
STRENGTHENING INFRASTRUCTURE GOVERNANCE THROUGH SUSTAINED ROAD SECURITY MEASURES

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ABSTRACT

Strengthening of road transport and its governance .ie the application of corporate governance in the sector is the need of the hour .Even though India is in the verge of becoming the third largest economy and a developed country, still road transport is very significant and the nation is obliged to protect traditional resources for gaining a competitive edge in the war stricken modern world. To get a better understanding about the reality a lot of researchers have to be carried out in the field of road Governance .But unfortunately number of studies are very less in this vital area, Therefore researchers have conducted the research in the said area .Data about road governance and other vital statistics have been collected from the website of Ministry of Rod Transport and its Annual Report for the year 2021-2022.Data have been collected as Primary data. Statistical Analysis techniques like Correlation analysis and Regression analysis have been carried out to get a better understanding about the research area. Researchers have a fitted a correlation model and a significant Regression model between the dependent and independent variables.

Key Words: *Road Transport, Governance, Ministry of Road Transport, Annual Report, Road Governance.*

INTRODUCTION AND STATEMENT OF PROBLEM

Road transport is a significant one with respect to the transportation, communication and logistics aspects related with commerce and industry in India. Allocated amounts are to be spend to get a better insight into the efficiency of the authorities. Besides scientific statistical analysis have to be carried to understand the relationship

between the Number of persons killed and Number of Two Wheelers, Number of Cars and Jeeps, Number of buses, Number of goods vehicles, Number of other Vehicles, Number of accidents and the Number of fatal accidents in India. That type of study will help the society and the government to understand the gravity of the problem and find its solutions.

OBJECTIVES

1. To understand the relationship between the amount allocated and the amount released by the Ministry of Road Transport and Highways from the Central Road & Infrastructural Fund(CIRF) for the development of roads in different States and Union Territories in India.
2. To understand the relationship between the Number of persons killed and Number of Two Wheelers, Number of Cars and Jeeps, Number of buses, Number of goods vehicles, Number of other Vehicles, Number of accidents and the Number of fatal accidents.

REVIEW OF LITERATURE

Infrastructure governance is crucial to make sure that public investment will lead to strengthening infrastructure resilience (“OECD recommendation on the governance of infrastructure,”n.d.). Recommendations on the governance of infrastructure provide guidance to make investment decisions. The recommendations include guarding fiscal sustainability, ensuring efficient procurement of projects and effective stakeholder participation, bringing efficiency in regulatory framework etc. OECD (2017) states in “ Infrastructure governance” , in Government at a

glance that infrastructure governance means interaction between government institutions and private sector users. The article shows that the key element for successful infrastructure development is strategic long term planning. Government should prepare a shortlist of priority projects based on cost-benefit analysis. But these processes are influenced by political motivation. Strong citizens or businesses influence investment decisions but in the funding and approval of projects they have no role.

Schwartz et al.(2020) found that meeting public investment needs is quite difficult. Infrastructure spending can be increased using various options but all these options have their own limitations. By cutting waste in infrastructure spending government can get much more out of the public funds they spend. Right institutions should be put in place to plan and implement project efficiently to meet priority investment needs.

Wegrich et al.(2017) states that infrastructure investments that channel funds towards constituencies do not offer high economic and social returns. They further found that existence of a good national infrastructure plan or use of cost benefit analysis or risk

management tools alone is not a reliable predictor of good infrastructure governance. Infrastructure governance remains inherently influenced by political logics. In order to manage reoccurring challenges, a more systematic engagement of particularly institutional factors is needed.

The observations found (“Why Infrastructure governance matters,”2020) delivery of services through economic and social infrastructure is one of the most important functions of government. Mere increase in infrastructure finance is not enough. Resources must be well spent. It also states that budget and budget tools should be used to ensure quality spending. Fiscal rules will help to improve planning, coordination and flexibility of capital budgets. They can help to place limits on government spending and debt accumulation to a great extent.

HYPOTHESIS

1. **H₀**: There is no correlation between the amount allocated and the amount released by the Ministry of Road Transport and Highways from the Central Road & Infrastructural Fund (CIRF) for the development of roads in different States and Union Territories in India.

2. **H₀**: There is no linear association between the Number of persons killed and Number of Two Wheelers, Number of Cars and Jeeps, Number of buses, Number of goods vehicles, Number of other Vehicles, Number of accidents and the Number of fatal accidents.

V. Methodology of the Study

Researchers have applied the following softwares to analyze the data. Both Correlation and Multiple Regression methods have been applied to analyze the data or prove the hypothesis. The researchers have applied the following software to analyze the data. Data collected from the website of the Ministry of Road Transport and Highways. Data has been collected during the period 2000-2001 to 2021-2022.

- a. SPSS.

THEORETICAL FRAMEWORK

New and innovative programmes like Prime Minister’s Gati Sakthi Programme, Bharatmala (Annual Report 2021-2022,2022 .p.2) are the ambitious projects of Government of

India. Following are the important acts related with the research area.

1. The Control of National Highways (Land and Traffic) Act 2002.
2. The Carriage by Road Act 2007
3. The National Highway Authority of India Act 1988
4. The National Highways Authority of India (the term of office and other conditions of service of Members) Rules 2003 & its amendments.
5. Other Related Acts.
6. The Motor Vehicles Act, 1988
7. The Central Motor Vehicles .1988
8. The Central Mortor Vehicles Rules, 1989
9. The Central Road and Infrastructure Fund Act 2000

(<https://morth.nic.in/control-national-highways-land-and-traffic-act-2002-2> n. d.).

Ministry of Road Transport and Highways is an organization which formulate and administer different plans related with Road Transport and National Highways .Besides,it undertakes different types of researches related with Road Transport and National Highways .The apex institution takes into consideration the opinion of State Government ,Individuals and different organizations related with Road Transport and National Highways apart from the opinion of the Central Government . (<https://morth.nic.in/control-national-highways-land-and-traffic-act-2002-2> n. d.).

DATA ANALYSIS.

Table No: 1 Amount allocated and the amount released by the Ministry of Road Transport and Highways from the Central Road & Infrastructural Fund (CIRF)

Amount in Rs. crore			
Sr. No.	Year	Allocation	Release
1.	2000-01	985.00	332.01
2.	2001-02	962.03	300.00
3.	2002-03	980.00	950.28
4.	2003-04	910.76	778.94
5.	2004-05	868.00	607.40
6.	2005-06	1,535.36	1,299.27
7.	2006-07	1,535.46	1,426.29
8.	2007-08	1,565.32	1,322.19
9.	2008-09	1,271.64	2,122.00
10.	2009-10	1,786.56	1,344.98
11.	2010-11	2,714.87	2,460.29
12.	2011-12	2,288.65	1,927.39
13.	2012-13	2,359.91	2,350.37
14.	2013-14	2,359.91	2,226.60
15.	2011-12	2,642.63	2,094.78
16.	2015-16	2,852.64	2,369.47
17.	2016-17	7,175.00	5,069.82
18.	2017-18	6,744.07	6,367.11
19.	2018-19	6,998.93	6,784.50
20.	2019-20	7,421.58	6,868.66
21.	2020-21	6,820.00	6,613.30
22.	2021-22	6,945.22	4,948.38

(Source: https://morth.nic.in/sites/default/files/Annual%20Report_21-22-1.pdf.pp:101)

The above table depicts amount allocated and the amount released by the Ministry of Road Transport and Highways from the Central Road & Infrastructural Fund (CIRF) for the development of roads in different States and Union Territories in India during the Research period. The table is taken

from the website of Ministry of Road Transport and Highways. The Central Road & Infrastructural Fund (CIRF) is a fund is a fund created as per Central Road & Infrastructural Fund (CIRF) Act 2000 for the purpose of the development and maintenance of National Highway works in India.

Table No: 2

Total Number of Registered Motor Vehicles in India: 2003-2019

(in thousands)

Year (As on 31 st March)	All Vehicles	Two Wheelers*	Cars, Jeeps and Taxis	Buses@	Goods Vehicles	Others*
1	2	3	4	5	6	7
2003	67,007	47,519	8,599	721	3,492	6,676
2004	72,718	51,922	9,451	768	3,749	6,828
2005	81,499	58,799	10,320	892	4,031	7,457
2006	89,618	64,743	11,526	992	4,436	7,921
2007	96,707	69,129	12,649	1,350	5,119	8,460
2008	105,353	75,336	13,950	1,427	5,601	9,039
2009	114,951	82,402	15,313	1,486	6,041	9,710
2010	127,746	91,598	17,109	1,527	6,432	11,080
2011	141,866	101,865	19,231	1,604	7,064	12,102
2012	159,491	115,419	21,568	1,677	7,658	13,169
2013	176,044	127,830	24,056	1,814	8,307	14,037
2014	190,704	139,410	25,998	1,887	8,698	14,712
2015	210,023	154,298	28,611	1,971	9,344	15,799
2016	230,031	168,975	30,242	1,757	10,516	18,541
2017	253,311	187,091	33,688	1,864	12,256	18,411
2018	272,587	202,755	36,453	1,943	12,773	18,663
2019	295,772	221,270	38,433	2,049	13,766	20,254
CAGR (2009 to 2019)	9.91	10.38	9.64	3.27	8.58	7.63

P-Provisional

*Others include tractors, trailers, three wheelers (passenger vehicles)/LMV and other miscellaneous vehicles for which category-wise break up is not reported by State/UT.

(Source: https://morth.nic.in/sites/default/files/Annual%20Report_21-22-1.pdf.pp.99)

The above table depicts number of different types of vehicles in India during the Research period. The table is taken from the website of Ministry of Road Transport and Highways.

Table No: 3

Number of Road Accidents and Persons Involved: 2005 to 2019

Year	Number of Accidents Total	Fatal	Number of Persons Killed	Injured
2005	439,255	83491 (19.0)	94,968	465,282
2006	460,920	93917 (20.4)	105,749	496,481
2007	479,216	101161 (21.1)	114,444	513,340
2008	484,704	106591 (22.0)	119,860	523,193
2009	486,384	110993 (22.8)	125,660	515,458
2010	499,628	119558 (23.9)	134,513	527,512
2011	497,686	121618 (24.4)	142,485	511,394
2012	490,383	123093 (25.1)	138,258	509,667
2013	486,476	122589 (25.2)	137,572	494,893
2014	489,400	125828 (25.7)	139,671	493,474
2015	501,423	131726 (26.3)	146,133	500,279
2016	480,652	136071 (28.3)	150,785	494,624
2017	464,910	134796 (29.0)	147,913	470,975
2018	467,044	137726 (29.5)	151,417	469,418
2019	449,002	137689 (30.7)	151,113	451,361

Note: Figures in parentheses indicate share of fatal accidents in total accidents

(Source: https://morth.nic.in/sites/default/files/Annual%20Report_21-22-1.pdf.pp109)

The above table depicts number of people killed due to road accidents during the Research period. The table is taken from the website of Ministry of Road Transport and Highways.

H₀: There is no correlation between the amount allocated and the amount released by the Ministry of Road Transport and Highways from the Central Road & Infrastructural Fund (CIRF) for the development of roads in different States and Union Territories in India.

Researchers applied Normality tests with respect to the data. The following tests have been applied.

1. Kolmogorov-Smirnov Test
2. The Shapiro-Wilk Test.

3. **Normal Q-Q Plots**

But the results are in negative direction. Therefore the researchers applied Non Parametric Test like Spearman Test to analyze the data. Results are as follows.

**Table No:4
Correlations**

	Allocated Amount	Released Amount
Spearman's rho		
Allocated Amount	1.000	.941**
Correlation Coefficient		
Sig. (2-tailed)	.	.000
N	22	22
Released Amount	.941**	1.000
Correlation Coefficient		
Sig. (2-tailed)	.000	.
N	22	22

** . Correlation is significant at the 0.01 level (2-tailed).

(Source: Data from the website of Ministry of Road Transport and Highways)

Here is the Correlation is very high .Besides, it is a positive correlation .Value of Spearman's Correlation Coefficient is 0.941.P value is 0.000(p<0.005).Therefore null hypothesis is rejected and hence it is found that positive correlation between the amount allocated and the amount released by the Ministry of Road Transport and Highways from the Central Road & Infrastructural Fund

(CIRF) for the development of roads in different States and Union Territories in India.

H₀: There is no linear association between the Number of persons killed and Number of Two Wheelers, Number of Cars and Jeeps, Number of buses, Number of goods vehicles, Number of other Vehicles, Number of accidents and the Number of fatal accidents.

The researchers applied Multiple Regression Analysis to analyze the data.

List of Independent Variables

Table No: 5

Number of persons killed
Number of Two Wheelers
Number of Cars Jeeps
Number of buses
Number of goods vehicles
Other Vehicles
Number of accidents
Number of fatal accidents

(Source: Data from the website of Ministry of Road Transport and Highways)

List of Dependent Variables

1. Number of persons killed.

Following are the results of analysis.

Table No: 6
Descriptive Statistics

Particulars	Mean	Std. Deviation	N
Number of persons killed	1.3337E5	17569.48662	15
Number of Two Wheelers	1.2406E5	52997.65911	15
Number of Cars Jeeps	2.2610E4	9322.29983	15
Number of buses	1.6160E3	344.67252	15
Number of goods vehicles	8.1361E3	3075.03386	15
Other Vehicles	1.3290E4	4337.67281	15
Number of accidents	4.7847E5	18525.38197	15
Number of fatal accidents	1.1912E5	16716.94984	15

(Source: Data from the website of Ministry of Road Transport and Highways)

Table No: 7
Variables Entered/ Removed^b

Model	Variables Entered	Variables Removed	Method
1	Number of fatal accidents, Number of accidents, Number of buses, Other Vehicles , Number of Cars Jeeps , Number of goods vehicles, Number of Two Wheelers ^a		. Enter

a. All requested variables entered.

b. Dependent Variable: Number of persons killed

(Source: Data from the website of Ministry of Road Transport and Highways)

Table No: 8.
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.997 ^a	.993	.987	2030.34913

(Source: Data from the website of Ministry of Road Transport and Highways)

a. Predictors: (Constant), Number of fatal accidents, Number of accidents, Number of buses, Other Vehicles , Number of Cars Jeeps , Number of goods vehicles, Number of Two Wheelers

The value of R Square is 0.993 .Therefore independent variables explain 99.3% of the variability of dependent variable. R Square value is significant.

Table No: 9.
ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.293E9	7	6.133E8	148.764	.000 ^a
	Residual	2.886E7	7	4122317.607		
	Total	4.322E9	14			

(Source: Data from the website of Ministry of Road Transport and Highways)

a. Predictors: (Constant), Number of fatal accidents, Number of accidents, Number of buses, Other Vehicles , Number of Cars Jeeps , Number of goods vehicles, Number of Two Wheelers

b. Dependent Variable: Number of persons killed

The F-ratio in the ANOVA table tests whether the overall regression model is a good fit for the data. The table shows that the independent variables statistically significantly predict the dependent variable, $F(7,7) = 148.764$, $p < .0005$ (i.e., the regression model is a good fit of the data).

Table No: 10
Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	35084.583	73474.327		.478	.648
Number of Two Wheelers	-.193	.353	-.583	-.548	.601
Number of Cars Jeeps	.629	1.848	.334	.340	.744
Number of buses	1.000	8.376	.020	.119	.908
Number of goods vehicles	-.735	3.704	-.129	-.199	.848
Other Vehicles	-.275	1.690	-.068	-.163	.875
Number of accidents	-.127	.243	-.134	-.522	.618
Number of fatal accidents	1.483	.593	1.411	2.501	.041

a. Dependent Variable: Number of persons killed

(Source: Data from the website of Ministry of Road Transport and Highways)

From the above table, researchers conclude that all the independent variables are statistically significant and they can predict the dependent variable.

FINDINGS

1. It is found that there is very high positive correlation between the amount allocated and the amount released by

the Ministry of Road Transport and Highways from the Central Road & Infrastructural Fund (CIRF) for the

development of roads in different States and Union Territories in India.

2. It is found that there is linear association between the Number of persons killed and Number of Two

CONCLUSION

It is concluded the event though the concerned departments are very much efficient in spending their allocated amounts, Cent percentage spending is not a reality .Further studies are needed to understand the reasons .Besides to control casualties due to road accidents , we have to reduce the number of vehicles on roads.

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Wheelers, Number of Cars and Jeeps, Number of buses, Number of goods vehicles, Number of other Vehicles, Number of accidents and the Number of fatal accidents.

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