is the immediate tributary area extending on all sides of the city."

R.L Singh (1955) "Umland is the immediate rural land surrounding the town or metropolitan region "

G.Krishnan (1970) "Umland is a contiguous tract which surrounds a service centre and is functionally integrated with it through certain certified criteria .

Other scholars who made an attempt to define unland are Lal Singh (1956),Ujagir Singh (1961), A.B Mukherjee (1962),R.L Dwivedi (1964)

The zone of influence is known by different names :-

- Zone of influence

- Umland
- City Region
- Catchment Area Urban Hinterland
- Urban Area
- Tributary Area
- Nodal Region
- Trade Area
- Sphere of Urban Influenc
- Holon
- Commuting zone.

Type Of Umland

Umland can be classified on the basis of effectiveness of services and intensity of financial relationship .They can be kept under two categories .

1. **Primary Umland** – This region is close to the city and offers effective services to the urban centre and depends solely on the city centre for its daily needs. People normally commute to the city. People normally commute to the city for trade and other social and economic requirements . The main characteristics of this zone is daily commuting. City has intense relationship with its countryside. Commuting is very easy owing to proximity with the city. People travel early to the city centre and return in the evening . Direct services are provided by the umland area. This zone supplies labour and act as labour shed too .
2. **Secondary Umland** – In the delimitation of the secondary umland the role of bus services, food grain supplies ,wholesale services, higher education is of paramount importance . In the secondary umland transport system is highly developed . Students living in this move towards city centre for education and return back during holidays .Wholesale markets flourish in this zone. Traders commute to the cities fo retailing. People residing in the secondary umland avail the services provided by the city as banking service, administrative and medical services. Peter Scholler has accepted the importance of communication as the basis of classification of secondary um;and.
On the basis of centrifugal and centripetal forces or services provided the city centre is of two types .

1. **Service Area or distribution area**- The region close to the city enjoys the facilities of education, medical facilities ,transport circulation,r etail works. wholesale works and entertainment.
2. **Supply Field** = This zone serves the city by supplying milk, v egetables foodgrains, fruits. It acts as a supply field .

Type of distribution area of city centre =The distribution area of the city can be divided into 3 categories by Dr. U.B Singh (2001)

- a. Each individual General Service Area for eg; medical, insurance ,newspaper circulation, trade services form their own region.
- b. Specialised Service Area-Those regions are included which offer specialized services. These services are also of two type services of general nature and specialized services.
- c. General service regions- the region which has originated with all types of services and supply features .

Delimitation of Umland

The delimitation of Umland is not an easy task as the relationship between city and and its region is dynamic .With the development of fast transport and communication system the influence area of the city has undergone considerable changes .Far flung places too cater to the needs of the city and supply essential commodities . Speedy transport system has brought about many changes in the supply of goods. Fluctuatons in services has created problems in the delimitation of the influence area of the city.

Both foreign and Indianauthors have tried to delimit this area in their own specific way. They can be categories as :-

- a) Theoretical or Statistical methods
- b) Empirical or Qualitative methods
- c) Theoritcal or Statistical Model

Some theoretical and statistical methods which are rational and analytic have been used for delineation of umland. A number of foreign and Indian scholars have put forward their views. Variables as linear distance between two cities,population of the city at intermediate distance have been taken by some scholars for their study .

In 1965, G.Ollson came with his view that the amount of interaction between two cities is directly proportional to the number of people living in those

cities and inversely proportional to the intervening distance. This concept was again used in different forms by scholars using different formula .

Gravity or International model - H.C Carey proposed this model in 1858-59. He tried to understand the interactions between two places. The effectiveness of the town depends on the distance between them and their population size. He has expressed his view with the help of this formula .

$$I = \frac{P_1 P_2}{d^2}$$

here I means the interaction between two centres.

- P_1 = The population of large size centre
- P_2 = The population of medium size centre
- P_3 = The population of small size centre
- D = linear distance between two centres

The extent of influence of smaller cities around a big city will determine the limits of the umland. His formula has considered population as the main factor. Cities with larger population influence larger areas rather than small cities .

He overlooked the presence of a smaller settlement in two cities. His gravity model was further improved by G.K Zipf. . The limit of the influence area of the three towns explained by him. He was of the view that large size towns has its

Law of retail Gravitation – This model was forwarded by W.J Reilly an American economist in 1931. It takes into account retail trade, population and distance between two nearest centres . His assumption was two centres attracts people for retail trade from an intermediate centre. It is direct proportion to the population size of the centres and inversely proportion to the square of the distance between the centres and intermediate centre. He used the following formula for determination of umland. The formula given by him is as follows.

$$\frac{S_1}{S_2} = \left(\frac{P_1}{P_2} \right) \left(\frac{D_1}{D_2} \right)^2$$

Here S_1 and S_2 represent volume of retail trade goods sold by them at Intermediate centre .

P_1 and P_2 where P_1 is the large centre and P_2 is small centre and has competition with small centre.

d_1 and d_2 represent the actual distance of intermediate centre P_1 and P_2

This law was modified by R. Knowles and J Beting in 1976. He given a formula to identify a small settlement K between .

$$MK_1 = P_j \times DK_j^2$$

$$\frac{MK_j}{P_j} = DK_j$$

Here P_j and P_j are two towns and K village is situated at a distance and at a lesser distance from P_j town. Importance will be given to town having larger population . This theory is of lesser significance.

Breaking Point Theory – This theory has been propounded by P.D Canvers. It is an improvement upon the retail gravitation theory . Breaking point theory forwarded by him means intermediate point between two cities .The intermediate point between two cities.The intermediate point breaks the movement of people.The point separates the the movement between two cities and will depend on population size of both cities and the distance between them . The interaction between two places is equal. The points bearing same influence if joined the umland can be ascertained . This theory gives emphasis on the population size and lesson functional status of the city.

Views of Indian Scholars

Some Indian Schlars have also presented their model to explain the delimitation of umland.They are as follows.

(i) Gravity Potential Model

This model has been developed by P.D Mahadev .and D.C Jaya Shanker in 1968 .The model bears some resemblance to Reilly model ..These scholars were of the notion that their exists certain amount of interaction between two cities .The amount of interaction however is directly proportional to the number of

people residing in those cities and inversely proportional to the intervening distance. To explain this they have given a formula .

$$GI = \frac{P_i \sum_j a_{ij} P_j}{\sum_j P_j^2}$$

dijxy

GI = Index of propensity to move

P₁ = Population of Town I

a_{By} = Weights on population

dij = Distance between town I and town j and

xy = weights on distance.

This model lays emphasis on population but no explanation has been given as to how weights on population and weights on distance can be solved.

(ii) Degree of Urban Influence Model

V.L.S Prakasha Rao has presented the model to study the umland of Karnataka . He has given the formula

$$D = T \times A \quad \text{and} \quad R = \frac{\sqrt{T \times A}}{U}$$

U

Where

D=Degree of urban influence

A=Area of the state or region

U=Population of the state of a region

T = Population of a town

R= Radius of the circle (influence area)

There exists a standard and constant value between A and U. They are used for calculation of the influence area of the town in the region. This model lays emphasis on total area of the state or region and population which is not objectives as the umland will develop in circular pattern which is not possible. Besides every town does not have the same distance . They have different characteristic.

M.M.P Sinha has also presented a 'Equal Gravity Model' in 1988.He has considered the term hinterland more applicable than Umland. A big town is surrounded by small town which exert influence. Between two towns there is a point is a point where the gravitational pull becomes zero .When these points are joined the influence area can be drawn. To explain he has given the following formula

$$H = \sum_N \frac{BPI}{D} \quad \text{when } BPI = D$$

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$$L = \frac{\sqrt{F}}{D}$$

H = Distance of Influence Area of a town. (Distance of big town with small town)

BPI = Gravitational Breaking Point Index

N = Number of factors which influence the delimitation

P = Value of any one factor in a big town (amount).

O =Value of any one factor in a small town.

D = Linear distance between small and big town.

The study of umland becomes important for regional planning as there exists a relationship between urbanization and area of influence or umland .

(iii) Empirical or Qualitative Method

This method has given more emphasis on the functional aspect rather than population in the demarcation of the city. This is conventional method and also known as qualitative method. The amount of inflow and outflow of commodities and services to and fro the city. With the help of maps on the basis of various services the linkages between the existing city and umland is

examined. However it has been seen that the intensity of relations decrease with the fall in extent of services. Both foreign and Indian scholars have presented their views regarding delimitation of umland .

Attempts were made in this direction after World War I . **C. B Fawcett** in 1917 on the basis of regionalization made an attempt to delimit the urban boundary .

In 1930, **R.E Dickinson** on the basis of trade , cultural relations and other movements of people tried to delimit the umland . His study is related to many of the American and British Cities. He has applied interpolation method which is also known as Sieve Techniques. He took into account all the factors and with the help of the chosen factors maps were drawn . Thus maps were placed over the others with the help of Interpolation method and a map is prepared. This map exemplifies the the umland of a region . **C.D Harris** in 1940 delimited the Salt Lake City..He took into consideration 12 essential services as retail trade, wholesale trade, medicinal trade, medicinal trade , ,radio broadcast, newspaper circulation ,religious influence, telephone relations ,bakery distribution ,oil distribution and other small services and delimited the boundary of umland of cities of U.S.A .

A.E Smailes in 1944 has defined umland field . He studied the umland of Middleborough and also Baileymena using different indices .

H.E Bracey in 1953 made an effort to delimit Somescet cities .Other scholars who attempted to delineate the umland are H.L Green in 1955. B.J Apstern in 1968. Harold Carter in 1975 and R. Knowles and J.Weiring have suggested ways of delimiting the umland in their own ways .

Efforts made by Indian Scholars

Several efforts in the last 5 decades have been made by scholars to delimit the umland. All the functions and services have been considered and kept under two groups.

- 1) Functions performed by influence area for its urban centre. They are the supply zone and supply milk and milk products, vegetables, foodgrains and workers.

- 2) Functions performed by the surrounding territory – higher services are provided by urban centres as education, administrative, wholesale trade, newspaper and medical facilities .

1. Functions performed by the influence area for its urban area for urban centre

The functions performed by the influence area in Indian conditions are as follows.

- (i) Milk supply – Milk is supplied on daily basis .Conventional means of transport are used as tempo, bus, bicycle and rail transport.
- (ii) Vegetable supply - Vegetables are brought from nearby villages on handcarts, buffalo carts, trucks etc. Some items are perishable and the others are non perishable..Supply is affected by lack of storage facilities.
- (iii) Bullock cart Service zone – Bullock cart is a cheap means of transport and are used to bring goods within 15-20 kms . This is a cheap means of connecting city and umland.
- (iv) Foodgrains Supply – City dwellers demands for foodgrains is usually from the neaby rural areas.This Index also helps in the delimitation of Umland.
- (v) Bicycle Service – Bicycles are the cheapest mode of transport for commuting from villages to service area.This function delimits the primary umland of the city .
- (vi) Commuters Zone – This is provided by the city for job opportunities, medical, trade and educational facility .City needs people from commuters zone for performing many functions. Commutind deepends on transport facility.

2. Functions Performed by cities for its surrounding Territory

Cities have certain functions to perform for the influrnce area. They are as follows:-

- (i) Medical Services –Medical services are provided to people of rural areas through hospitals, doctors, surgeons. Nursing homes and thus acts as a medium of urban rural association . On the basis of medical facilities available two zones apparently emerge as (i) Inner Zone and (ii) Outr zone.

- (ii) Bus service Zone –Bus service provides transport and communication facilities and the city extends its function to the surrounding areas. This variable helps in delimiting the umland.
- (iii) Newspaper Circulation Zone _ Newspaper circulation is an important variable which helps in delineation of the umland of a city . The demand of paper is from far and near .The city and area area of circulation becomes one unit .
- (iv) Educational Service – Cities are centres of education. It diffuses it to the people of the rural areas. The umland of the city can be delineated on the basis of education.
- (v) Non Agricultural goods Trade Zone – The city supplies non agricultural commodities as well to its surrounding areas. It acts as wholesale centre for nearby towns and rural service centres. They provide retail services and can be used as another variable of Umland delineation .

Some notable studies on Umland is by Ugagir Singh and R.L Singh. Ujagir Singh has delimited the umland of Allahabad on the basis of milk and khoya supply, education and foodgrain. He has delimited umland into two categories :-

- (i) Primary umland - This region is traversed by people who supply milk and khoya and has strong economic relations with the city. They commute daily to the cities and return in the evening .
- (ii) Secondary Umland – this is classified as inner secondary and outer secondary. Inner secondary umland is determined by the catchment area of intermediate education . Retailing is also done by the wholesalers.

Inner secondary however forms the outmost limit of the influence area of the city . The demarcation is on the basis of trade of foodgrains .

R.L Singh has delimited the umland of Varanasi in 1951.He has outlined five functions. He has taken milk supply, vegetable supply , foodgrains supply,bus services and newspaper service is variable . Student on the other hand travel to the city for education.

A B Mukherjee has also delimited Modinagar in 2001.The functions have been kept inthree groups.

- (i) Economic Service Area

- (ii) Social Service Area
- (iii) Cultural Service Area .
- (iv) V.L.S Prakash Rao has done a study of Karnataka (Mysore) State in 1964 on the basis of on the basis of three indices viz. wholesale trade, retail trade and bus service has tried to delimit the umland .

Many others are N.R Kar, Shah Mansoor Alam, K.R Dikshit ,
,Gopal Krishnan, S.B Sawant .S.K Agarwal.S.c Bansaland M.M.P Sinha
have also made an attempt to delimited the umland .

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