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Role and Current Status of Infrastructure in the Economy of Assam: A District level Analysis

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Abstract

Infrastructure is needed for the up lifting of an economy. No country can progress without proper infrastructural facilities. Infrastructure development is required for the economic development of any country. In this paper, an attempt is made to make an assessment of the role of infrastructure (both economic and social) in economic development of Assam. The time considered in this study is 2016. In this study, a total number of 10 indicators are considered. Out of which six indicators are concerned with economic infrastructure and the rest four indicators are concerned with social infrastructure. Under social infrastructure education and health infrastructure is considered. Two indicators are considered for each education and health infrastructure. Economic infrastructure index and social infrastructure index were constructed using the Principal Component Analysis. In this paper, composite index is computed using principal component analysis and also the different categories of development is assessed which is classified under four heads- highly developed, middle level developed, developing and low developed categories respectively. The different categories were classified on the basis of the computed composite index.

Keywords:

Infrastructural Development; Economic Infrastructure, Social Infrastructure

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1. Introduction

One of the pre-requirement for the development of any economy is the infrastructure facilities in the economy. Infrastructure development helps both directly as well as indirectly in the development of any economy. Infrastructure raises the productive capacity of any nation. It affects production, consumption, distribution, etc. Broadly, infrastructure is of two type- economic infrastructure and social infrastructure. Economic infrastructure is one that helps in promoting and speeding up the economic activities such as roads, railways, airways, telecommunications, banking, etc. While social infrastructure includes education, health, etc. Both social and economic infrastructures are important for economic development but economic infrastructure is more important as it helps in development of social infrastructure.

Infrastructure facilities in Assam is not developed (both economic and social infrastructure) as compared to the developed States of India. Infrastructure which is important for the development in any country/State is inadequate in Assam which may be one reason for the backwardness of the State. This may be also the reason for low State Gross Domestic Product. Assam is rich in natural resources and also has huge potential to

develop. If proper infrastructural facilities are created then resources can be utilized in a proper manner and the development of the State can also take place.

Thus, the present paper makes an attempt to assess the current infrastructural status in Assam. The composite indices were computed for the different districts of the State by using principal component analysis and then they are classified into different development.

2. Literature Review

A number of studies have already been done emphasizing on the extent and nature of disparities in development of infrastructure in India. Different aspects were focused in different studies. Some focused on the extent of disparity in infrastructural development and also on whether these disparities were converging or diverging over time. While others focused on only regional infrastructural development by constructing some composite indices. While few others also focused on the impact of infrastructure on regional economic growth, role of public investment in regional development, role of infrastructure in economic development in India, etc. . Some of these studies are worth mentioning- Prakash (1977) [9], Dadibhavi (1990) [3], Choudhury& Roy, U (1992)[2], Ghosh and Prabir (1998)[4-5], Lall (1999), Deb and Prabir (2004), Basavaraj (2007) [1], Ghosh (2008), Chaudhari and Halder (2009)[10], Kapil (2009), Patra and Acharya (2011) [8], Wolassa (2012)[11], etc. It must be noted that these studies were made by these researcher on different States of India.

Thus, from above we find that a number of studies were conducted in India on different aspects of infrastructure but only a few studies were found in assessing the role of infrastructure and its current status in the economy of India and other States particularly in Assam. Thus, the present paper focuses on assessing the role and current status of infrastructure in the economy of Assam.

3. Objectives of the study

The objectives of the paper are-

1. To assess the current status of infrastructural facilities considering both economic and social infrastructure considering the year 2016.
2. To classify the districts into different development categories on the on the basis of computed composite index.

4. Research Question

1. What is the current status of infrastructural facilities prevailing among the different districts in Assam?
2. Whether there is any difference in the levels of development in infrastructural facilities among the different districts?

5. Data and Methodology

5.1 Source of data- The study is based on secondary data collected from different sources.

These sources are- Directorate of Economics and Statistics, Government of India, Ministry of Road Transport and Highway, Government of India, Road Transport Yearbook, Central Electricity Authority Ministry of Power, Government of India, Quarterly Statistics on Deposits and Credits of Schedule Commercial Banks, RBI, Various issues. In this study the time period considered is 2016.

5.2 Selection of Indicators-

The indicators selected for this study are mentioned below. They are-

i. Scheduled Commercial Bank per lakh of the population
ii. Rail route per 100 sq. km
iii. Road length per 100 sq. Km
iv. Total registered vehicles per lakh of the population
v. Per capita availability of Power (kilowatt hour)
vi. Installed capacity of power (per lakh of the population)
vii. No. of school per lakh population
viii. No. of college per lakh population
ix. No. of government hospital per lakh population

x. No. of government bed per lakh population

Out of the above indicators the first six indicators are concerned with economic infrastructure and the last four indicators are related with social infrastructure. Indicators 7 and 8 are related with education infrastructure and indicators 9 and 10 are concerned with health infrastructure. These indicators may not form an all inclusive list but are selected because of data availability constraint.

5.3 Method for analysis:

First of all the data were normalized using the following formula-

$Z_i = X_i - \bar{X}/X_i$

In this study in order to assess the status of physical infrastructural facilities in Assam we have constructed physical infrastructure index which is computed by this following equation-

Index= $W_1*Z_1+W_2*Z_2+W_3*Z_3+\ldots\ldots\ldots\ldots+W_n*Z_n$

Where, Z_1, Z_2, Z_3 and Zn are different variables of thephysical infrastructure. W_1, W_2, W_3 and W_n are weights assigned to the different variables.

To calculate the weights following method is used:

$W_i = F_{ik} . V_k$

Where,

W_i = Weights of the ith Variable,

F_{ik} = Factor loading of ith variable and kth Factor, reflecting highest correlation between X_i and Factor k, and

V_k = Variation explained by kth factor.

In order to calculate the Factor loading, Principal Component Analysis method (Factor Analysis) is used.

6. Findings and Discussion:

As we know development is a multi-dimensional process, therefore, it cannot be assessed by taking one or two indicators. On the other hand, taking many indicators and assessing them individually may not lead us to draw the correct interpretation. Thus, what is needed is to take some indicators and make an assessment in a comprehensive way so that meaningful interpretations can be drawn from it. Thus, we have considered 10 indicators in total. Out of which 6 indicators are concerned with economic infrastructure and four indicators are related with social infrastructure. These indicators may not form an all inclusive list but are selected because of data availability constraint. Since data were not available therefore only one year is considered for this study i.e. 2016. The table 1 below shows the composite indices of the different districts of Assam.

Table 1: Rank of the different districts in Assam.

Districts	Infrastructure Index	Rank
Kokrajhar	0.30	15
Dhuburi	0.33	13
Goalpara	0.31	14
Barpeta	0.37	10
Morigaon	0.28	17
Nagaon	0.39	9
Sonitpur	0.29	16
Lakhimpur	0.40	8
Dhemaji	0.30	15
Tinsukia	0.35	12
Dibrugarh	0.40	8
Sivasagar	0.42	6
Jorhat	0.43	5
Golaghat	0.37	10
KarbiAnglong	0.31	14
DimaHasso	0.52	2
Cachar	0.31	14

Karimganj	0.29	16
Hailakandi	0.33	13
Bongaigaon	0.41	7
Chirang	0.28	17
Kamrup	0.48	3
Kamrup Metro	0.44	4
Nalbari	0.56	1
Baksha	0.28	17
Darrang	0.36	11
Udalguri	0.26	18

Source: computed by the Author.

The composite indices of development have been worked out for different districts for comprising both physical and social infrastructure which is named as infrastructure index (II). Different districts are ranked on the basis of the computed composite indices. The value of the composite index lies between 0.26 and 0.56. If the composite index value moves toward 1 the better the facilities. From the table 1, it can be seen that Nalbari is found to be in the first position among the districts of Assam with a score of 0.56. On the other hand, Udalguri is found to be in the lowest position with an index score of 0.26 in the year 2016. There is wide disparity in physical infrastructural facilities among the different districts of Assam which is prominent from the composite index value.

6.1 Relative Share of Area and Population under Different Levels of Development:

In order to assess the different levels of development simple ranking of districts on the basis of the composite indices would be sufficient but by using a suitable classification of districts on the basis of mean and standard deviation will give a more meaningful analysis. For relative comparison of the different States with respect to infrastructural development it appears quite appropriate to assume that the districts having composite indices less than or equal to (mean-standard deviation) are highly developed and districts having a composite indices greater than (mean + standard deviation) are low developed. In the same way, districts with composite indices in between (mean) and (mean-standard deviation) are middle level developed and the districts with composite indices between (mean) and (mean + standard deviation) are developing. This is shown with the help of the table 2 below-

Table 2: Different category of districts in Assam

Districts	No. of districts
Highly developed (› 0.44)	5
Middle level developed (0.36-0.44)	6
Developing (0.28-0.36)	14
Low Developed (‹0.28)	2

Source: Computed by the Author.

In table 2, we can see that 5 districts viz. Nalbari, DimaHasao, Kamrup, Jorhat and Kamrup Metro were found to be in the highly developed category. Sivasagar, Lakhimpur, Bongaigaon, Dibrugarh, Barpeta and Tinsukia were found to be in the medium level of development. Fourteen districts viz. Nagaon, Darrang, Golaghat, Dhuburi, Hailakandi, Kokrajhar, Goalpara, Dhemaji, Sonitpur, Cachar, KarbiAnglong, Karimganj, Morigao and Chirang were found to be in the developing category. Two districts viz.Baksha and Udalguri were found to be in the low developed category.

Relative Share of Area and Population:

In order to know the actual scenario of physical infrastructural facilities among the districts of Assam, the relative share of area covered under each category along with the population shares are shown below in table 2. This will help in assessing the true picture of physical infrastructural facilities in Assam.

Table 3: Relative Share of area and population

Categories	No. of districts	Area (%)	Population (%)
Highly developed	5	16.38	15.54
Middle level	6	19.74	23.33

developed			
Developing	14	58.16	55.42
Low Developed	2	5.69	5.71

Source: Computed by the Author.

From the above table 3, it is found that only 16.38% of the area is covered under the highly developed category which comprises of 15.54% of the population share of the State. The middle level developed category includes about 19.74% of the area and 23.33% of the population share in the state. Developing category comprises of the highest percentage covering 58.16% of the area with 55.42% of the population. While the low developed category includes 5.69% of the area with 5.71% of the population.

7. Conclusion

Thus, from the above analysis it is found that the infrastructural facilities are not uniform among the different districts of Assam. Wide disparities exist among the different districts of Assam in infrastructure facilities (both physical and social infrastructure). Nalbari is found to be in the first position in case of infrastructure provision and Udalguri in the last position. The composite index value ranges between 0.26 and 0.56 which depicts wide disparities in infrastructure. Moreover, from the above analysis we also found that only 16.38% were under highly developed category which comprises about 15.54% of the population share of the state. The major portion of the state is still under the developing category covering 58.16% of the area of the state and 55.42% of the population share of the state. Thus, it is clear that the major portion of the state is still under the developing category.

8. Suggestions

The following suggestions can be provided on the basis of the study-
i. The policy makers must focus on the development of infrastructural facilities because without it no economy can progress.
ii. A low developed district may not be low developed in all aspects in certain indicators they may be highly developed or middle level developed.
iii. Dimension specific policies must be taken by the government.
Thus, concrete action on the part of both the State as well as Central government is needed.

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