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*Recent Trends in Social Sciences*

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'Ravichandram' Survey No-101/1, Plot  
No-23, Mundada Nagar, Jalgaon (M.S.)

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## **The Role Of Infrastructure Facilities In Structural Changes Of Agriculture Development In Karnataka State**

**Dr.(Smt). Sunanda. I. Kittali**

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### **Abstract:**

The focus of World Development Report on infrastructure during 2002 was an important step towards underscoring its basic necessity in the process of economic growth in developing countries. It has been emphasized that infrastructure is the best conduit of development. However, the fact is alleviated due to other mounting pressures in the process of development. This happens mainly due to the intrinsic and indirect role that infrastructure plays in the process. To that extent even the academic studies on development process rarely underscored infrastructure as a major determinant of the process. It is only in the recent past that, this lacuna is identified strongly by the academicians and infrastructure. In this paper attempt has been made to analyzed the role of infrastructure in agricultural development in the districts of Karnataka state. Keeping in view the researcher has made an attempt to the basic premises of infrastructure as major determinant of agricultural development. The study underscores the prime role of infrastructure in the development process in India as well as in Karnataka. It also helps to find out the regions and the districts lagging in terms of development of infrastructure and points out the lacunae. The study also set the tone to find out the Regional Disparities in Karnataka.

**Key Words:** *Infrastructure, Structural Changes, Agriculture, Development, Facilities.*

### **Introduction:**

The 2002 World Development Report focus on infrastructure, was an important step towards underscoring its basic necessity in the process of economic growth in developing countries. Now it realized that, urgent need to improve the agriculture infrastructure in achieving economic growth at faster rate, the Government of India as well as the Karnataka State Governments have ventured into making heavy investment in agricultural infrastructure especially from the Fifth Five-Year Plan onwards. The agricultural infrastructure includes all of the basic services, facilities, equipment and institutions needed for the economic growth and efficient functioning of the food and fiber markets. Infrastructure investment demands a strong commitment to the cooperative extension system that enhances production, marketing, food safety, nutrition, natural resource conservation and all other functions of different agencies concerned with agricultural infrastructure. The major focus of infrastructural investment has been on irrigation, transportation, electric power, agricultural markets, etc. and these not only contributed to the agricultural growth at the macro level but also reduce the wide disparity between different regions in terms of agricultural growth.

### **Study Area:**

Karnataka state has a geographical area of about 1, 91,791 sq. kms. (8<sup>th</sup> rank in India). It accounts for 5.83 percent of the total area of the country (32.88 lakh sq.km) and located in the south-western part. It lies between the 11° 31' to 18° 45' northern latitudes and the 74° 12' to 78° 40' eastern longitudes. The state is divided into 30 districts. Physiographically Karnataka state is divided into 4 distinct regions (coastal plain, hilly range, eastern plateau and Cotton growing soil track of northeast). Out of the total geographical area (19.18 million hectares) of Karnataka state 13.44 million hectares of land is used for agriculture purpose, of this only 2.94 million hectares were brought under irrigation, remaining 11.03 million hectares of land is under rainfed area.

**Objectives:** The following are the major objectives of the present study:

- (a) To identify the suitable components of infrastructure for measuring agricultural development in the Karnataka state. (b) To analyse the level of development of various agriculture infrastructural indicators across different districts in Karnataka.

### **Data Base And Methodology:**

The secondary data have been collected from various published reports at district level regarding agricultural development and major infrastructural variables. For the analysis of agricultural infrastructure development in Karnataka state is used the **correlation coefficient and multivariate analysis / factor score analysis** to study the linkage between the infrastructural facilities and the regional imbalance. For this, researcher has identified 15 indicators for classifying the different agriculture infrastructure development regions.

### **Status Of Agriculture Infrastructural Development:**

The district-wise analysis of agricultural infrastructural facilities in Karnataka State is attempted through the inter-district disparities in the agricultural sector. For carrying out this analysis, selected fifteen indicators concerned to the agriculture infrastructural facilities, mentioned below:

- X<sub>1</sub>. No. of Regulated Agricultural Markets in each district. X<sub>2</sub>. Agricultural Credit Per capita Rural Population. X<sub>3</sub>. No. of Agricultural Cooperative Societies per lakh of Rural Population. X<sub>4</sub>. No. of Bank Branches per lakh population lending agricultural credit. X<sub>5</sub>. Bank Advance per lakh population. X<sub>6</sub>. No. of Farm Contact Centers. X<sub>7</sub>. Existence of Rural Development Centers. X<sub>8</sub>. Existence of Agricultural Research Centers. X<sub>9</sub>. Existence of Farmers Training Centers. X<sub>10</sub>. No. of Sales Outlets of Seeds, Fertilizer and Pesticides. X<sub>11</sub>. No. of Telephones Used. X<sub>12</sub>. Length of Rural Roads in kms. X<sub>13</sub>. No. of Godowns Available for Storage the Agriculture Production. X<sub>14</sub>. No. of Agriculture Implements and Machinery. X<sub>15</sub>. No. of Soil Testing Laboratories for Analyzing Soil Capacity.

**Table No.1: District-wise Different Dimensions of Agricultural Infrastructure Indicators of Karnataka State:**

| Sl. No         | Name of the District   | No. of Regulated Agricultural Markets | Agricultural Credit to Per Capita Rural Population | No. of Agricultural Cooperative Societies per lakh of Rural Population | No. of Bank Branches per lakh Population Lending Agricultural Credit | Bank Advance per lakh Population | No. of Farm Contact Centers | Existence of Rural Development Centers | Existence of Agricultural Research Centers | Existence of Farmers Training Centers | No. of Sales Outlets of Seeds, Fertilizer and Pesticides | No. of Telephones Used | Length of Rural Roads (in kms) | No. of Godowns Available for Storage the Agriculture Production | No. of Agriculture Implements and Machinery | No. of Soil Testing Laboratories for Analyzing Soil Capacity |
|----------------|------------------------|---------------------------------------|----------------------------------------------------|------------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------|-----------------------------|----------------------------------------|--------------------------------------------|---------------------------------------|----------------------------------------------------------|------------------------|--------------------------------|-----------------------------------------------------------------|---------------------------------------------|--------------------------------------------------------------|
|                |                        | X <sub>1</sub>                        | X <sub>2</sub>                                     | X <sub>3</sub>                                                         | X <sub>4</sub>                                                       | X <sub>5</sub>                   | X <sub>6</sub>              | X <sub>7</sub>                         | X <sub>8</sub>                             | X <sub>9</sub>                        | X <sub>10</sub>                                          | X <sub>11</sub>        | X <sub>12</sub>                | X <sub>13</sub>                                                 | X <sub>14</sub>                             | X <sub>15</sub>                                              |
| 1              | Bagalkot               | 20                                    | 923.53                                             | 16.37                                                                  | 7.26                                                                 | 3465.40                          | 18                          | 1                                      | 1                                          | 1                                     | 589                                                      | 64820                  | 1190                           | 7                                                               | 851278                                      | 1                                                            |
| 2              | Bangalore              | 8                                     | 221.15                                             | 4.24                                                                   | 11.33                                                                | 1194.57                          | 16                          | 1                                      | 1                                          | 1                                     | 548                                                      | 1834726                | 978                            | 46                                                              | 112536                                      | 1                                                            |
| 3              | Bangalore Rural        | 14                                    | 291.48                                             | 10.61                                                                  | 5.70                                                                 | 1587.30                          | 35                          | 1                                      | 1                                          | 1                                     | 241                                                      | 709658                 | 1417                           | 17                                                              | 813629                                      | 1                                                            |
| 4              | Belgaum                | 43                                    | 880.86                                             | 16.71                                                                  | 7.75                                                                 | 3664.73                          | 35                          | 1                                      | 1                                          | 1                                     | 284                                                      | 26132                  | 2371                           | 6                                                               | 820529                                      | 1                                                            |
| 5              | Bellary                | 20                                    | 879.25                                             | 10.84                                                                  | 7.73                                                                 | 4077.66                          | 27                          | 1                                      | 1                                          | 0                                     | 531                                                      | 28442                  | 1750                           | 8                                                               | 472966                                      | 1                                                            |
| 6              | Bidar                  | 14                                    | 815.43                                             | 14.69                                                                  | 6.13                                                                 | 4199.09                          | 30                          | 1                                      | 1                                          | 0                                     | 462                                                      | 86775                  | 753                            | 6                                                               | 199987                                      | 1                                                            |
| 7              | Bijapur                | 16                                    | 551.60                                             | 15.71                                                                  | 6.86                                                                 | 2998.78                          | 18                          | 1                                      | 1                                          | 1                                     | 194                                                      | 38108                  | 1349                           | 5                                                               | 823112                                      | 1                                                            |
| 8              | Chamarajnagar          | 7                                     | 293.71                                             | 10.29                                                                  | 5.91                                                                 | 1999.10                          | 16                          | 1                                      | 0                                          | 0                                     | 315                                                      | 11671                  | 927                            | 3                                                               | 186341                                      | 1                                                            |
| 9              | Chikballapur           | -                                     | -                                                  | -                                                                      | -                                                                    | -                                | -                           | -                                      | -                                          | -                                     | -                                                        | -                      | -                              | -                                                               | -                                           | -                                                            |
| 10             | Chikmangalur           | 17                                    | 2968.43                                            | 12.54                                                                  | 11.50                                                                | 9244.37                          | 32                          | 1                                      | 0                                          | 0                                     | 323                                                      | 56062                  | 1335                           | 5                                                               | 388709                                      | 1                                                            |
| 11             | Chitradurga            | 14                                    | 482.31                                             | 10.35                                                                  | 7.61                                                                 | 2952.55                          | 22                          | 0                                      | 0                                          | 1                                     | 380                                                      | 99518                  | 1439                           | 4                                                               | 504691                                      | 1                                                            |
| 12             | Dakshin Kannada        | 8                                     | 30.66                                              | 9.50                                                                   | 15.96                                                                | 9850.97                          | 17                          | 0                                      | 0                                          | 0                                     | 209                                                      | 32093                  | 1269                           | 4                                                               | 455822                                      | 1                                                            |
| 13             | Davangere              | 13                                    | 986.91                                             | 13.39                                                                  | 6.98                                                                 | 3338.20                          | 24                          | 1                                      | 0                                          | 0                                     | 608                                                      | 123337                 | 1172                           | 7                                                               | 587139                                      | 1                                                            |
| 14             | Dharwad                | 17                                    | 888.87                                             | 21.47                                                                  | 11.16                                                                | 8715.87                          | 14                          | 0                                      | 1                                          | 1                                     | 665                                                      | 74970                  | 2788                           | 5                                                               | 961982                                      | 1                                                            |
| 15             | Gadag                  | 22                                    | 870.33                                             | 23.65                                                                  | 8.33                                                                 | 4000.19                          | 11                          | 0                                      | 0                                          | 0                                     | 263                                                      | 42801                  | 2462                           | 7                                                               | 674795                                      | 1                                                            |
| 16             | Gulbarga               | 29                                    | 334.34                                             | 9.66                                                                   | 5.44                                                                 | 1160.32                          | 46                          | 1                                      | 0                                          | 0                                     | 729                                                      | 63152                  | 2805                           | 11                                                              | 593832                                      | 1                                                            |
| 17             | Hasan                  | 22                                    | 1024.10                                            | 11.22                                                                  | 9.18                                                                 | 4292.52                          | 38                          | 1                                      | 0                                          | 0                                     | 291                                                      | 148364                 | 2052                           | 8                                                               | 607549                                      | 1                                                            |
| 18             | Haveri                 | 18                                    | 782.58                                             | 20.19                                                                  | 6.61                                                                 | 3089.83                          | 19                          | 1                                      | 0                                          | 0                                     | 911                                                      | 38808                  | 2080                           | 5                                                               | 624518                                      | 1                                                            |
| 19             | Kodagu                 | 6                                     | 4501.94                                            | 14.47                                                                  | 20.17                                                                | 1261.30                          | 16                          | 1                                      | 1                                          | 1                                     | 581                                                      | 40107                  | 1167                           | 2                                                               | 93588                                       | 1                                                            |
| 20             | Kolar                  | 23                                    | 471.86                                             | 9.85                                                                   | 7.17                                                                 | 919.30                           | 53                          | 2                                      | 0                                          | 0                                     | 1072                                                     | 54924                  | 2371                           | 9                                                               | 539958                                      | 1                                                            |
| 21             | Koppal                 | 17                                    | 466.94                                             | 7.94                                                                   | 6.03                                                                 | 2716.52                          | 20                          | 0                                      | 0                                          | 0                                     | 237                                                      | 73383                  | 1251                           | 4                                                               | 589023                                      | 1                                                            |
| 22             | Mandya                 | 13                                    | 685.91                                             | 14.40                                                                  | 7.27                                                                 | 3195.22                          | 31                          | 1                                      | 1                                          | 1                                     | 206                                                      | 78875                  | 4549                           | 4                                                               | 488052                                      | 1                                                            |
| 23             | Mysore                 | 14                                    | 774.23                                             | 11.65                                                                  | 8.95                                                                 | 6282.08                          | 33                          | 1                                      | 0                                          | 0                                     | 186                                                      | 25339                  | 2074                           | 8                                                               | 776641                                      | 1                                                            |
| 24             | Raichur                | 15                                    | 638.13                                             | 7.89                                                                   | 5.52                                                                 | 2482.20                          | 37                          | 1                                      | 1                                          | 1                                     | 177                                                      | 83978                  | 996                            | 6                                                               | 488122                                      | 1                                                            |
| 25             | Ramanagar <sup>#</sup> | -                                     | -                                                  | -                                                                      | -                                                                    | -                                | -                           | -                                      | -                                          | -                                     | -                                                        | -                      | -                              | -                                                               | -                                           | -                                                            |
| 26             | Shimoga                | 19                                    | 943.12                                             | 14.40                                                                  | 9.33                                                                 | 5286.06                          | 40                          | 1                                      | 0                                          | 1                                     | 251                                                      | 25926                  | 1349                           | 10                                                              | 586910                                      | 1                                                            |
| 27             | Tumakur                | 33                                    | 330.63                                             | 10.71                                                                  | 7.30                                                                 | 1801.93                          | 50                          | 1                                      | 0                                          | 1                                     | 313                                                      | 40339                  | 2203                           | 9                                                               | 773410                                      | 1                                                            |
| 28             | Uttar Kannada          | 13                                    | 587.23                                             | 16.57                                                                  | 12.27                                                                | 2102.57                          | 35                          | 2                                      | 0                                          | 1                                     | 788                                                      | 119565                 | 3344                           | 4                                                               | 242535                                      | 1                                                            |
| 29             | Udupi                  | 8                                     | 367.15                                             | 5.76                                                                   | 18.3                                                                 | 7933.53                          | 9                           | 0                                      | 0                                          | 0                                     | 729                                                      | 56679                  | 700                            | 4                                                               | 221409                                      | 1                                                            |
| 30             | Yadagiri <sup>@</sup>  | -                                     | -                                                  | -                                                                      | -                                                                    | -                                | -                           | -                                      | -                                          | -                                     | -                                                        | -                      | -                              | -                                                               | -                                           | -                                                            |
| Mean Values    |                        | 17.1481                               | 851.5807                                           | 12.7804                                                                | 9.0278                                                               | 3844.8948                        | 27.4815                     | 0.8519                                 | 0.4074                                     | 0.4815                                | 447.5185                                                 | 151057.4815            | 1783.0000                      | 7.9259                                                          | 536261.5926                                 | 1.0000                                                       |
| Std.Dev.Values |                        | 8.1746                                | 899.0269                                           | 4.5541                                                                 | 3.8297                                                               | 2521.7336                        | 12.0076                     | 0.5338                                 | 0.5007                                     | 0.5092                                | 247.6818                                                 | 360370.0489            | 886.4911                       | 8.1991                                                          | 241164.5991                                 | 0.0000                                                       |
| Karnataka      |                        | 17.88                                 | 835.13                                             | 12.47                                                                  | 10.10                                                                | 4154.18                          | 27                          | 1                                      | 1                                          | 1                                     | 444.18                                                   | 83779                  | 1783                           | 5                                                               | 358493                                      | 1                                                            |

Note: \* Chikballapur (data clubbed with its parented District Kolar), # Ramanagar (data clubbed with its parented District Bangalore Rural) and @ Yadagiri (data clubbed with its parented District Gulbarga).

- These 03 districts are newly formed and its separate data is not available, the data is clubbed in to their parented districts.
- In X<sub>7</sub>, X<sub>8</sub>, X<sub>9</sub> and X<sub>15</sub> indicators column mentioned 1 for existence of centre and 0 for not existence of centre.

**Table No.2 : Levels of Agricultural Infrastructural Development in Karnataka State.**

| Degree of Development | Range Values of Factor Score | No. of Districts in each Category | Name of the District in the Particular Category on the basis of their Score Value                                                               |
|-----------------------|------------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| High                  | 1.570 to 2.066               | 03                                | Bangalore Urban, Belgaum and Bangalore Rural.                                                                                                   |
| Medium                | 1.075 to 1.570               | 15                                | Bagalkot, Mandya, Dharwad, Uttar Kannada, Kodagu, Bijapur, Raichur, Shimoga, Bellary, Tumakur, Kolar, Chikmangalur, Haveri, Gulbarga and Bidar. |
| Low                   | 0.580 to 1.075               | 09                                | Hasan, Mysore, Davangere, Chitradurga, Gadag, Dakshin Kannada, Udupi, Koppal and Chamarajnagar.                                                 |

For the present analysis it is initially assumed that all the 15 indicators influences on the agricultural development in the districts of Karnataka State in one or the other way. To show the correlation between agricultural development and 15 different types of indicators (see Table No:1) are processed through the SPSS package to obtain simple bi-variate product moment correlation coefficients to show the inter-variable relationships which are represented in the form of a matrix. It is observed from the matrix of correlation coefficients that all variables are not equally related to one another. Out of 15 indicators only 02 of them are significantly correlated at 5% level and 04 indicators are correlated at 1% level, these 06 dominant variables are;  $X_6$ . No. of Farm Contact Centers,  $X_{14}$ . No. of Agriculture Implements and Machinery,  $X_3$ . No. of Agricultural Cooperative Societies per lakh of Rural Population,  $X_7$ . Existence of Rural Development Centers,  $X_9$ . Existence of Farmers Training Centers and  $X_{12}$ . Length of Rural Roads in kms. While remaining 09 indicators are less and negative correlated to the agricultural development.

Here we have noted that, out of the 27 districts in the state, only 03 districts namely: Bangalore Urban, Bangalore Rural and Belgaum have performed high level in almost all the variables, whereas the 15 districts viz., Bagalkot, Bellary, Bidar, Bijapur, Chikmangalur, Dharwad, Gulbarga, Haveri, Kodagu, Kolar, Mandya, Raichur, Shimoga, Tumakur and Uttar Kannada have medium level of performance and 09 districts namely: Chamarajnagar, Chitradurga, Dakshin Kannada, Davangere, Gadag, Hasan, Koppal, Mysore and Udupi are having least performance in most of the variables. The situation is very worse in these 09 districts, because no infrastructural indicator performs more than 1% level significance.

#### **Conclusions:**

Though Karnataka State has achieved an impressive growth rate in the overall infrastructural development compared to other states in the country, the agricultural infrastructure development is not evenly distributed within the State. Assuming that the level of agricultural growth rate has a positive strong correlation with the overall development in general and the agricultural development in particular, the unequal distribution of infrastructure would result in regional imbalances affecting the welfare of the individuals. This provides a strong case for increasing the level of agricultural infrastructure in some of the districts that we have identified in Category-III, are lacking adequate level of infrastructure facilities. Moreover, as we have already seen in the analysis part mere existence of infrastructural indicators may not ensure agricultural growth even if we assume that there exists a strong correlation between level of infrastructure and agricultural output.

Since there is a strong empirical evidence to show that the level of infrastructure determines the economic development of a particular region, the regional disparities in the food production and employment generation that contribute to overall development can be attributed to lack of or adequacy of infrastructural development. Though Karnataka state performance in terms of many of the infrastructural indicators is relatively superior to other states, there exists lot of scope for improving the infrastructural provision in the agricultural sector so that increased food grains production could be realised in the coming years. Since the agricultural sector in the states contributes around 37 percent of the gross domestic product (GDP) and 3/4 of the rural population in the state depends on the agricultural sector, infrastructural bottlenecks can be a major constraint in alleviating the overall poverty in the state. Keeping this in mind, the state government has to continue to invest in rural infrastructural facilities. Apart from this, the government should develop necessary institutions to attract private investment in some of the areas where there is a scope for the private sector to play a role.

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