UNEQUAL CITIES: A STUDY BASED ON FUNCTIONAL CLASSIFICATION OF SELECTED CITIES OF TELANGANA STATE, INDIA

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Abstract

The significant performance of any specific economic activity has impact on city growth. Cities with strong economic potential will undergo rapid development. Use of innovative technology is the basic tool that helps in development. If an activity is concentrated at certain limit in a town, it dominates the city's economic life and becomes its major function, and the performance level of such services is at greater proportion than the others. Few cities have high economical potential in more than one service also. Cities which are not economically potential in any service are categorized as single diversified group. Indian census classifies towns into 6 classes based on population and identifies 9 economic occupations. Telangana is the newly formed state (June 2nd 2014) of India having 160 towns which constitutes 38.12% of urban population. This paper explains the changing pattern of occupations of different towns from 1961 to 2011. Standard Deviation is the method used for classification of cities and explains the degree of variations.

Keywords: City Growth, Unequal Cities, Functional Classification, Standard Deviation

Introduction

City growth depends upon on its economic resources that generate employment for urban dwellers as well as internal migrants. Development in general is due to the transformation of economic activity to higher levels, e.g. primary to secondary, secondary to tertiary and tertiary to quaternary and further quinary activities. In this process, unequal growth causes economic differences. The sustainable development of the cities is the primary agenda of United Nations (UN). Cities must facilitate full and productive employment and decent work for all and making cities inclusive growth. To achieve the sustainable development goals, it is necessary to understand the levels of economic activity performed by each city. Due to innovation technology, cities developed to the level of performing more than one type economic activity; however the main economic base dominates the other economic activities. The vital services are not performed in the same proportions in all the cities. Almost every geographer would identify Detroit as a manufacturing city, Glasgow as a port city, Manchester as Industrial city and Beijing as a Trading center there by indicating that one city does more than its share of manufacturing; while another provides trade and few facilitates the market for the finished goods. In the developing countries like India, inclusive growth is an important component at present scenario and it indicates the growth perspectives of the cities of India. The research paper empathizes on the towns of Telangana state which constitutes 38.12% urban population living total 160 towns. The Census of India classifies cities into six classes based on population. The nine occupational characters of different class cities is attempted to study the degree of variation from normal for a specific economic activity. It is the first stated criteria used based on the census data available from 1961 to 2011.

The Census of India specifies the economic activities with respect to gainfully employed workers and grouped them into different categories since 1961. In 1961 census of India identified 9 economic activities viz. Cultivators, Agricultural Labourers, Mining and Quarrying,

Household Industry labourers, Manufacturing sector, Construction, Trade and Commerce, Transport storage and communications and Other Services respectively. Though there were few changes in the classification of economic activities during later decades, they broadly compose the same

When the employment is created to a certain percentage of the total working force by an economic activity, it is treated as more significant. Secondly, the present study is confirmed to only the urban centers where the agricultural activity is normally found insignificant, thus to overcome these situations the nine economic activities are grouped as Primary, Secondary and Tertiary sectors.

The cities classification is based on population according to India census.

Table 1: Classification of U.As / Cities / Towns according to size of Population

Sl. No	Classification of Towns	Population Range
1	Class I	100,000 & above
2	Class II	50,000 – 99,999
3	Class III	20,000 – 49,999
4	Class IV	10,000 –19,999
5	Class V	5,000 – 9,999
6	Class VI	Less than 5,000

Source: Population Census of India, Andhra Pradesh 2011

The Study Area

The two cities in each class are selected for examining the transformation of economic activity that results the city growth of the city.

Towns selected for the study are

Class I- Hyderabad and Warangal, Class II - Nizamabad and Kothagudam, Class-III - Kagagnagar and Narayapet, Class-IV - Jagtial and Kosigi, Class-V - Narayankhed and Kollapur, Class VI towns are not significant for the study

Table 3. Area of Telangana Cities from 1971 to 2017 and Variation (in Square Kilometers)

Sl. NO	Name	Area - 1971	Area - 2017	Variation	% Variation 1971-2017
1	Hyderabad	172	650	478	277.91
2	Warangal	14.84	57.6	42.76	288.14
3	Nizamabad	8.05	23.65	15.6	193.79
4	Jagitial	0.09	0.39	0.3	333.33
5	Kollapur	0.58	1.89	1.31	225.86
6	Kosgi	0.57	1.38	0.81	142.11
7	Kottagudem	4.90	9.45	4.55	92.86
8	Narayankher	0.39	1.49	1.1	282.05
9	Narayanpet	1.06	2.63	1.57	148.11
10	Kaghaznagar	2.68	5.46	2.78	103.73

Source: Compiled by author from Toposheets and Google earth maps.

Form the above table we notice there is drastic increase in area of all towns from 1961 to 2011.

Objectives

To id entify class wise unequal growth of the towns interms of area. To examine the functional classification of towns. To examine and analyze the transformation of economic

activities of the towns. To examine the role of the economic activity in unequal development of the town..

Methodology

The work force of each individual activity is proportionately calculated with the total workers and the average of the proportions of each individual activity is calculated for standard deviation method. Standard deviation method is applied to find out the degree of variation from the average for each economic activity and they are grouped into appropriate categories. The towns having more than one type of services in outstanding proportions are organized systematically. Geographical Information System (GIS) is used for mapping and analysis. The classification is done based output values and divided into 3 categories, they as i) (Mean) to (Mean + 1σ), (ii) (Mean + 1 σ) to (Mean+2σ) (iii) (Mean+2 σ) to (Mean +3 σ).

Analysis

In spatial literature the unequal growth of towns is an existing reality. The growth of towns depends upon its economic performance. The transformation of economic activities from primary form to modernized form indicates the rapid rate of spatial extent of town. The city which performs one economic activity at higher rate depicts the unequal growth of the town as every town doesnot have specific economic activities at equal levels. The growth patterns and economic activities of different towns have been studied to identify the unequal growth in various class towns defined by Census of India in Telangana state.

Hyderabad City Expansion: 1971-2017
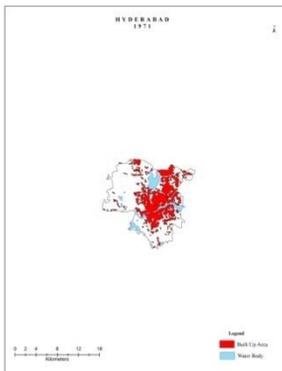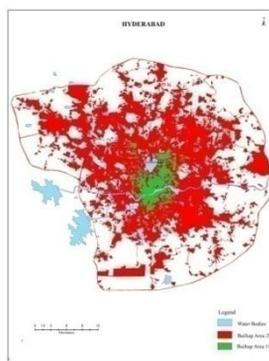
1971 (172 Sq. Km)   2017 (650 Sq. Km)   Variation (478 Sq. Km)
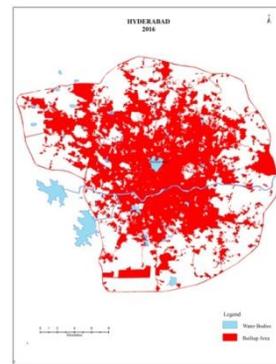
Class-I towns: The population in class I towns as defined by the census of India is more than 1,00,000. The cities like Hyderabad and Warangal are selected for analyzing the performance of their economic activity for city's growth.

The Hyderabad city – It is the capital city of Telangana state. It was built by the Nizam kings 425 years ago; later it also served as the British residency between 1700AD to 1947 AD. It was built on the bank of the Musi rives (extinct) which passes through the center of the city.

The city Hyderabad ranked 1st in "Best of the World - 20 places you should see in 2015" by National Geographic, San Francisco and "Must Visit" cities in the world by The New York Times. Hyderabad was rated 2nd among India's 'Hottest IT destinations' by Rediff Business and 2nd most attractive destination for "Doing Business in India" by The World Bank.

The performance levels of various economic activities of Hyderabad city from 1961 to 2011 is studied in detail. It indicates that the primary and secondary activities, such as Cultivators, Agriculture labourers, mining. Household and Constructions have no significance, Manufacturing industries showing study growth since 1961 onwards ($+1\sigma$). The tertiary activities such as trade and commerce, transportation and other services performance is recorded between $+2\sigma$ and $+3\sigma$. These services have played vital role in growth of the city.
Hyderabad city expansion was started since 1970's due to large scale internal migration for search of employment from Andhra region which is also the Telugu speaking state of Madras presidency. Subsequently globalization policies in India in mid 1990's, the tertiary activities such as trade, commerce, transportation, construction sectors accelerated the propriety and given scope for establishment of international institutions and acquired latest infrastructure and thereby manufacturing, chemical, pharma, information technology industries and also world class institutions like education, hospitals, science and research centers, banking, housing(satellite township and housing for poor) have been forced to equip qualitative infrastructure. Basic services like international airports, rail connectivity, road network, power (electricity), sewerage and drainage, street lightening, drinking water, recreation hubs, green spaces (lung spaces) and software technology has been developed to provide quick and effective services to the people which resulted Hyderabad to transform into smart city.

Table 5: Economic Activity Levels of Warangal town: 1961-2011

Year	Cultivator	Agriculture Labourers	Livestock, Forestry, Fishing, Hunting plantations, Orchards and Allied	Mining	Household industry	Manufacturing	Construction	Trade & Commerce	Transportation	Other Services
1961	< M	< M		< M	< M	+2σ	< M	+1σ	+1σ	+1σ
1971	< M	< M	< M	< M	+1σ	+1σ	< M	+1σ	+2σ	+1σ
1981	< M	< M			+1σ					+1σ
1991	< M	< M	< M	< M	+1σ	+1σ	+1σ	+1σ	+2σ	+1σ
2001	< M	< M			+1σ					+1σ
2011	< M	< M			< M					+1σ

Warangal City Expansion: 1971-2016

Warangal city – It is the second largest city in Telangana state. Historically, Warangal was the capital of great Kakatiya dynasty during 13th Century. Government of India recognized Warangal as 'Heritage city' considering its historical importance. Warangal Fort and Thousand Pillar Temple are some of the ASI protected world heritage assets which attracts 23 million people annually (Dept. of Tourism, Govt. of Telangana, 2015).

Warangal is acting as hub for local trade and commercial activities in the region. It is one of the key producers of long-staple cotton among Telangana districts. Enumamula market is the Asia's biggest cotton market located in the city. The city had good water resources. Endowed with a number of lakes, the city provides the water for drinking and irrigation.
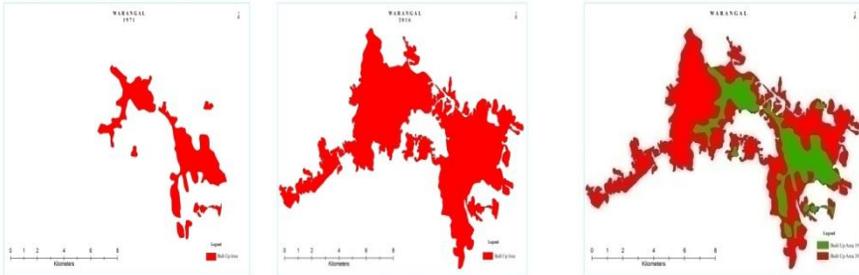
1971 (14.84 Sq. Km)   2016 (57.6 Sq. Km)   Variation (42.76 Sq. Km)

When examined the economic activity levels of Warangal city from 1961 to 1981, it indicates that the primary activity such as cultivators, agricultural labourers, live stock, fishing and mining has no significance. Secondary activities such as household and manufacturing have no significant contribution for the city growth. Construction activity showed its growth from 1991(+1σ). The tertiary activity such as trade and commerce, transportation and other services are constantly contributing for the city growth and the level of economic activity was recorded between +1σ to +2σ. Transportation activity has a major role for the city spread. Hence the secondary and tertiary activities are the cause for the growth of the town.

Class-II towns

The population in class II towns ranges between 50,000 to 99,999. The cities like Nizamabad & Kothagudam are selected for analyzing the performance of their economic activity for city's growth.

The economy activity of the city is largely based on industries and business, which belongs to government sector and public sector. The income of the people is basically from government employment (government schemes) and secondly most of families migrating to gulf countries for work purpose. The major industries is 'Nizam Sugar Factory', it is the biggest sugar factory in Asia during the Nizams regime.

Table 8: Levels of Economic Activities of Nizamabad town: 1961-2011

Year	Primary	Live	plantation mining	...	di...	activities	Construction	Commerce	Transport	se
1961	< M	< M		< M	< M	+1σ	< M	+1σ	+1σ	+1σ
1971	< M	< M	< M	< M	< M	+1σ	< M	+2σ	+2σ	< M
1981	< M	< M			+1σ					+1σ
1991	< M	< M	< M	< M	+2σ	< M	< M	+1σ	+1σ	+1σ
2001	< M	< M			+1σ					< M
2011	< M	< M			+1σ					+1σ

Source: Prepared by author. M=Mean

Nizamabad City Expansion: 1971-2017

When examined the economic activity levels of the Nizamabad city from 1961 to 2011, it indicates that the primary activities such as cultivators and agricultural labourers, mining and livestocks, forestry, fishing hunting have no significant role for city growth. The secondary activities such as household industries showed vital role for city growth since 1981 (between +1σ and +2σ). Manufacturing industries was existed during early independence i.e. 1951 to 1961 but later its significance lost due to its close down by government. The tertiary activities such as trade and commerce, transportation and other services shown steady and gradual increase which fluctuates between +1σ to +2σ.

Kothagudem city is well known for underground and opencast coal mines. Hence the coal based industries particularly, ferro alloy industries and thermal power stations are set up here. Geographically the city experiences the hottest summer months where the temperature reaches close to 50^{0}C in the summers. The city name itself means the emerging city. 'Kotha' in Telugu language means the 'New' and 'Gudem' means 'York'. Growth of city started where British colonies searching for coals reserves.

Table 9. Economic activitiy levels of Kothagudam town: 1961-2011

Year	Cultivator	Agriculture Labourers	Livestock, Forestry, Fishing, Hunting plantations, Orchards and Allied activates	Mining	Household industry	Manufacturing	Construction	Trade & Commerce	Transportation	Other Services
1961	< M	< M		+3σ	< M	< M	< M	+1σ	< M	< M
1971	< M	< M	< M	+3σ	< M		< M	+1σ	< M	< M
1981	< M	< M			< M					+1σ
1991	< M	< M	< M	+2σ	< M	< M	< M	< M	< M	< M
2001	< M	< M			< M					+1σ
2011	< M	< M			< M					+1σ

Source: Prepared by author. M=Mean

Kottagudem City Expansion: 1971-2017
Expect the mining activity all other primary and secondary economic activities have no major role for city growth. Few tertiary activity such as trade and commerce and other services have helped the growth of the city since 1961.

Class-III towns
The population in class III towns range in between 20,000 to 49,999. The cities like Kagagnagar and Naraynpet are selected for analyzing the performance of their economic activity for city's growth.
Kagagnagar city is also called as Sirpur Kagagnagar. Kagag means paper. Paper industry is located here. The growth and development of town is mainly depending on migration of the people for search of employment in Sirpur paper mill and textiles industries,
The secondary economic activity such as manufacturing plays an dominated role in the city growth. The level of this economic activity is recorded at +3σ during 1961 and 1971 and at +2σ standards during 1991. The tertiary activity such as trade and commerce recordeds at

+1σ during 1991 and other services activity recorded at +2σ during 1981 and 2011 (Table 10).

Narayanpet city is municipal town; the root cause of city growth is depended on manufacturing of silk sarees and making of gold works. When the economic activities of the Narayanpet are examined the secondary economic activity mainly household industry labourers found the highest and most of them employed in silk industries. The level of economic activity recorded at +1σ to +3σ in all the decades till 2001. The other workers also contributing for the city growth and it stands at +1σ since 2001 (Table 11).

Table 11: Economic activity levels of Narayanpet town: 1961-2011

Year	Cultivator	Agriculture Labourers	Livestock, Forestry, Fishing, Hunting plantations, Orchards and Allied activates	Mining	Household industry	Manufacturing	Construction	Trade & Commerce	Transportation	Other Services
1961	< M	< M		< M	+3σ	< M	< M	< M	< M	< M
1971	< M	< M	< M	< M	< M		< M	< M	< M	< M
1981	< M	< M			+1σ					< M
1991	+1σ	+1σ	< M	< M	+1σ	< M	< M	< M	< M	< M
2001	< M	+1σ			+1σ					+1σ
2011	+1σ	+1σ			< M					+1σ

Source: Prepared by author. M=Mean

Table 12: Economic activity levels of Jagtial town: 1961-2011

Year	Cultivator	Agriculture Labourers	Livestock, Forestry, Fishing, Hunting plantations, Orchards and Allied	Mining	Household industry	Manufacturing	Construction	Trade & Commerce	Transportation	Other Services
1961	< M	< M		< M	< M	< M	< M	< M	< M	< M
1971	< M	+1σ	+1σ	< M	+1σ	< M	< M	+1σ	< M	< M
1981	< M	+2σ			< M					< M
1991	+1σ	+2σ	< M	< M	< M	< M	< M	+1σ	< M	< M
2001	+1σ	+2σ	< M	< M	< M	< M	< M	+1σ	< M	< M
2011	+1σ	+2σ	< M	< M	< M	< M	< M	+1σ	< M	< M

Source: Prepared by author. M=Mean

Narayanpet City Expansion: 1971-2017
Class-IV towns:
The population in class-IV cities range in between 10,000 to 19,999. The cities like Jagtial and Kosigi are selected for analyzing the performance of their economic activity for city's growth.

Jagtial: The city is located at the catchment area of Godavari river, hence the agriculture and allied occupations are the main economic activities of the people. Cold storage factories, rice mills and Beedi leef factories located at urban fringes of Jatial city.

Jagtial City Expansion: 1971-2017

When examined the economic activity levels of Jagtial town it indicates that, the primary sector mainly agriculture activity dominated the city growth. The agriculture labourers concentration is maximum and it stands at +2σ and cultivators at +1σ since 1991. The tertiary economic activity like trade and commerce also has minor impact on city growth and it stands at +1σ since 1971. The livestock is other major economic activity which is present and has contributed minor role for the growth of the city and it stands at +1σ in 1971 (Table 12). **Kosigi** is town located in Mahbubnagar district of Telangna state. City growth and development majorly depended on agriculture. The town Kosigi is located in plain areas of the Mahbubnagar district and depended on natural rainfall and irrigation from Krishna river systems. When examined the levels of the economic activity of Kosigi town it indicated that, the primary activity mainly cultivation and other agriculture activity have predominance role in the city growth. The cultivator stands at >+3σ and +3 σ during 1981 and 1991 and agriculture labourers activity shows the maximum growth and it stands at +2σ standards in 1971 and 1991. The secondary economic activity like household industry laborers also plays significant role for the city growth and they stands at +2σ up to 1981 and after that it have slowdown to +1σ standards in 1991 (Table 13).

Table 13: Economic activity levels of Kosigi town: 1961-2011

Year	Cultivator	Agriculture Labourers	Livestock, Forestry, Fishing, Hunting plantations, Orchards and Allied activates	Mining	House Hold industry	Manufacturing	Construction	Trade & Commerce	Transportation	Other Services
1961	+1σ	< M		< M	+1σ	< M	< M	< M	< M	< M
1971	+1σ	+2σ	< M		+2σ	< M	< M	< M	< M	< M
1981	>+3σ	+1σ			+2σ					< M
1991	+3σ	+2σ	< M	< M	+1σ	< M	< M	< M	< M	< M
2001										
2011										

Source: Prepared by author. M=Mean

Kosgi City Expansion: 1971-2017

Class-V towns

The population in class-V towns range in between 5,000 to 9,999. The cities like Narayankhed and Kollapur towns are selected for analyzing the performance of their economic activity for city's growth.

Narayankhed town is in located Sangareddy district of Telangana state. The agriculture and allied occupations are the major economic activity for growth of the town.

1971 (0.57Sq. Km)   2017 (1.38 Sq. Km)   Variation (0.81 Sq. Km)
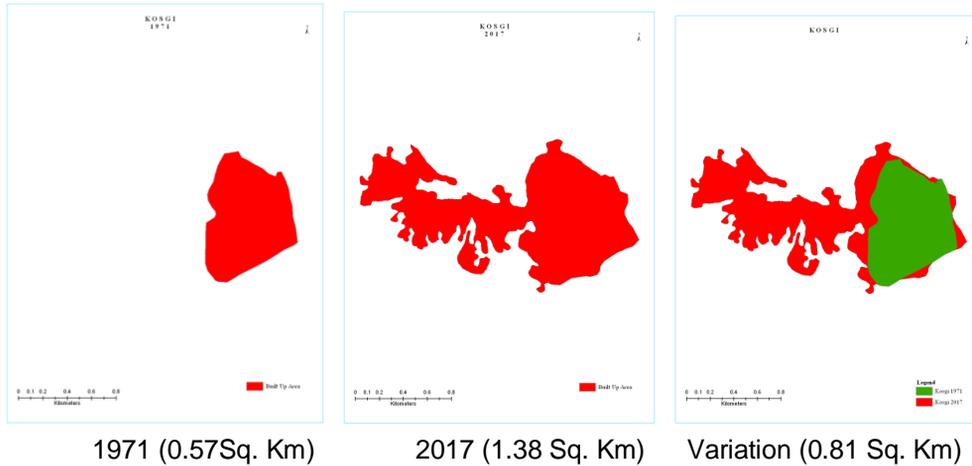
Table 14: Economic activity levels of Narayanakhed town (1961-2011)

Year	Cultivator	Agriculture Labourers	Livestock, Forestry, Fishing, Hunting plantations, Orchards and Allied activates	Mining	Household industry	Manufacturing	Construction	Trade & Commerce	Transportation	Other Services
1961	< M	< M		< M	< M	< M	< M	< M	< M	< M
1971										
1981	+1σ	+1σ			< M					< M
1991										
2001										
2011	< M	< M			< M					< M

Source: Prepared by author. M=Mean

When examined the levels of economic activity of Narayanakhed town it indicated that the primary activities such as cultivators and agriculture labourers are found high during some decades and it stands at +1σ. The other economic activities like mining, household industry labourers, manufacturing, trade and commerce and other services have no significant role (Table 14).

Kollapur town is located in the forest track of Nallamal forest lands on the banks of river Krishna in Telangana state. The ancient monuments and famous ancient temples are present here. It is also known as Telangana Mysore. The Mysore city is one of the famous tourist spot of Karnataka state of India.

When examined the levels of the economic activities of Kollapur town it shows that, the cultivation and the agriculture labourers are the major activity of the population and these activities stands +2σ since 1971, hence the town growth is depended on primary activity only. The construction activity shows at +1σ only in1991 (Table 15).

Conclusions

The unequal city growth is an existing reality in different classes towns of Telangna state. It is mainly due to the variation in level of economic activity in different class town. The functional classification of the cities of Telagnana reveals that, the rapid growth and expansion of the class-I cities i.e. Hyderabad and Warangal is based on tertiary economic activities and the level of such economic activities stands at +3σ in both the towns. In class-II towns viz. Nizamabad and Kothagudam, cities growth is due to high concentration of secondary and tertiary activities. The mining activity plays an important role for Kothagudam town growth. Among tertiary activities the trade and commerce and transportation role is seen maximum in class-II towns in Telangana state. functional classification in class-III and Class-IV towns of Telangana state is examined it is indicates that, the cities like Kagagnagar, Narayanpet, Jagtial are in transition zone of primary activities to secondary activities. Agriculture and allied occupation and household industries plays an important role for growth of the town, it is proven that, Jagtial is basing on agriculture activity and Kagagnagar and Narayanpet towns shown the growth based on agriculture based industries like paper, silk etc. But whereas in class-V towns they are purely depends only on agriculture sector activities cities growth. The functional classification is the one way of understanding the inequalities of city's growth based on economic specialization of town. The unequal growth in the cities of class-I, class-II, class-III, class-IV and class-V has positive correlation with changing patterns of primary, secondary and tertiary economic activities based economy of cities.

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