



AN ECONOMIC ANALYSIS OF ROAD NETWORK IN INDIA

Economics

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ABSTRACT

Road transport is the primary mode of transport which plays an important role in conveyance of goods and passengers and linking the centers of production, consumption and distribution. It is also a key factor for promoting socio-economic development in terms of social, regional and national integration. Road Transport was the most dominant in share in Gross Value Added, as compared to its other counterparts within the Transport Sector. An efficient road network of connectivity is a prerequisite for overall economic growth and development. In this paper an attempt has been made to analyze the road network in India. The study is based on secondary data collected from secondary sources.

KEYWORDS

Road transport, production, consumption and distribution, socio-economic development, National and State Highways

Introduction

Transport sector like in India is a very extensively system, comprising different modes of transport like roads, railways, aviation, inland waterways and shipping, which facilitates easy and efficient conveyance of goods and people across the country. The percentage share of entire Transport Sector in Gross Value Added in 2011-12 was 4.92 per cent. It increased to 4.99 per cent in 2014-15, recording an increase of 0.07 percentage points as compared to 2011-12. The percentage share of Railways in Gross Value Added in 2011-12 was 0.75 per cent. It increased to 0.81 per cent in 2014-15, recording an increase of 0.06 percentage points as compared to 2011-12. The percentage share of Road Transport in Gross Value Added in 2011-12 was 3.24 per cent. It increased to 3.28 per cent in 2014-15, recording an increase of 0.04 percentage points as compared to 2011-12. Road Transport was the most dominant in share in Gross Value Added, as compared to its other counterparts within the Transport Sector, during the period under consideration (Government of India, 2011-12).

Road transport is the primary mode of transport which plays an important role in conveyance of goods and passengers and linking the centers of production, consumption and distribution. It is also a key factor for promoting socio-economic development in terms of social, regional and national integration. During 2001 to 2015, we have seen a Compound Annual Growth Rate of 3.52% in Total road length in India. During this period, more 2098624.255 Kms. added towards total road length in India (Government of India, 2012-13).

Review of Literature

Effective transportation is indispensable to economic progress. Extraction, manufacturing, merchandise and banking are also necessary, but these businesses almost depend upon transportation (Seema Jain and Pawan Kumar Dhiman, Sep 2017). Transport Systems pose a continuous trade-off between time and money cost, so that a city can choose a fast system with a high money cost per mile or a slower, cheaper system (Selod H, 2004). Transport is both incentives and disincentives are needed to promote the use and sustainability of Public transport. Incentives include better quality and more comfortable public transport with higher frequency of trips, low waiting time and a unified public transport system. Disincentives for private transport (Mitra R, 2012).

Methodology

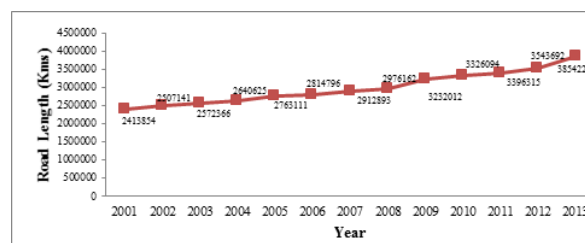
The present study uses Secondary data. The analytical tools and techniques have been used for analysis and interpretation of data. Secondary data collected from Indian Government reports such as Central Statistical Organization, Basic Road Year Book 2012-13, Basic Road Statistics and Indian Economic Survey. Statistical results are worked out with the help of SPSS.

Road Network in India

Road network and efficient communication is vital to the economic development trade and social integration. An efficient road network of connectivity is a prerequisite for overall economic growth and development. India has a road network of over 5,472,144 Kms as on

2015, had the second largest road network in the world (Government of India, 2015-16). This road length includes National Highways (NHs), State Highways (SHs), Rural and Urban Roads.

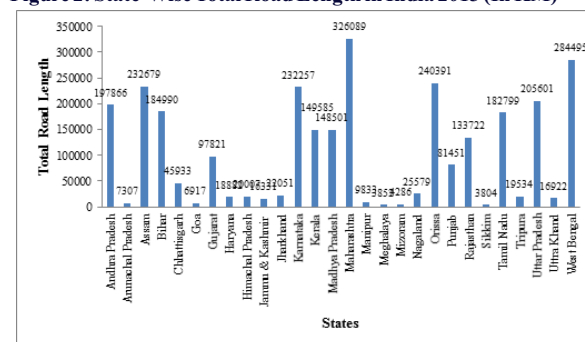
Figure 1: Total Road Length in India (In Km)



Source: Basic Road Statistics of India 2013-14, Ministry of Road Transport and Highways, GOI.

In the above table and graph shows that the total length of road in India as per 2001 is 2413854 kms where National highways is 57737 kms, state highways is 132100 kms, rural roads are 1972016 kms and urban roads are 252001 kms urban road spread more than other categories. The length has been increased comparatively till the year 2013, national highways 79116 kms, state highways 169227 kms, rural roads 3159639 kms, urban roads 446238 kms total length increased up to 3854200 kms. This shows the gradual increased length of the roads.

Figure 2: State-Wise Total Road Length in India 2013 (In KM)



Source: Basic Road Statistics of India 2013-14, Ministry of Road Transport and Highways, GOI

In the above table and graph shows that Maharashtra recorded the highest road length 326089 kms as on 2013. The five states with the largest road network viz. Maharashtra, West Bengal, Orissa, Assam and Karnataka accounted for 40 per cent of the total road length of the country.

Independent Sample Test for Road Length in India

The following section has been attempted to analyze the independent sample test for comparison of National Highways, State Highways, Rural and urban roads in India.

A) Road Length of National and State Highways in India (Km)

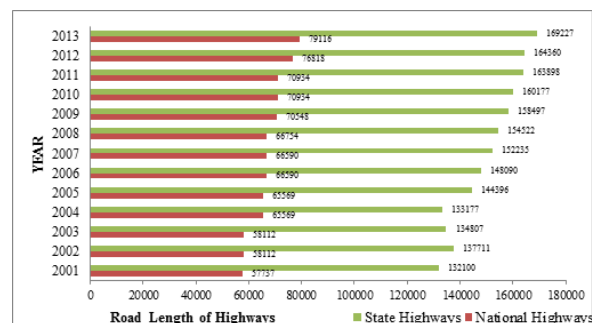
The main highways running through the length and breadth of the country connecting major ports, state capitals, large industrial area and tourist centers etc. National Highways in India are designated as NH followed by the highway number. Indian national highways are further classified based on the width of carriageway of the highway. As of March 2016, India had completed and placed in use 1,01,011 km of national highways. State Highways provide linkages with the National Highways, district headquarters, important towns, tourist centers and minor ports and carry the traffic along major centers within the state.

Table 1: Independent Samples Test for Road Length of National and State Highways in India (Km)

Description	Levene's Test for Equality of Variance		t-test for Equality of Means			
	F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference
Equal variances assumed	8.653	.007	-20.649	24	.000	-83062.615
Equal variances not assumed			-20.649	18.014	.000	-83062.615

The above table 1 shows the road length of National and State Highways in India. The road length of National Highways in India was 6.724 and State Highways were 1.505. The difference between the two is 83062.615. It is found from F-test that the variance between the two groups is significant. Therefore, equal variance was not assumed. It is significant at 5 percent level. Therefore, alternative hypothesis accepted that means significant difference in the total road length between NH and SH is accepted.

Figure 3: Road Length of National and State Highways in India (In Km)



Source: Basic Road Statistics of India 2013-14, Ministry of Road Transport and Highways, GOI

As on 2013, the length of National Highways in India was 79116 Kms. It accounted for 1.79 per cent of the total road length in India as on same time period. As on 2015, the length of State Highways in India was 169227 Kms. It accounted for 3.05 per cent of the total road length in India as on same time period. Therefore, NH and SH both are increased in 2013.

B) Road Length of Urban and Rural Roads in India

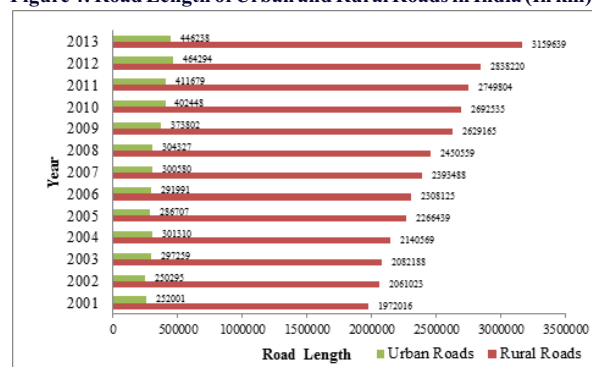
The rural roads in India form a substantial portion of the Indian road network, constituting 70.23 per cent of the total roads in India (as of March 2013). As of March 2013, the percentage of surfaced rural roads to the total rural road length was 66.15 per cent. Many rural roads are of poor quality, potholed, and unable to withstand the loads of heavy farm equipment. These roads are also far from all-season, good quality 2-lane or 4-lane highways, making economic resource flow slow, and logistical costs between different parts of India one of the highest in the world.

Table 2: Independent Samples Test for Road Length of Rural and Urban Roads in India (Km)

Description	Levene's Test for Equality of Variance		t-test for Equality of Means			
	F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference
Equal variances assumed	17.809	.000	21.012	24	.000	2104526.077
Equal variances not assumed			21.012	13.020	.000	2104526.077

The above table 2 shows the road length of National and State Highways in India. The road length of rural road in India was 2.446 and urban road was 3.375. The difference between the two is 2104526.077. It is found from F-test that the variance between the two groups is significant. Therefore, equal variance was not assumed. It is significant at 5 percent level. Therefore, alternative hypothesis accepted that means significant difference in the total road length between rural and urban road is accepted.

Figure 4: Road Length of Urban and Rural Roads in India (In Km)



Source: Basic Road Statistics of India 2013-14, Ministry of Road Transport and Highways, GOI

During 2001 to 2013, to estimated 4.51 per cent in length of Urban Roads in India. The length of Urban Roads in India as on 2001 and 2013 were 252001 Kms. and 446238 Kms. respectively. During 2001 to 2013, the growth rate is estimated 3.93 per cent in length of rural roads in India. The length of Rural Roads in India as on 2001 and 2013 were 1972016 Kms. and 3159639 Kms. respectively.

Conclusion

The growth of Road network in India has not kept pace with the requirements. It is a recognized fact that modernization of infrastructure, especially transportation plays a vital role in enhancing the growth rate of any region. It is important to recognize the fact that road connectivity to rural areas is a must for improving the socio-economic conditions of the rural people. The major objectives of the road sector development should aim towards creating adequate capacity to match the demand, all weather roads for all villages, modernization of construction activities and appropriate strategies to maintain the road networks. In this study found that the road length has been increased in India. In the road length of national highways 79116 kms, state highways 169227 kms, rural roads 3159639 kms, urban roads 446238 kms and total length increased up to 3854200 kms. In India, Maharashtra recorded has the highest road length was 326089 kms.

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