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Functional Characteristics and Growth Patterns of Towns and Cities of Bihar 1961-71

Introduction

Demographically, the functional characteristics of town/cities may be regarded as an important variable in the study of urbanization. A given region (country/state etc.) may be characterized by urban centres of different specialized functions and their growth pattern may differ due to their functional characteristics. Specialized functional cities may provide special kinds of job opportunities to its migrants. The force of attraction of cities/towns may differ from city to city to an extent, depending upon their functional characteristics and also on the socio-economic characteristics of population to whom the cities attract. Labourers may prefer to go to manufacturing towns whereby they easily get jobs. On the other hand, highly educated persons may be more attracted by service towns than to manufacturing towns. An examination of the growth patterns of towns and cities according to their funtional characteristics such as service, manufacturing, trade and commerce, transport etc. will no doubt be interesting as well as informative to planners and policy makers in the field of town and country planning. Accordingly, the main objective of the study is to apply functional approach to examine the growth pattern of towns of Bihar as of 1961 over the period 1961-71 irrespective of size-classes.

Methodology

As the functional classification of towns of Bihar in 1961 has already been

done in the General Report of 1961 Bihar Census [l], the same classification has been considered here as the basis of the study and the growth pattern of towns will be examined over the period 1961-71. The methodology adopted in the Bihar census report for the classification of towns which is in line with the one used by the Registrar General [2] is as follows.

First of all, out of nine industrial categories only seven, (i.e. excluding cultivators and agricultural labourers) namely mining, quarrying, live stocks, fores try, fishing, housing and plantations orchards and allied activities (III); household industry (IV); manufacturing and other household industry (V); construction (VI); trade and commerce (VII); transport and storage and communications (VIII) and other services (IX) are grouped Into three main categories shown below :-

Census Industrial Categories		*Main function of town*	
(a)	III, *IV*, V and VI	*(A)*	Manufacturing
(b)	VII and VIII	(5)	Trade and Transport
(c)	IX	(C)	Service.

It is evident that manufacturing virtually encompasses all kinds of industrial activities. After this regrouping, the function is determined on the basis of percentage distribution as follows :

(i) Where the sum of the percentages In categories III, IV, V and VI under Group *A* is greater in value by 20 percent or more than the sum of the percentages in categories VII and VIII in Group *B* or the percentages of category IX in Group *C*, the town is treated as manufacturing.

(ii) Where the sum of percentages in categories VII and VIII in group *B* is greater in value by 20 percent or more than the sum of the percentages in Group *A* or *C*, the town is classified as a trade and transport town.

(iii) Where the percentage of category IX in Group *C* is greater in value by 20 percent or more than the sum of the percentages in Group *A* or *B*, the town is termed as a service town.

Further, towns and town groups which fall within the above three categories invariably satisfy what is later described as towns with predominant function accentuated. A further refinement which stems from this broad three tier classification is indicated below:

(i) Where the percentage of category **III** is observed to be greater than that of category **IV** or V or **VI** by 10 percent or more, the town is described as a *mining* or plantation town.

(ii) Where the percentage of category IV is found to be greater than that of categories III or V or VI by 10 percent or more than the town is called as artisan town.

(iii) Where the percentages of category V is greater than that of category III or IV or VI by 10 percent or more the town is classed as manufacturing town.

(iv) Where the percentage of category VII is greater than that of category VIII by 10 percent or more, the town is designated as a trading town.

(v) Where the percentage of category VIII is greater than that of category VII by 10 percent or more, the town is classified as a transport town.

Towns and town groups falling in the above five categories invariably satisfy what is described as towns with 'predominant function[1] moderately diversified or accentuated.

Analysis

Cities' Differential and Functional Characteristics. Cities' diffential is recognized fact. There is no region in the world where cities/town resemble in every way. Cities/towns in one country not only differ from those in another countries but also differ among themselves within the same country. They differ not only in size, location, spacing, levels of fertility, mortality, migration, literacy, sex ratio, density, per capita income, urbanism etc, but also in respect of functional characteristics. That cities differ in function has long been recognized. Functional types such as industrial, commercial, mining, university and resort towns have been differentiated by numerous writers and out-standing examples of each have been cited[3]. Even within a city heterogeneity is general. In this connection, Bierstedt remarks 'The heterogeneity of the city, of course, extends far beyond its occupational diversity. There is heterogeneity in patterns of recreation, in education, in wholesale and retail trade, in religion, in political opinion, in ethnic origin, in modes of transportation, in styles of living and styles of thought. There is heterogeneity in the goals that men pursue and the path through which they reach their different destinations [4].

It may be further noted that a given region may be predominated by one special type of functional towns/cities or may be characterized by uneven distribution of towns according to their functional characteristics. Further, within the region even similar functional towns may differ in size, growth pattern and

other socio-economic and demographic variables, cited above, from another functional type of towns.

Table 1 reveals the distribution of towns and their growth pattern over the period 1961-71 according to the functional characteristics as of 1961. It may be noted that out of 151 towns of Bihar in 1961 (none of which declassified in 1971), only 72 (47.68 percent) were service towns and 63 (41.72) percent, manufacturing towns; the remaining 16 (10.60 percent) were trade and transport towns, of which 6 and 10 were respectively designated as trade and commerce, and transport towns. About 50 percent of urban population of the State was claimed by service towns followed by 40 percent in manufacturing towns and the remaining 10 percent in town falling in other functional categories.

TABLE 1—DISTRIBUTION OF TOWNS OF BIHAR AS OF 1961 ACCORDING TO **FUNCTIONAL CHARACTERISTICS AND THEIR AVERAGE SIZES (IN 1961) AND THE GROWTH RATES OVER THE PERIOD 1961-71**

Functional Characteristics	*No. of towns*	*Average sizes (1961)*	*Population*		*Growth rates*
			1961	*1971*	
1. Service	72	37826	1968034 (50.50)	2540706 (51.40)	29.10
2. Manufacturing	63	28341	1565630 (40.17)	1972476 (39.91)	25.98
(a) Mining	18	11527	200220 (5.14)	355021 (7.18)	77.17
(6) Artisan	23	30978	521220 (13.37)	618038 (12.51)	18.58
(c) Manufacturing	22	39340	844026 (21.66)	999417 (20.22)	18.41
3. Trade and Transport	16	24843	363438 (9.33)	429720 (8.69)	18.24
(o) Trade and Commerce	6	11250	68006 (1.75)	85894 (1.74)	26.30
(6) Transport	10	3300	295432 (7.58)	343826 (6.95)	16.38
Total	151*	32493	3897102 (100.00)	4942902(100.00)	26.84

SOURCE : Computed from (i) Census of India, Vol. IV Bihar Part I-A
• (i) *General Report on the Census,* p. 216-221.
(ii) Census of India, 1971, series I India Paper I of 1972 *Final Population,* pp. 85-88.

Only two towns (out of 153 in 1961) namely Maubhandar (Population 5843 in 1961) and Shekarpur Bazar (Population 10975 in 1961) which were declassified in 1971 Census have not been considered under study.

It would appear, thus, that Bihar is predominated by service towns both in number as well in concentration of population, according to functional characteristics. Further, the headquarter towns of districts and subdivisions played an important role in contribution to the total number of service towns. This func" tional category includes the five cities : Patna, the capital of the state and Gaya, Muzaffarpur, Darbhanga and Ranchi, the headquarters of respective districts.

As examination the average size of towns in different functional classes shows that the average for the service towns is the largest amongst three functional categories. Within sub-functional group of manufacturing towns, manufacturing towns had the maximum average of the order of 39,340, followed by artisan towns with an average of 30,978. The transport towns show the least average (3,300), whereas mining towns and trade and commerce towns record almost same average (of 11,527 and 11,250, respectively).

From Table 1 it also appears that, on the whole, service towns have grown at faster rate (29.10 percent). In the second place are the broad category of manufacturing towns, with a growth rate of 25.98 percent. Within the broad manufacturing category, mining *towns* have grown the most rapidly (77.17 percent) among the functional categories. Artisan and manufacturing towns (the two sub-group of manufacturing) have grown at almost the same rate (i.e., 18.58 percent and 18.41 percent, respectively).

Growth Pattern of Towns within Functional Categories

1. SERVICE TOWNS. Within a given functional group of towns, there may be variation in the growth rates to an extent, depending upon the services in the towns available to its migrants and resident people. Table 2 presents the distribution of towns at different functional categories according to growth rates for 1961-71. It will be seen that most service towns (24) had a growth rate of , 20-30 percent, followed by 17 towns with the rate of 30-40 percent. Only, 4 towns showed a growth rate of less than 10 percent, whereas 3 towns had a growth rate of more than 70 percent; one *of* them recorded a growth rate of as much as 157.98 percent. Of the 72 service towns in 1961, only 9 towns.recorded a growth rate of more than 50 percent the maximum being observed in Bikramganj in Shahabad district. Its 1961 population of 5681 increased to 14,656 in 1971. So rapid a growth rate may be attributed to the opening there of College, market centre/business centre for rice etc.

The median growth rate of the service towns was of the order of 27.91 percent, whereas the model rate was 26.11 percent. These two values were the highest among the functional categories.

TABLE 2—DISTRIBUTION OF TOWNS OF BIHAR AS OF 1961 ACCORDING TO FUNCTIONAL CHARACTERISTICS AND THE LEVEL OF GROWTH RATES DURING THE PERIOD 1961-71

Level of growth rate (in percentage)	*Number of towns by function characteristics*						*Total*
	Service	*Manufacturing*			*Trade and Transport*		
		Mining	*Artisan*	*Manufacturing*	*Trade and Commerce*	*Transport*	
Below 10	4	7	2	4	—	2	19
10-20	13	1	10	9	—	4	37
20-30	24	1	9	5	5	2	46
30-40	17	1	1	2	1	2	24
40-50	5	—	1	2	—	—	8
50-60	2	—	—	—	—	—	2
60-70	4	2	—	—	—	—	6
70-80	1	—	—	—	—	—	1
80-90	—	—	—	—	—	—	—
90-100	1	—	—	—	—	—	1
above 100	1	6	—	—	—	—	7
Total	72	18	23	22	6	10	151

SOURCE : Same as *Table 1.*

Some calculated averages :

Characteristics of towns	*Median growth rate* percentage	*Modal growth rate* percentage
(i) Service Towns	27.91	26.11
(ii) Manufacturing Towns (including all sub-groups)	19.25	15.83
(*a*) Artisan Towns	19.50	18.89
(*b*) Manufacturing Towns	17.78	15.56
(iii) Trade and Transport Towns	22.85	24.28
(*a*) Transport Towns	17.50	15.00

2. MANUFACTURING TOWNS. It may be noted from Table 2 that of 151 towns in 1961, only 63 were classified as manufacturing (including mining, artisan and manufacturing). These towns display a greater variation in growth rates. Only a little less than one third of manufacturing towns (20) showed growth rates of 10 to 20 percent, followed by a little more than one fourth (15) in the range 20-30 percent. Only two towns showed the higher growth rates of 60-70 percent. At the two extremes of the range of variation in growth rate, 13 recorded rates below 10 percent and 6, more than 100 percent. The median and model growth rates for the manufacturing towns were 19.25 and 15.83 per cent respectively. The growth pattern of sub-groups of manufacturing towns are described below.

(a) Mining Towns. Mining towns deserve some special attention in the study of urbanization. This characteristics, of course, exists in the presence of mineral resources inside or within easy reach of the towns so that their large inhabitants can pursue this activity.

Out of 63 manufacturing towns of the state in 1961, only 18 belonged to mining towns. Their growth pattern shows an interesting picture. At one extreme only 7 towns exhibited growth rates below 10 percent, at the other Six towns recorded growth rates of more than 100 percent. These latter six arc Kerkend (689.69 percent) Tistra (353.69 percent) Jorpokher (187,47 percent) Jaraadoba (153.44 percent) and Bhowra (141.78 percent) in Dhanbad district and Musabani (160.71 percent) in Singhbhum district. Their high level of growth rates may be attributed to the fact that they are situated in industrial belt of Dhanbad and Singhbum districts, characterized by rich in mineral resources such as coal, copper, iron, Bauxite etc.

(6) *Artisan Towns.* All the artisan towns have grown slowly during the period 1961-71. They all have record growth rates below 50 percent. Out of 23 towns, only 10 fall in the interval of 10-20 percent, followed by a towns in next interval of 20-30 percent. For two towns the rate was less than 10 percent, whereas for another two it was above 30 percent but below 50 percent. The median and modal growth rates for the Artisan towns were of the order of 19.5 and 18.89 percent, respectively.

(c) *Manufacturing Towns.* Manufacturing towns proper had, in general, grown at low rates, more or less in Hue with the Artisan towns. All the 22 towns of this functional group showed growth rates *below* of 50 percent. Among them the largest number of towns (9) fall in the interval of 10-20 percent, followed by 5 towns in the next interval of 20-30 percent. Of the remaining, 2 towns

had a growth rate of 30-40 percent and another two of 40-50 percent. In the lowest interval of less than 10 percent there were 4 towns. The median and the modal growth rates were of the order or 17.78 and 15,56 percent, respectively. Both the values are lower than the corresponding values for artisan towns.

3. TRADE AND TRANSPORT TOWNS. Of the 151 towns, only 16 were characterised as trade and transport towns in 1961 and among them 6 were further classified as trade and commerce and 10 as transport towns. All the 16 towns had the growth rates below 40 percent; among them 2 towns had growth rates of less than 10 percent, 7 of 20-30 percent and another 3 towns, of 30-40 percent.

The median and modal growth rates were of the orders of 22.85 and 24.28 percent, comparatively being higher than other functional categories of towns except service towns. The growth pattern of its two sub-groups are described below.

(a) *Trade and Commerce Towns.* Of the six trade and commerce towns, 5 showed growth rates of 20 to 30 percent and only one, namely Banmakhi Bazar, exhibited the growth rate of 32.91 percent. The average growth rate for these towns was 26.67 percent. Obviously, the range of variation for this small group of towns is quite narrow.

(b) Transport Towns. The growth rates for all the 10 transport towns were below 40 percent, with a maximum of 35.01 percent in Katihar and minimum of—8.86 in Barauni. Most of them have grown at slower rates even as compared to the trade and commerce towns. The overall growth rate of transport towns was 16.38 percent, whereas for trade and commerce towns it was 26 30 percent (Table-I). The median and modal growth rates for transport towns were 17.5 and 15.0 percent respectively; these values are comparable to the corresponding values for the manufacturing (sub-group) towns. It is evident also that the range of variation in growth rate for transport towns is somewhat broader than the one for trade and commerce towns, despite the fact that towns of both the groupsrecordedgrowthratestobelessthan40p e r c e n t . **T e s t**

Testing of Some Hypotheses

It should be interesting and informative to frame some hypotheses regarding functional characteristics of towns and their size-class structure and growth pattern etc. and test them by applying suitable statistical techniques. Some of the relevant hypotheses tested here are as follows.

(a) *Independence of Size-class Structure and Function of Towns.* First We exa-

mine whether the size-class structure *of* towns is independent *of* functional characteristics of the towns. For this purpose, six classes of towns were grouped into two classes namely big towns, consisting of class III to I and small towns (remaining three classes VI, V and IV). Further, three main functional categories namely service, manufacturing and trade and transport were grouped into' two namely service, and manufacturing and others classes. This has been presented in Table 3.

TABLE 3-FREQUENCY DISTRIBUTION OF TOWNS **OF BIHAR AS OF 1961 ACCORDING** TO THEIR SIZE-CLASSES **AND FUNCTIONAL** CHARACTERISTICS

Size class / *Functional Characteristics*	*Big towns with pop. 20,000 and above*	*Small towns below 20,000*	*Total*
Service	22	50	72
Manufacturing and others	25	54	79
Total	47	104	151

Calculated value of $x^2_{(1)} = .0208$.

Table value of $x^2_{(1)}$ *with 5 percent* level of Significance = 3.84.

Assuming the hypothesis that the size class-structure of towns is independent of functional characteristics of towns, X^2 (chi square) test was applied. The calculated value of X^2 is as low as .0208, which is less than the value of X^2 for 1 degree of freedom at 5 percent level (3.84 percent).

(*b*) *Independence of Growth Rates and Functional Characteristics of Towns.* Before applying statistical technique, the growth rates of all towns have been classified in three groups namely high (50 percent and above), moderate (20-50 percent) and low (less than 20 percent) growth rates. Functional characteristics were also grouped into two classes, as earlier mentioned, service towns in one group and remaining others in another group.

Assuming the hypothesis that the level of growth rate is independent of the functional characteristics of towns, X^2 was calculated. The calculated value of X^2 comes out to be 11.71 which is significantly higher than the table value of

TABLE 4—FREQUENCY DISTRIBUTION OF TOWNS OF BIHAR AS OF 1961 ACCORDING TO THEIR FUNCTIONAL CHARACTERISTICS AND THE GROWTH RATES 1961-71

Growth rates / *Functional Characteristics*	*High (50 percent and above)*	*Moderate (20-50 percent)*	*Low (below 30 percent)*	*Total*
Service	9	46	17	72
Manufacturing and others	8	32	39	79
Total	17	78	56	151

Calculated value of $x^2_{(2)} = 11.71$.

Table value of $x^2_{(2)}$ at 5 percent level of significance = 5.99.

5.99 at 5 percent level of significance with two degrees of freedom. Accordingly, the hypothesis is rejected and it is concluded that the level of growth rate is dependent on the functional characteristics of towns.

Conclusions

Bihar state exhibits relative importance of service towns within its urban population. The service towns, in general, are growing faster than other functional categories of towns. Within the class of manufacturing towns, the mining towns are growing very rapidly. It may also be noted that service town are, on the average, bigger in size than towns falling in other functional categories. The have attained higher size as a part of the progress of urbanization; and they appear to make a major contribution to the urban population of the state.

The statistical analysis of the distribution of the growth rates reveals that the median and modal values of the growth rate of the service towns were found to be the highest among all functional categories.

The high level of growth rates as revealed by mining towns may be attributed to the fact that they are developing in industrial belt of Dhanbad and Singhbhum districts characterized with rich in mineral resources such as coal, copper, iron and Bauxite etc.

Further, on the basis of the application of X^2 test to the data, it is concluded that the size of the town/city is independent of its functional characteristics

while level of growth rate is dependent on the functional characteristics of towns/cities.

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