Contribution of Growth Centres in Agricultural Development of Imphal Valley During 1990s.

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Abstract

In the process of development of an area, the locational view of growth impulses is equally important because there are many processes which are accelerated through growth points. In the historical perspective, the socio-economic development is continuous process through which change in the economic landscape can be observed. In the present context, when we are going to discuss the role of growth centres in agricultural development with reference to Imphal valley, it can be said that the valley is economically passing through its initial stage of development where growth points are also emerging with their diverse functional nature. No doubt, the emerging locational patterns of these specific growth points would be playing a significant role for accelerating the developmental processes on its economic landscape and faster growth of the area.

Keywords: Growth points; Agricultural development; Imphal valley; Spatial Organisation

1. Introduction

The increasing disparities in the emerging patterns of agricultural development and the growth points in Imphal valley, demanded to develop an appropriate strategy for the balanced growth in the valley. The associated problems of preparing strategy are manifold. In order to highlight these problems, there is a need to interpret the role of growth centres for the development of agriculture in the study area for visualising the interactions of developmental phenomena in its core-periphery angles. There should be direct emphasis as to how the processes of development of agricultural landscape are accelerated through the growth centres in an area. This view of development is related to the concept of 'Spatio-Functional Organisation' through which the proper integration of agricultural activities with the existing land resources can be linked by proposing a normative functional structure for optimal development of agricultural activities. For the study of its structural features, the contribution of growth points for agricultural development in the valley may be highlighted.

Broadly, the functioning of existing spatio-functional organisation follows some norms and rules which are generally based on the availability of resources and demand of local people. The conditions of the working of spatio-functional organisation can only be interpreted by identifying the areas of: (a) surplus resources available for their proper processing and (b) need and demands of food items and other material for stabilising the consumption of the

local people. This ground of resource personalities and emerging functional nodes thereon can only be integrated properly by putting forward the contribution of growth centres for agricultural development of Imphal valley in following ways as:

- The growth centres are considered as 'Production Processing Centres' of the area by which the surplus production is processed and send it to the outside market. Therefore, they may also be considered as the generation of earning nodes of the area.
- The growth centres may be considered as 'Diffusion Centres of Modern Agro-Technology' which play a significant role for diffusing the effects of agro-technological inputs to surrounding peripheral areas. These centres, therefore, are contributing for agricultural development through intensifying the market activities in the area.
- The growth centres as 'Surplus Labour Absorption Points as well as Centres for Infrastructural Development' for agricultural activities by attracting the large number of rural masses and providing employment assets to the surplus labour of the rural areas.

Keeping these aspects of the main contribution of the growth centres in mind, there is a need of detail interpretation for testing the validity of these facts in connection with emerging growth points in Imphal valley. It is put forward in the following paragraphs.

Study Area

Manipur state is one of the smallest states of India and situated in the North eastern corner of the country bordering Myanmar. It is a hillock state having a geographical area of 22,327 sq. km extending between 23˚50' to 25˚42' N latitudes and 92˚58' to 94˚45' E longitudes. The state is practically excellent natural beauty and rich cultural heritage. A small valley also known by the name Imphal Valley (i.e., only 10 percent area to the total geographical area of the state) is located which is surrounded by mountains and hill ranges in all sides. The economy is largely depended on agricultural activities with very limited availability of raw materials for industrialisation, which could generate avenues of employment. The state of Manipur, as the rest of the North-eastern region of India is passing through its initial stage of economic development. The per Capita Domestic Product and Per Capita Income is one of the least in the country.

Methodology

Identifying Growth Points/Centres

Growth points/growth centres in Imphal valley are identified by adopting the permutation and combination method of four parameters of the characteristics of growth and development of villages as well as urban centres of the area. They are:

- Population size of the villages of the valley according to 1991 census.
- Annual growth rate of population more than 5.0 percent during 1981-1991.

- ❖ Numbers of functional strength available more than 4 in numbers, and
- ❖ Administrative status of the villages/urban centres like large village, Notified Town and Census Town and Municipality Corporation, etc.

From the above parameters, 115 number of settlements belonging to urban as well as rural growth nodes have been identified for interpreting and analysing the nature and locational patterns of activities specially related to agricultural development. The general nature of these identified growth points can be studied by categorising them into 26 categories adopting a permutation and combination method of those attributes.

Measurement of Centrality

The aggregated picture of functional diversities of selected growth points/ centres is shown by using ‘centrality score method' as given by Bhat, et.al (1976). Functional weightage (Wi) are assigned here to consider the total number of growth points (N) divided by number of points/ locations having functions and facilities, (fi), i.e., Wi= N/fi After calculating the composite centrality score for all the agricultural functions/ facilities by using 'weighted mean technique', the spatial ordering of functional hierarchy are prepared on the basis of nesting hierarchy.

Data Collection

In order to interpret the regional patterns of agricultural productivity (land as well as labour), and locational patterns of agricultural activities/enterprises, the village-wise statistics related to cropping patterns, crop-yield; agricultural labour force and agricultural infrastructure and administrative facilities are required. For the same, the statistics have been collected from the secondary as well as primary sources as given below: (i) Agricultural as well as other related statistics have been collected from the offices of the district~ sub-divisional headquarters located in Imphal Valley. (ii) Crop-yield statistics collected from the Agricultural Offices, Government of Manipur, and National Sample Survey Organisation (NSSO), Department of Economics and Statistics, Government of India. (iv) Cropping-patterns and agricultural landuse statistics have been collected :from the various offices of Sub-Divisional Officers (SDO), Sub-Divisional Collectors (SDC), and Directorate of Settlements and Land Records, Government of Manipur, Imphal, (iv) Data related to agricultural functions, facilities/enterprises have been collected Primary Economic Census Abstract from Directorate of Economics and Statistics, Government of Manipur, Imphal, Village Directory Abstract from the Census Operation, and National Informatics Centre (NIC), Imphal, and (v) '":illage-wise statistics related to demographic structure like, occupational structures, agricultural workforce etc. have been collected from the National Informatics Centre, Imphal, and Census Operation (Imphal), Govt. of India. Testing the validity of spatio-functional organisation which is working in Imphal valley, the data related to the sources of fanners: family income according to the various sizes of land holding are required because the functioning of spatio-functional organisation is directly related to income of the rural families. For the same, the data of 50 households belong to farming community who are

living in Central part of the valley have been collected by preparing the questionnaires and compiling them at primary level.

Findings

Functional Nature of Growth Points

There are various aspects of studying the nature and growth of the growth points which can be, analysed to study the importance of these points because they are now true representatives of the agglomeration of functions and activities and through them various developmental processes are accelerated in the area. Table. 1. Highlights the categorisation of growth points/centres by adopting Permutation and Combination method of three attributes; Population Size, Growth Rate of Population and Number of Functions Available in Imphal Valley.

Reviewing the concerned literature, it can be concluded that these growth points are performing multi-facility agricultural innovations in the area (Misra 1968, Herman 1972, Moseley 1974, Mohammad 1978 and Clark 1986) and therefore they are considered as "Diffusion Centres" in the area (Hagerstrand 1967, Misra 1968, Morrill 1970, Clark 1986 and Misra 1995). They are also "Collecting Centres" for surplus production (Sen 1975), as well as treated as "Processing Centres" of the primary products available in the area. In the perspective of integrated area development approach, these growth points are considered as "Points of Interaction" of the local people who move from rural to urban areas. On the whole, it can be said that these points are the nodal centres of spatial functional forces from where many processes of socio-economic development in the area are operated. These centres are playing significant role in three ways:

- Supplying the materials and commodities which fulfil the demands of the local people
- Spreading the effects of developmental activities to their surrounding areas, and
- Processing the available local resource-based surplus production.

Table.1. ***Categorisation of Growth Centres/Points***

Sl. No.	Categories	No. of Growth Points/Centres
1.	HP, HG, HF	-
2.	LP, HG, LF	-
3.	HP, HG, LF	2
4.	HP, LG, LF	1
5.	LP, HG, HF	-
6.	*LP, LG, HF*	1
7.	LP,LG, LF	1
8.	HP, LG, HF	-
9.	LP, LF	11
10.	HP, LF	7
11.	LP, LG	4
12.	LG, LF	-
13.	LG, HF	-

14.	HG, LP	-
15.	HP, HF	1
16.	LP, HF	3
17.	LP, HG	3
18.	HP, LG	-
19.	LP, LG	-
20.	HP, HG	1
21.	HG, LF	2
22.	HP	4
23.	HG	25
24.	LG	23
25.	HF	4
26.	LF	22
TOTAL 26 CATEGORIES		115 number of growth points/centers

Abbreviations:

HP = High Population size (Above 5000 persons)

LP = Low Population size (Below 5000 persons)

HG = High Population Growth (above – 75% in 1991-2001)

LG = Low Population Growth (50-75% in 1991-2001)

HF = High number of functions (above - 5)

LF = Less number of functions (4 - 5)

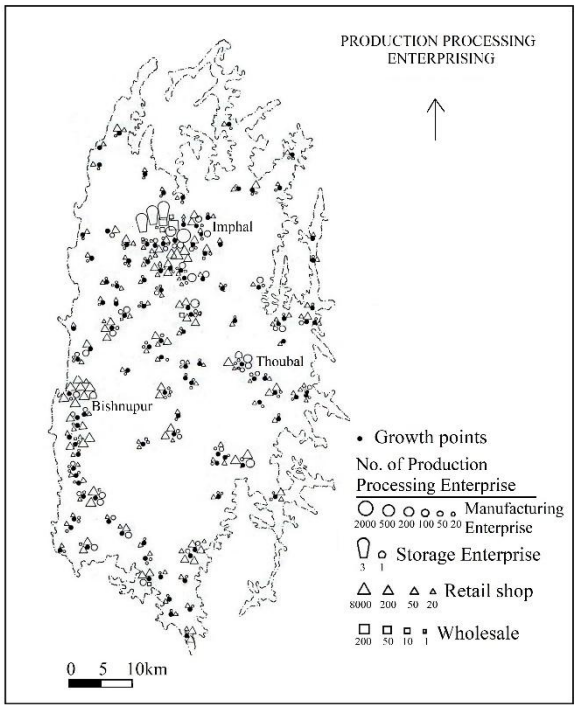


Fig. 1.

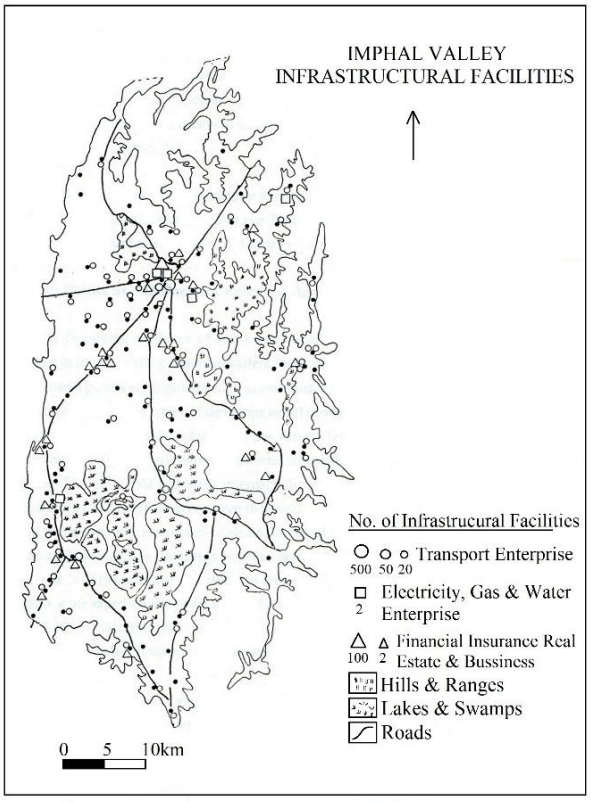


Fig. 2.

Growth Points as "Collection and Processing Centres of Surplus Production"

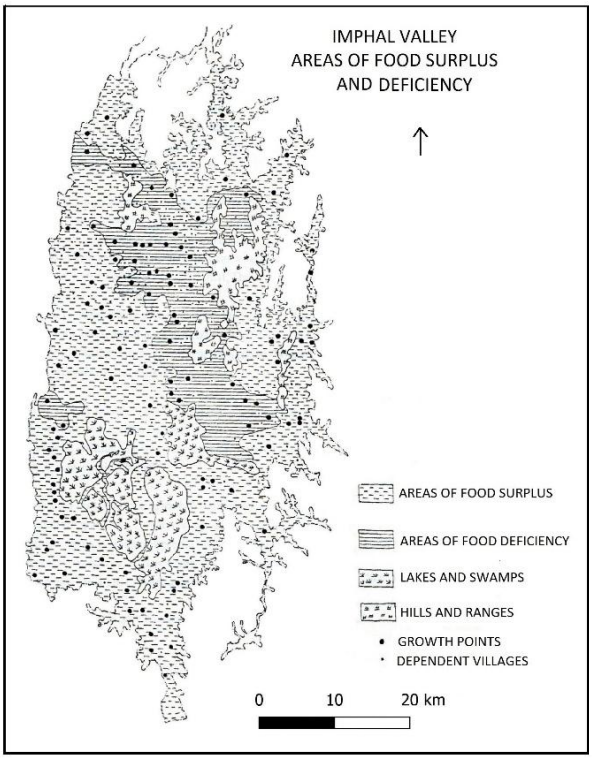
For testing the validity of the above facts of the present research that the market activities of the growth points must be growing faster in the areas of available agricultural production surpluses. Increasing production surplus in the rural areas increases the growth of the growth points faster simultaneously by increasing the number of agro-based activities on them. The matured system of wholesale and retail market activities, storage facilities, and agro-based manufacturing enterprise must be developed accordingly in the areas of surplus agricultural production. Therefore, these facts can only be highlighted here by identifying the areas of agricultural production surplus/deficiency and comparing them in their established spatio-functional organisation of agricultural activities.

Growth Points as "Centres of Infrastructural facilities for Agricultural Development"

Indeed, the growth points of any area have locational characteristics of the agglomeration of activities related to agricultural development. What is infrastructure for agricultural development? Some attributes of socio-economic development may also be considered as infrastructure for agricultural development (World Development Report 1994), and some attributes are related to the same. For example, educational, medical, sanitation and drinking water facilities are directly related to socio-economic development but they are indirectly associated with the agricultural development through providing the skill labour. On the other hand, the attributes of infrastructure namely, electricity, road and banking including financial institutions, insurance and real estates and business services facilities are directly related to agricultural development. Therefore, there is a need of interpreting the locational characteristics of infrastructural facilities/enterprises which are directly related to agricultural development in Imphal valley.

Growth Points as "Diffusion Centres of Agricultural Innovations"

In the foregoing analysis of the contribution of growth points in agricultural development in Imphal valley, the main salient features of the locational characteristics of emerging growth points are highlighted. It shows that Imphal city is the main nodal centre of the area from where two types of developmental processes are being accelerated in its surrounding areas in the rural landscape of the valley. Transport and other infrastructural enterprises evolve diversified patterns concentrating their intensities on a few centres of higher order. The available facilities intensify the process of attraction by which the people especially farmers of the area move to their nearby centres to avail facilities. On the other hand, there are some processes related to thrust which have been radiating the effects of those available functions, facilities on those growth points. Therefore, if it is assumed that the roads of the area are working as channels in the locational system and these centres radiate the effects of these facilities, then the processes of diffusion of innovations can be studied in relation to agricultural activities. For the purpose, the growth of these activities are interpreted in their spatial perspective.



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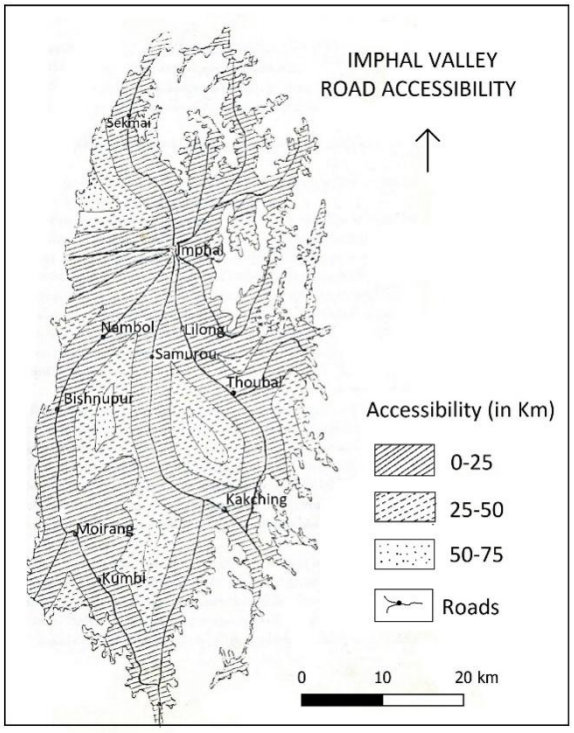


Fig. 4.

Hagerstrand (1968) is the pioneer worker on diffusion theories who explains the processes of diffusion in two ways: continuous spread and hierarchical patterning. The continuous spread of a particular innovation is the result of many facts (Misra 1995). For example, the availability of functions/facilities on the growth points increase the waves of diffusion of any kind of innovation, while high intensity of road network helps in radiating the effects of these innovations in the area. These are the physical available attributes of spatial organisation. On the other hand, innovation of adoption is based on the adopter (in the present case farmers) who adopt the innovation and use them for agricultural development. Fertilizer, irrigation, and HYVs are the main attributes of intensifying the agricultural activities in any area. These innovations are diffused by the spatio-function organisation and adopted at lower level. Therefore, the farming community is also important factor of receiving the effects of innovation. Economic as well as educational levels of the farmers also control the rate of adoption of those innovations. For the same, the data related to agricultural innovations, their adoption rate and related factors have been collected by preparing questionnaire and complied them in a proper way to test the validity of the facts related to the diffusion of agricultural technology from the growth centres and its impact on the surrounding areas.

In order to analyse the spread effect of agricultural innovations in Imphal valley, the data of 50 farmers who have various size land holdings with various income groups have been collected by conducting household survey in the study area. The farmers, samples and their villages are selected by distance from the Imphal city in its surrounding areas. The following conclusions have been drawn by compiling the questionnaires data.

(a) The farmers of high income group (20-30 thousand rupees annually) who are having a large size of partial of land holding with two hectares of land and under paddy

cultivation, are adopting modern means of HYVs and chemical fertilizers in the agricultural practices. While the farmers of low income groups are practising agriculture in traditional ways. Therefore, the agricultural productivity is recorded very low in the low income families.

(b) The rate of adoption of modern innovations in agricultural practices is recorded low in the farmers family those who are having low level of education (below- middle school class). The educated farmer's family are having high degree of adoptability of innovations in the agricultural practices in the valley.

(c) The adoption rate of innovation is also influenced by the demand of food for the family. Nearly 15 percent farmers of the sample families shows high rate of adoption of chemical fertilizers and HYV seeds in agriculture because of their high demand of food in their families for local consumption especially rice crop.

(d) On the other hand, the functional structure of growth points and road connectivity of Imphal city with other growth points prevailing in the valley are also worth noting factors for the adoption rate of innovations in the agricultural practices. There is a smooth distance decay pattern of the interaction and diffusion of those innovation which are related to agricultural development in the valley. For example, the rate of adoption of innovation decreases with increasing the distance of the location of adopters of these innovations from the Imphal city. It is recorded that the adoption rate of fertilizer use is recorded 63.23 percent upto 10 Km of distance from its vicinity of Imphal city and other growth points are important in the developmental processes in the valley.

(e) The gradient of distance-decay of the innovations is not so steep in the valley. For example, the surroundings of 10 Km from the Imphal city, decreasing rate of the adoption is observed 3.7 percent per Km of distance, which is slower (1.2 percent) between 10 and 30 Km distance, only 0.9 percent is recorded in the outer zone of the 30-50 Km of distance from Imphal city.

Growth Points within Their Spatial Arrangement

The locational characteristics of the functional structure prevailing in Imphal valley have already analysed to put them separately under various homogeneous functional groups. There is, further need to synthesise the functional strength and their distributive nature. Therefore, in this section of the paper, the synthetic view of functional strength with hierarchic orders and spatial arrangement of agricultural activities is interpreted here.

The functional nature and their aggregated strength and hierarchic orders which are working over economic space by integrating the growth points in Imphal valley, have already discussed in detailed. The spatial organisation of functional structure is also equally important aspect. It would give some clues of the weakness of the locational system prevailing in the valley. Therefore, the spatial organisation of those activities related to economic, infrastructural as well as administrative attributes is interpreted here by aggregating them and classifying them into four homogeneous groups. It would provide the spatial organisation of those activities at different levels. The total growth points identified in the valley are classified into four orders, namely, Growth Pole, Growth Node, Growth

Centres and Growth Villages; from higher order to lower order growth points, it is important to study how these growth points are interlinked and interrelated with their lower order growth points in the spatial organisation of economic landscape.

Spatial Arrangement at Various Levels of Growth Points

Starting the assimilation processes of arranging the lower order and dependent growth points with their higher order growth points and putting them on different maps, the boundaries of influencing zones at various levels of growth points are delineated and the total population served by them are calculated. Table. 2. Shows the Number of Dependent Growth Points and Population served at various orders of Spatial Organisation. The following salient features in this spatial organisation of growth points emerging in Imphal valley are markable to highlight.

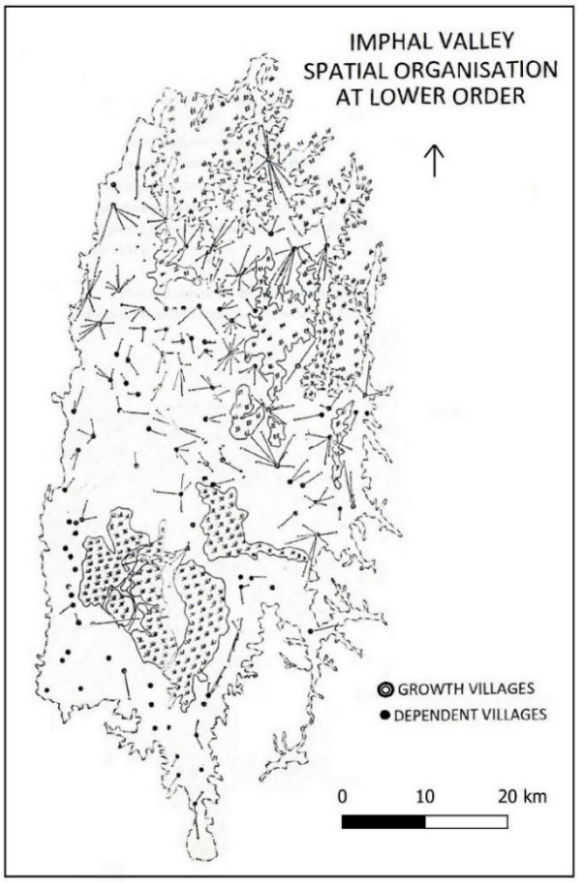
(i) Imphal city which is emerged as the growth pole of the area is serving the total population of the valley through the next high order growth point i.e., Bishnupur town.

(ii) There are two high order growth nodes (Imphal city and Bishnupur town). Imphal is interacting with 6 next lower order growth centres, namely Lilong, Thoubal, Samurou, Mayang Imphal, Kakching, Nambol towns, while Bishnupur town is serving only two next lower order growth centres (i.e. Ningthoukhong and Moirang towns) in the valley. But the population size of Bishnupur town is recorded very low rather than its proportion functional strength. Therefore, it may provide an important place in near future in the spatial organisation in the valley.

(iii) The middle order growth centres are classified ten in number including Imphal and Bishnupur growth nodes. Because these two are performing functions/facilities at the middle order growth centres and therefore they are also considered as growth centres of the middle order in the spatial organisation. Imphal city serves with maximum number of facilities to its next order growth points (i.e. 24 in number) with serving the maximum areal size in the central part of the valley. The second important growth centre at the order of the spatial organisation is Moirang town which is situated at the South-Western lowland area of the Loktak Lake in the valley is serving to 10 growth points of its lower order points including a few growth points located at Loktak Lake. (i.e. Thanga). Kakching and Thoubal are also important growth centres of the middle order because each of them serves average six numbers of growth points of their next lower order growth villages. At this level, it is also clear that some small points which are emerging as growth villages of the extremely southern side as well as of the foothill areas of the north eastern side are growing in the isolation. They do not serve and interact with their higher order centres. Therefore, there is a case of functional gap at this middle level of the spatial organisation.

(iv) The spatial organisation at lowest orders where the growth villages are emerging faster and working as contact points in the spatial organisation of the valley, contributes significantly. The contribution of lower order growth points can be interpreted as follows:

a) The growth villages of Northern and North-Eastern foothill areas where higher order centres are emerging in isolation, these growth villages have more interaction with the dependent villages. These number of seven dependent villages are being served by each growth village in the valley.
b) The growth villages emerging in the central part of the valley serve an average number of 2 to 5 dependent villages in their surrounding areas with an average size of population of about 10 to 15 thousand persons.
c) In the longitudinal belt of southern part were Kakching- Sugnu towns are situated, the number of dependent villages which are served by the lower order growth points are very less. It is because of these areas situated in the transitional belt of agro-ecological conditions between marshy lands and foothill slope areas.
d) Most of newly emerging growth villages which are having an average size of population of about 6- 10 thousand persons are growing themselves without interacting with their dependent villages especially in the south-western parts of the valley.



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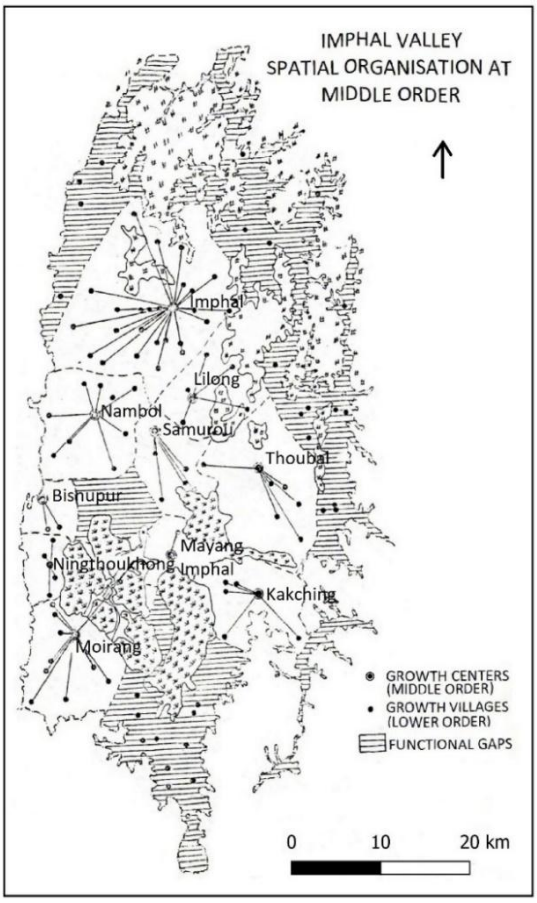

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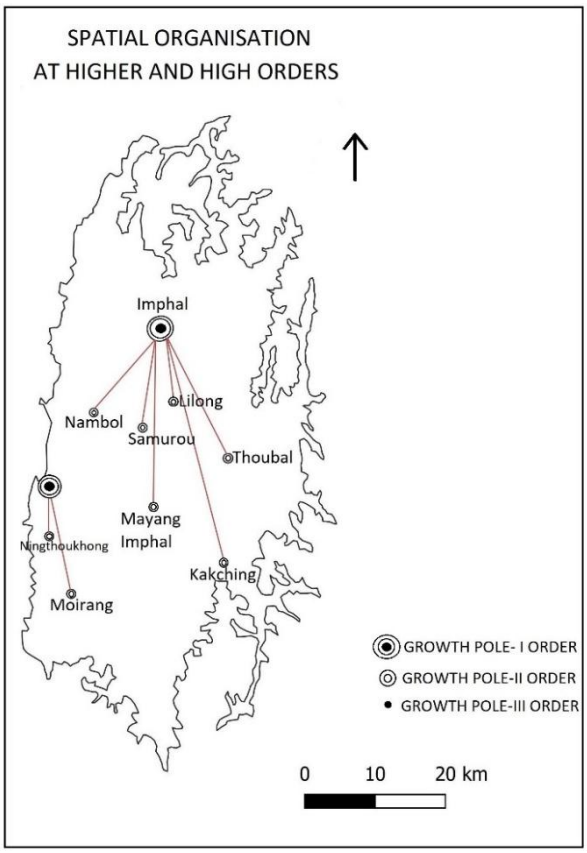

Fig. 7.

Table.2. ***Number of Dependent Growth Points and Population served***

Name of Orders	Population Size (1991)	Total Population Served (1991)	No. of Next Lower Order Growth Points Served and their Name
A. Higher Order :			
1. Imphal	198,535	11,51,946	1 Bishnupur
B. High Order :			
1. Imphal	198,535	5,87,096	6 Thoubal, Kakching, Mayang Imphal, Nambol, Lilong, Samurou.
2. Bishnupur	8,040	1, 57, 390	2 Moirang, Ningthoukhong
C. Medium Order :			
1. Imphal	*198,535*	2,13,425	24
2. Bishnupur	8,040	35,178	2
3. Thoubal	33,011	97,229	6
4. Kakching	24,437	55,709	5
5. Mayang Imphal	16,570	26,124	1
6. Nambol	16,021	66,872	9

7. Lilong	15,211	70,244	5
8. Samurou	11,858	57,493	5
9. Moirang	15,443	1,03,300	10
10. Ningthoukhong	9,458	18,912	4
D. Lower Order :			
All Identified Growth Points	6,500	10,000	3

Note **:** Figures include the population of the growth points of various orders
Figures at this order are average only

Conclusion

Functional hierarchy and spatial organisation provides clues for suggesting weakness of the spatio-functional organisation working in the area. It was found that, in spite of diverse nature of the distribution of economic as well as infrastructural enterprises in Imphal valley, there is an emergence of weak spatial organisation of these facilities. The highest order growth point, i.e. Imphal city, is working as a functional pole with high concentration of functional agglomeration. Therefore, it seems that the functional force is concentrated towards Imphal town which creates diversified pattern and primacy in the functioning of spatial organisation. However, the centres of lower order, that are called growth villages are emerging faster and would be acting as Contact Points between higher order growth points of the functional hierarchy and the resource structure available for utilisation in the valley.

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