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Cost Management Practices in Passenger Road Transport Undertakings in Karnataka

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ABSTRACT

Transportation plays a vital role in the economic development of a country. In India, the cost of transportation is huge due to several reasons. The study is conducted from the cost management perspective with special reference to Passenger Road Transport undertakings in Karnataka state. The aim of the paper is to study the relationship between Operating cost and Total cost in the passenger road transportation of Public Sector undertakings and Private sector undertakings. 6 Passenger Road Transport Undertakings are selected for the study purpose. In Public sector KSRTC, NEKRTC and NWKRTC are selected and in Private sector operators are selected on the basis of the ownership, which are registered in the state as a Public Limited Companies before March 31st 2010, those are S.G.M.T,Co. Ltd. Sagara, Shivamogga Dist (1944) and VRL logistics Ltd, Hubballi. (1983) Transport in Co-operative Services (TCS-Sahakara Sarige) koppa, Chikkamagalur dist. (1991). The objective of the study are to study the

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Operating cost and its relationship between total cost along with its profitability in passenger road transportation of Public Sector and Private sector undertakings.

Secondary data were collected from published sources like Annual administration reports of the undertakings, Govt bulletins. Collected data were tabulated and cost per Kilometre is taken into consideration for comparison purpose. Secondary Data regarding operating cost were classified on the basis of five major parameters like a) Labour cost, b) Material cost, c) Tax cost, d) Depreciation cost and e) Administration and General Expenses. The data regarding revenue; cost incurred by the undertakings were collected for 6 consecutive years from 2010-11 to 2015-16. Both descriptive and inferential statistics applied for the data analysis. Employee /Labour cost and Material Cost (Fuel, oil and Lubricants, tyres ,tubes and Spare parts) are significantly differ in both the public sector and private sector undertakings than Tax Cost, Depreciation on Vehicles and Administrative Expenses & General charges. Hypothesis is accepted there is no significant difference in the relationship between total cost and operating cost in the passenger road transportation of Public Sector and private sector undertakings. Hypothesis is accepted that there is no significant difference in the cost and profitability of passenger road transportation of Public Sector and private sector undertakings.

Some suggestions are given to reduce the Labour cost like Administrative cost can be controlled by streamlining systems in accounting, establishment and personnel etc. Adoption of time and motion study, works study and methods should be followed to reduce the repairs and maintenance staff. **Measures to control material cost:** Measures for improvement like Watching on the vehicles giving less than 4.5 kms per litre of diesel (kmpl), concentration on vehicles having less than 4.0 kmpl. Classification of driver wise kmpl performance will help to group the drivers into ABC to bring in focus the drivers who need training and persuasion. Incentive scheme may be developed to motivate the workers at depot level for fuel economy. Study concluded that passenger road transport undertakings should develop their own strategy to control these costs.

Key Words: Passenger road transport, operating cost, total cost, labor cost, material cost.

1) Introduction

Transportation plays a vital role in the economic development of a country. The cost of transportation is huge due to several reasons. Hence, need arises to study the cost management in the passenger road transportation sector. The study is conducted from the cost management perspective with special reference to few passenger road transport undertakings operating in Karnataka state. The topic of the thesis is broadly relating to the area of passenger road transportation sector with special focus on cost aspect in selected passenger road transport undertakings.

Meaning of Transportation

Transport or transportation is the movement of people, animals and goods from one location to another. Modes of transport include air, rail, road, water, cable, pipeline and space. The field can be divided into infrastructure, vehicles and operations. Transport is important since it enables trade between people, which in turn establishes civilizations.

Road transport (British English) or **road transportation** (American English) is the transport of passengers or goods on roads.

Passenger Road Transport Enterprise/Undertaking

Road transport enterprise offering and performing services in the transport of one or more persons (passengers), not including the driver, and whose main activities in the field of road transport, according to value-added, is road passenger transport.

2. Transport Sector in Karnataka

Karnataka, a state in South India has a well-developed transport system. The road transport is well developed in the state with many National and State highways providing means for fast transportation. Buses, cars and trains are the means of transport for moving across distant places in Karnataka. For transportation within the city or town limits; motorbikes, cars, auto rickshaws and buses are used.

The public bus transport in Karnataka is managed by the Karnataka State Road Transport Corporation (KSRTC). It was set up in 1961 with the objective of providing adequate, efficient, economic and properly coordinated road transport services. For better management of public transport, KSRTC was bifurcated into three Corporations viz., Bangalore Metropolitan Transport Corporation, Bengaluru on 15th Aug 1997, North-west Karnataka Road Transport

Corporation, Hubballi on 1st Nov 1997 and North-East Karnataka Road Transport Corporation, Gulbarga on 1st Oct 2000. Buses run by private persons are allowed to operate in few districts of Karnataka. Inter district transportation are run by private operators, connecting capital Bangalore and main cities like Mangalore and Dharwad to district headquarters. Intra district transportation by private operators is currently allowed in Dakshina Kannada, Shivamogga, Chitradurga, Chikkamagalur and Udupi districts.

3. Significance of the Study

- The study analyzes the various elements of cost incurred in the passenger road transport sector.
- The study provides the benefit for the state Road Transport Undertakings to know the ways and means of reducing the cost as well as fixing an adequate fare during all the seasons.
- The study is ultimately benefiting to the public as well passengers who are mainly depending on the passenger road transportation, through the fixation of fair fares**.**

4. Statement of the Problem

- In India, the cost of operation in the Passenger Road transportation sector is increasing tremendously due to various reasons like, hike in the prices of the petroleum products, increase in the cost of labour, administration and other overheads etc. Raising the passenger fares again and again will adversely affect on the middle class people who are mainly depending on the public road transportation.
- Material and personnel costs, constituted higher share both in total cost of operation and revenue and shows that they have recorded increasing trend (R.R Krishna, S Annamalai, 2005).
- Performance of the STUs have not improved over the earlier three years. Fleet size, Total staff cost and Fuel consumption cost were showing an increasing trend.(Shivi Agarwal, 2009).
- Corporations have to concentrate more on the cost factors which are fully within the control of the corporations and they should lay greater emphasis on the cost management (Mahalingu and Dr J Madegowda, 2012).

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Therefore, a study is undertaken to find out the relationship between total cost and operating cost along with profitability. Some suggestions are recommended to reduce the unnecessary cost through adoption of some cost control techniques.

5. Scope of the Present Study.

The present research study is confined to few Passenger Road Transport Undertakings in Karnataka state only. The passenger Road transport undertakings included public sector passenger road transport undertakings (KSRTC, NEKRTC, and NWKRTC) and few big private passenger road transport corporations that are carrying the passengers on route permit basis as well as tourist basis.

6. Research Location and Rationale

The Research is conducted within the state of Karnataka. 6 Passenger Road Transport Undertakings are selected for the study purpose. The following criteria is used for the Selection of the undertakings. **Three from the Public Sector and three from the private sector.**

Justification for the selection of Sample undertakings

In Public sector 4 Public sector undertakings are operating in Karnataka at present. KSRTC, NEKRTC and NWKRTC are selected for the study purpose. BMTC is not taken into consideration for the study purpose, because it is operating in the city area only and its cost components are different from other Public sector undertakings. In Private Sector, passenger Road Transport undertakings were selected on the basis of their ownership pattern, i.e only Public Limited Companies and Co-operative Society registered in Karnataka state before March 31st 2010 is considered. Only 2 companies registered before 31st March 2010. They are **1) S.G.M.T,Co. Ltd**. Sagara, Shivamogga Dist (1944) **2) VRL** logistics Ltd, Hubballi. (1983). In **co-operative sector** 3) Transport in Co-operative Services **(TCS-Sahakara Sarige) koppa**, Chikkamagalur dist. (1991).

Period of the Study.

The research was conducted for a time span of five years. The data regarding revenue; cost incurred by the undertakings were collected for 6 consecutive years from 2010-11 to 2015-16. There is no significance in selecting the period except the availability of data consistency.

7. Review of Literature

Review of Literature is conducted to identify the research gap and to formulate the conceptual framework on the topic.

Made Gowda (1999) studied the implication of cost of concessional Travel on the working of State Road Transport Corporations (SRTCs) in India. Examined 36 SRTCs and found that the cost of concessional travel had remarkable bearing on the profit of the STUs and suggested that the Government should subsidise the same.

Vohra (1999) made an analytical study about the growing role of private Sector in passenger road transport service. He revealed that the private bus operators control the lion's share (around 77 per cent) in the bus transport operations and this share is on the increase. He suggested that public sector should hire buses from private operators and concluded that, both public and private sector should join together and play a complimentary role.

Raghbendra Jha, Sanjay Kumar Singh (2000) Attempted to measure cost-inefficiency of nine major Indian State Road Transport Undertakings (STU) for the period 1983-84 to 1996-97. Found that given the size distribution of the STUs and relevant measures of their working conditions, the potential for reduction in cost inefficiency was very high. Study found that there has been stability in the cost-inefficiency ranks across STUs.

R.R Krishna, S Annamalai, (2005) Presented an analysis of the structure of total cost of operation and variations in the proportions of various cost components of selected STC's in Tamil Nadu. He found that Material and personnel costs, constituted higher share both in total cost of operation and revenue and shows that they have recorded increasing trend.

Shivi Agarwal, (2009) measured technical and scale efficiencies of public transport sector in India from the years 2004-05 to 2007-08. Efficiencies of the STUs were measured by applying

the DEA Model with categorical DMUs (STUs transported in Rural, Hill and Urban area). Concluded that performance of the STUs have not improved over the earlier three years and Fleet size, Total staff and Fuel consumption were considered as inputs and Passenger kilometers as output.

Mahalingu and Dr J Madegowda (2012), 19 State Road transport corporations were selected for the study and 5 years data (2004-05 to 2008-09) regarding operating costs and non-operating costs were taken. Relative shares of each major element of cost (personnel cost, material cost, depreciation, motor vehicle taxes and non-operating cost) to total cost are computed. Suggested that corporations have to concentrate more on the cost factors which are fully within the control of the corporations and they should lay greater emphasis on the cost management.

The survey of various literatures, authored by various authors' emphasis on the Importance of public transport for the economic development of any nation. They examined ***various factors which influence on the cost of public transport, like material cost, labour cost and other administrative overheads,*** *etc in a different manner. Literature also revealed that the public sector transport undertakings* ***should reduce the unnecessary cost to run their organisations without loss.***

8. Objectives of the Study

1. To study the Operating cost in passenger road transportation of Public Sector and Private sector undertakings.
2. To study the relationship between Operating cost and Total cost in the passenger road transportation of Public Sector undertakings and Private sector undertakings.
3. To study the Profitability of passenger road transportation of Public Sector and Private sector undertakings, considering the revenue generated.

9. Hypotheses of the Study

The following hypotheses have been formulated for the present study.

1. There is **no significant difference in the operating cost** in passenger road transportation of Public Sector and private sector undertakings.

2. There is **no significant difference in the relationship between** Operating cost and total cost in the passenger road transportation of Public Sector undertakings and private sector undertakings.
3. There is **no significant difference in the profitability of passenger road transportation of Public Sector** and private sector undertakings.

10. Research Design / Method of Research

The data for the study is collected from secondary Sources like Annual administration reports of the sample undertakings and Govt bulletins. Collected data were tabulated and cost per Kilometre is taken into consideration for comparison purpose. Secondary Data regarding operating cost were classified on the basis of five major parameters like a) Labour cost, b) Material cost, c) Tax cost, d) Depreciation cost and e) Administration and General Expenses. Collected data were tabulated and findings were drawn.

11. Plan of Analysis

1. After data obtained from secondary sources **classification and tabulation carried** out.

2. Both **descriptive and inferential statistics applied** for the data collected.

3. Descriptive statistics consist of **numbers, percentages, mean, standard deviation, and Co-efficient of variation**.

4. Statistical inference drawn based on the result obtained and tested for **5% level of significance**.

12. Data Analysis and Interpretation

STRUCTURAL COMPOSITION OF TOTAL COST

Cost Components	**KSRTC**	**NEKRTC**	**NWKRTC**	**VRL LOGISTICS LTD**	**TCS, Koppa**	**S.G.M.T Co Ltd**
Material Cost	46.01	44.71	43.47	35.53	61.19	57.79
Labour Cost	34.38	37.74	37.19	18.41	14.41	17.02

Motor Vehicles Tax	4.90	4.62	4.18	2.55	5.32	5.08
Depreciation cost	7.51	6.32	6.63	8.83	3.39	6.04
Admin & Other Cost	4.11	3.03	4.09	29.78	12.79	11.97
Financial Cost (Interest)	0.99	1.42	2.21	4.90	2.21	2.10
Non-operating cost	2.10	2.16	2.23	0.00	0.69	0.00
Total Cost	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table -1: Structure of Total cost of Selected Undertakings (Average of 6 years Percentage from 2010-11 to 2015-16)

OBJECTIVE-1

12.1 To study the Operating cost in passenger road transportation of Public Sector and Private sector undertakings.

12.1.1 LABOUR COST

Table -2: Labour cost Per Kilometer of selected Undertakings from 2010-11 to 2015-16

Sl No.	Name of the Undertakings	2010 -11	2011 -12	2012 -13	2013 -14	2014 -15	2015 -16	Mean ± SD	't' Test
	Public	**7.08**	**7.81**	**9.47**	**10.66**	**12.01**	**14.02**	**10.17±0.23**	
1	KSRTC	7.21	7.61	9.24	10.45	11.53	13.57	9.93	
2	NEKRTC	6.55	7.46	9.39	10.72	12.87	15.33	10.39	
3	NWKRTC	7.47	8.35	9.79	10.80	11.62	13.15	10.20	
	Private	**3.99**	**4.16**	**4.64**	**5.01**	**5.82**	**6.63**	**5.04±1.62**	13.30*
4	VRL LOGISTICS LTD	5.60	5.23	5.92	6.39	8.12	9.76	6.84	
5	TCS Koppa	2.82	3.37	3.40	3.93	4.23	4.37	3.69	
6	S.G.M.T Co LTD	3.55	3.89	4.60	4.71	5.11	5.76	4.60	

Source: Annual Reports of sample Passenger Road Transport Undertakings of 2010-11 to 2015-16, * Significant at 5% level,

Table 2 depicts that Labour cost per Kilometer of all the undertakings found to be an increasing trend from 2010-11 to 2015-16. Except VRL it is found reduced in the year 2011-12.

Table -3: Analysis of Labour cost with T-Test

Sl No.	Name of the Undertakings	Average Labour Cost/km	Average Labour cost share/total cost (%)

A	**Public Sector**	**10.172 ±0.23**	**36.436 ±1.80**
1	KSRTC	9.933	34.383
2	NEKRTC	10.386	37.737
3	NWKRTC	10.197	37.187
B	**Private Sector**	**5.043 ±1.62**	**16.616 ±2.03**
1	VRL LOGISTICS LTD	6.839	18.407
2	TCS Koppa	3.687	14.415
3	S.G.M.T.Co Ltd	4.603	17.025
	t-Test	**5.43* (p=0.006)**	**12.67* (p=0.001)**

* Significant at 5% Level,

H_0 (1): There is no significant difference in the Labour cost in passenger road transportation of Public Sector and private sector undertakings.

Interpretation: Regarding the average cost of labour per kilometer under public sector found to be higher in NEKRTC (10.386) followed by NWKRTC (10.197) and KSRTC (9.933).In private sector highest average labour cost notices under VRL LOGISTICS LTD (6.839) followed by S.G.M.T.Co Ltd (4.603) least of these is in TCS Koppa (3.687).Further, the Average labour cost per Km found higher in Public sector (10.172) as compared to Private sector (5.043).

The data subjected for statistical test reveals that the difference in the average labour cost per Km between public sector and private sector found to be **significant** (t=5.43*, P=0.006)

Result: Hypothesis is rejected that there is a significant difference in the Labour cost in passenger road transportation of Public Sector and private sector undertakings. Because benefits provided to the employees are more in Public sector than private sector, hence average labour cost is more in Public sector than private sector.

12.1.2: MATERIAL COST PARAMETER

Table - 4: Total Material Cost Per Kilometer of selected Undertakings (2010-11 to 2015-16)

(Cost Per Kilometer)

Sl No.	Name of the Undertakings	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	Mean ±SD	't' Test
	Public	**10.36**	**11.25**	**12.06**	**13.93**	**14.15**	**11.84**	**12.26±0.71**	

1	KSRTC	11.03	12.04	12.96	14.75	15.06	12.66	13.08	
2	NEKRTC	9.82	10.77	11.72	13.74	13.97	11.63	11.94	6.92
3	NWKRTC	10.22	10.94	11.50	13.30	13.42	11.23	11.77	*
	Private	**11.67**	**13.07**	**14.66**	**16.40**	**17.60**	**15.30**	**14.79±1.38**	
4	VRL LOGISTICS LTD	9.27	10.29	13.00	14.19	17.25	15.14	13.19	
5	TCS Koppa	12.84	14.35	15.30	17.44	18.16	15.44	15.59	
6	S.G.M.T Co LTD	12.91	14.56	15.69	17.58	17.39	15.33	15.58	

Source: Annual Reports of sample Passenger Road Transport Undertakings from 2010-11 to 2015-16, * Significant at 5% level,

Table- 4 depicts that Total Material cost per Kilometer of all the undertakings found to be an increasing trend from 2010-11 to 2014-15. But in the year 2015-16 it is found decreased in all the undertakings because of reduction in diesel prices.

Table -5: Statistical Analysis of Undertakings by Total Material cost

Sl No.	Name of the Undertakings	Average Material Cost/km	Average Material cost share/Total Cost (%)
A	**Public Sector**	**12.266 ±0.71**	**44.732 ±1.27**
1	KSRTC	13.084	46.009
2	NEKRTC	11.942	44.714
3	NWKRTC	11.771	43.472
B	**Private Sector**	**14.785 ±1.38**	**51.503 ±13.90**
1	VRL LTD	13.191	35.532
2	TCS Koppa	15.587	61.187
3	S.G.M.T.Co Ltd	15.578	57.788
	t-Test	**2.81* (p=0.048)**	**0.84 ^{NS} (0.450)**

* Significant at 5% Level, NS : Non-significant

H_0: There is no significant difference in the Total Material cost in passenger road transportation of Public Sector and private sector undertakings.

Interpretation: Regarding the average cost of material per kilometer under public sector found to be higher in KSRTC (13.084) followed by NEKRTC (11.942) and NWKRTC

(11.771).With respect to the private sector it is evident from the findings that the highest average material cost notices under TCS Koppa (15.587) followed by S.G.M.T.Co Ltd (15.578) least of these is in VRL LOGISTICS LTD (13.191). Further, the Average Material cost per Km found higher in Private sector (14.785) as compared to Public sector (12.266).

Significant. (t=-2.81*, P=0.048)

Result: Hypothesis is rejected that there is a significant difference in the total material cost in passenger road transportation of Public Sector and private sector undertakings. Average material cost is more in Private sector than public sector. Because Expenses relating to spares, consumables, tyres and tubes are more in Private sector than public sector. Public sector undertakings are purchasing materials in a bulk manner and they can enjoy the benefits of economy, than private sector undertakings.

12.1.3: OTHER OPERATING COST (TAX, DEPRECIATION& ADMIN &GENERAL EXPENSES)

Table-6: Other Operating COST (Tax, Depreciation& Admin &General Expenses) Per Kilometer of selected Undertakings (2010-11 to 2015-16)

(Cost Per Kilometer)

Sl No.	Name of the Undertakings	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	Mean±SD
	Public	**3.58**	**3.73**	**3.98**	**4.44**	**4.68**	**4.53**	**4.16±0.49**
1	KSRTC	4.13	4.39	4.53	4.79	5.27	5.04	4.69
2	NEKRTC	3.26	3.34	3.81	4.00	4.08	3.78	3.71
3	NWKRTC	3.35	3.45	3.62	4.52	4.69	4.77	4.07
	Private	**7.65**	**7.74**	**8.72**	**9.06**	**9.83**	**10.66**	**8.94±5.43**
4	VRL LTD	12.40	11.94	14.36	15.27	18.15	19.06	15.19
5	TCS Koppa	4.83	5.33	5.51	5.26	4.98	6.77	5.45
6	S.G.M.T.Co LTD	5.71	5.96	6.29	6.65	6.37	6.15	6.19

Source: Annual Reports of sample Passenger Road Transport Undertakings of 2010-11 to 2015-16, * Significant at 5% level,

Table -6 depicts that other operating cost (Tax, Depreciation & Admin & General Expenses) per Kilometer of all the undertakings found to be an increasing trend from 2010-11

to 2014-15 and it is decreased in the year 2015-16 in public sector undertakings. But in Private sector it is found fluctuating trend from 2010-11 to 2015-16.

Table-7: Analysis of Undertaking by Other Operating cost (Tax, depreciation, Admin &General Expenses)

Sl No.	Name of the Undertakings	Average Material Cost/km	Average Material cost share/Total Cost (%)
A	**Public Sector**	**4.157 ±0.497**	**15.130 ±1.294**
1	KSRTC	4.692	16.525
2	NEKRTC	3.711	13.968
3	NWKRTC	4.066	14.899
B	**Private Sector**	**8.944 ±5.425**	**28.577 ±10.915**
1	VRL LOGISTICS LTD	15.193	41.147
2	TCS Koppa	5.448	21.498
3	S.G.M.T.Co Ltd	6.190	23.085
	t-Test	**1.52*^{NS} (p=0.202)**	**2.11 ^{NS} (0.101)**

* Significant at 5% Level, NS: Non-significant

H_0 : There is no significant difference in the Other operating cost (Tax, depreciation, admin & other cost) in passenger road transportation of Public Sector and private sector undertakings.

Interpretation: Regarding the average other operating cost (Tax, depreciation admin &other cost) per kilometer under public sector found to be higher in KSRTC (4.692) followed by NWKRTC (4.066) and NEKRTC (3.711). With respect to the private sector, the highest average Other operating cost (Tax, depreciation admin &other cost) notices under VRL LOGISTICS LTD (15.193) followed by S.G.M.T.Co Ltd (6.190) least of these is in TCS Koppa (5.448). Further, the Average other operating cost (Tax, depreciation admin &other cost) per Km found higher in Private sector (8.944) as compared to Public sector (4.157). **Data found non-significant**. (t=-1.52*, P=0.202)

Result: Hypothesis is accepted that there is no significant difference in the other operating cost (Tax, depreciation admin &other cost) in passenger road transportation of Public Sector and private sector undertakings.

12.1.4 Total operating Cost

Table -8: Total operating Cost per Kilometers (Total Operating cost/No. of Kilometers) of selected Undertakings (2010-11 to 2015-16) (Cost Per Kilometer)

Sl No.	Name of the Undertakings	2010 -11	2011 -12	2012 -13	2013 -14	2014 -15	2015 -16	Mean ± SD	't' Test
	Public	**21.01**	**22.79**	**25.52**	**29.03**	**30.84**	**30.39**	**26.59±0.97**	
1	KSRTC	22.37	24.04	26.73	29.99	31.86	31.27	27.71	
2	NEKRTC	19.63	21.57	24.92	28.46	30.91	30.74	26.04	1.61
3	NWKRTC	21.03	22.75	24.91	28.63	29.74	29.15	26.03	NS
	Private	**23.31**	**24.98**	**28.02**	**30.47**	**33.25**	**32.60**	**28.77±5.65**	
4	VRL LTD	27.27	27.46	33.28	35.85	43.52	43.96	35.22	
5	TCS Koppa	20.49	23.05	24.21	26.63	27.37	26.58	24.72	
6	SGCo PVT LTD	22.17	24.42	26.58	28.93	28.87	27.25	26.37	

Source: Annual Reports of sample Passenger Road Transport Undertakings of 2010-11 to 2015-16, NS : Non-significant,

Table 8 depicts that Total Operating Expenses per Kilometer of all the undertakings found to be an increasing trend in Public sector undertakings from 2010-11 to 2014-15 but it is reduced in the year 2015-16 in all the public sector undertakings. But in Private sector it is found fluctuating trend from the year 2010-11 to 2015-16 in S.G.M.T co but in VRL LOGISTICS LTD and TCS Koppa shows increasing trend upto 2014-15.

Table -9: Analysis of Undertakings by Total Operating Cost

Sl No.	Name of the Undertakings	Average Operating Cost/km	Average Operating cost share/Total Cost (%)
A	**Public Sector**	**26.594 ±0.96**	**96.298 ±0.69**
1	KSRTC	27.709	96.917
2	NEKRTC	26.039	96.418
3	NWKRTC	26.035	95.558
B	**Private Sector**	**28.772 ±5.65**	**96.695 ±1.45**
1	VRL LOGISTICS LTD	35.223	95.086
2	TCS Koppa	24.722	97.102
3	S.G.M.T.Co Ltd	26.371	97.898

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	t-Test	**0.66 NS (p=0.550)**	**0.43 NS (0.690)**

NS : Non-significant

H_0 : There is no significant difference in the total operating cost in passenger road transportation of Public Sector and private sector undertakings.

Interpretation: Regarding the average Total operating cost per kilometer under public sector found to be higher in KSRTC (27.709) followed by NEKRTC (26.039) and NWKRTC (26.035). The highest average Total operating cost notices under VRL LOGISTICS LTD (35.223) followed by S.G.M.T.Co Ltd (26.371) least of these is in TCS Koppa (24.722). Further, the Average total operating cost per Km found higher in Private sector (28.772) as compared to Public sector (26.594). data found **non-significant**. (t= -0.66*, P=0.550).

Result: Hypothesis is accepted that there is no significant difference in the total operating cost in passenger road transportation of Public Sector and private sector undertakings.

12.1.5: Total Cost

Table -10: Total Cost Per Kilometer of selected Undertakings (2010-11 to 2015-16) (Cost Per Kilometer)

Sl No.	**Name of the Undertakings**	**2010 -11**	**2011 -12**	**2012 -13**	**2013 -14**	**2014 -15**	**2015 -16**	**Mean±SD**	**'t' Test**
	Public	**21.90**	**23.71**	**26.45**	**30.03**	**32.11**	**31.44**	**27.61±0.85**	
1	KSRTC	23.16	24.88	27.51	30.79	32.87	32.30	28.59	
2	NEKRTC	20.41	22.36	25.72	29.51	32.40	31.67	27.01	1.46
3	NWKRTC	22.14	23.90	26.12	29.79	31.07	30.35	27.23	NS
	Private	**24.34**	**26.00**	**29.10**	**31.45**	**34.30**	**33.48**	**29.78±6.24**	

4	VRL LOGISTICS LTD	29.26	29.50	35.07	37.55	45.36	44.90	36.94
5	TCS Koppa	21.18	23.62	25.08	27.30	27.97	27.58	25.46
6	SGCo PVT LTD	22.59	24.87	27.15	29.51	29.57	27.96	26.94

Source: Annual Reports of sample Passenger Road Transport Undertakings of 2010-11 to 2015-16, NS : Non-significant,

Table 10 depicts that Total cost per Kilometer of all the undertakings found increasing trend from the year 2010-11 to 2014-15 in all the undertakings but in 2015-16 it is found reduced in all the undertakings except NEKRTC.

Table -11: Analysis of Undertakings by Total Cost

Sl No.	**Name of the Undertakings**	**Average Total Cost/km**	**Sl No.**	**Name of the Undertakings**	**Average Total Cost/km**
A	**Public Sector**	**27.609 ±0.85**	B	**Private Sector**	**29.779 ±6.25**
1	KSRTC	28.585	1	VRL LOGISTICS LTD	36.939
2	NEKRTC	27.010	2	TCS Koppa	25.456
3	NWKRTC	27.231	3	S.G.M.T.Co Ltd	26.942
	t-Test	**0.60 ^{NS} (p=0.580)**			

10) NS: Non-significant

H_0 (): There is no significant difference in the total cost in passenger road transportation of Public Sector and private sector undertakings.

Interpretation: Regarding the average Total cost per kilometer under public sector found to be higher in KSRTC (28.585) followed by NWKRTC (27.231) and NEKRTC (27.010). With respect to the private sector, the highest average Total cost notices under VRL LOGISTICS LTD (36.939) followed by S.G.M.T.Co Ltd (26.942) least of these is in TCS Koppa (25.456). Further, the Average Total cost per Km found higher in Private sector (29.779) as compared to Public sector (27.609). **Data found non-significant**. (t=-0.60*, P=0.580).

Result: **Hypothesis is accepted that there is no significant difference in the total cost in passenger road transportation of Public Sector and private sector undertakings.**

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12.1.6: TOTAL REVENUE

Table -12: Total Revenue Per Kilometer of selected Undertakings (2010-11 to 2015-16)

Sl No.	Name of the Undertakings	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	Mean±SD	't' Test
	Public	**21.87**	**23.49**	**25.98**	**29.14**	**31.63**	**31.25**	**27.23±1.22**	
1	KSRTC	23.87	25.09	27.53	30.02	32.43	32.83	28.63	
2	NEKRTC	20.22	21.95	25.50	28.81	32.30	31.22	26.67	
3	NWKRTC	21.51	23.43	24.92	28.58	30.15	29.69	26.38	
	Private	**26.80**	**27.67**	**30.67**	**32.79**	**36.40**	**36.71**	**31.84±9.98**	1.96*
4	VRL LTD	36.50	34.96	40.32	42.60	52.72	52.97	43.35	
5	TCS Koppa	21.26	23.72	25.19	27.39	28.07	27.70	25.55	
6	S.G.M.T Co LTD	22.64	24.33	26.49	28.39	28.42	29.46	26.62	

Source: Annual Reports of sample Passenger Road Transport Undertakings of 2010-11 to 2015-16, * Significant at 5% level,

OBJECTIVE-2

12.2.1 To Study the relationship between Total cost and the Operating cost in passenger road transportation of Public Sector and Private sector undertakings.

Table -13: Relationship between Average Total Cost and Average operating cost per Kilometer

Sl No	Name of the Undertakings	Average Total Cost/km	Average Operating cost/km	Standard Deviation	Correlation coefficient (r)
A	**Public Sector**	**27.609**	**26.594**	**0.717**	
1	KSRTC	28.585	27.709	0.619	0.9912*
2	NEKRTC	27.010	26.039	0.686	
3	NWKRTC	27.231	26.035	0.846	
B	**Private Sector**	**29.777**	**28.772**	**0.712**	
1	VRL	36.939	35.223	1.213	0.9996*
2	TCS Koppa	25.456	24.722	0.519	
3	S.G.M.T.Co Ltd	26.942	26.371	0.403	
	t-Test	**0.60 ^{NS} (p=0.580)**	**0.66 ^{NS} (0.550)**		

* Significant at 5% level, NS : Non-significant

Hypotheses-2: H_0 : There is no significant difference in the relationship between total cost and operating cost in the passenger road transportation of Public Sector and private sector undertakings.

Interpretation:

a) The Average Total cost found to be 27.609 Rs Per Km among Public sector as against Average operating cost found to be 26.594 Rs per Km. To measure the relationship between Average Total cost and Average operating cost of Public sector correlation Co-efficient is employed. The result indicate that there exists significant positive relationship between Average Total cost and Average operating cost (r=0.9912*)

b) It is evident from the findings that the Average Total cost found to be 29.777 Rs Per Km among Private sector as against Average operating cost found to be 28.772 Rs per Km. Correlation Co-efficient result indicate that there exists significant positive relationship between Average Total cost and Average operating cost (r=0.9996*)

The overall Average Total cost between Public sector and private sector (t=0.60, p=0.580) and Average operating cost between Public sector and private sector (t=0.66 ^{NS}, p= 0.550) found to be non-significant.

Result: Hypothesis is accepted that there is no significant difference in the relationship between total cost and operating cost in the passenger road transportation of Public Sector and private sector undertakings.

OBJECTIVE -3

12.3 To study the profitability of passenger road transportation of Public Sector and Private sector undertakings, considering the revenue generated.

Table -14: Relationship between Average Total Cost and Average Total revenue

Sl No.	Name of the undertakings	Average Total Cost/km	Average Revenue/km	Standard Deviation	Correlation coefficient (r)
A	**Public Sector**	**27.609**	**27.225**	**0.292**	
1	KSRTC	28.585	28.629	0.0310	
2	NEKRTC	27.001	26.667	0.242	
3	NWKRTC	27.231	26.379	0.602	0.9680*
B	**Private Sector**	**29.779**	**31.870**	**1.609**	
1	VRL	36.939	43.345	4.530	
2	TCS Koppa	25.456	25.554	0.069	0.9980*
3	S.G.M.T.Co Ltd	26.942	26.621	0.227	
	t-Test	**0.60 ^{NS} (p=0.580)**	**0.80 ^{NS} (0.470)**		

* Significant at 5% Level, NS : Non-significant

Hypotheses-3 : H_0 : There is no significant difference in the profitability of passenger road transportation of Public Sector and private sector undertakings.

a) **Interpretation:** It is evident from the findings that the Average Total cost found to be 27.609 Rs Per Km among Public sector as against Average revenue found to be 27.225 Rs

per Km. Correlation Co-efficient result indicate that there exists significant positive relationship between Average Total cost and Average revenue (r=0.9680*)

b) The Average Total cost found to be 29.779 Rs Per Km among Private sector as against Average revenue found to be 31.870 Rs per Km. Correlation Co-efficient result indicate that there exists significant positive relationship between Average Total cost and Average revenue (r=0.9980*)

The overall Average Total cost between Public sector and private sector (t=0.60, p=0.580) and Average revenue between Public sector and private sector (t=0.80 ^{NS}, p= 0.470) found to be non-significant.

Result: Hypothesis is accepted that there is no significant difference in the Total cost and profitability of passenger road transportation of Public Sector and private sector undertakings.

13. Summary of Major Findings of the Study

- The Average labour cost per Km found higher in Public sector (10.172) as compared to Private sector (5.043).
- The Average Material cost per Km found higher in Private sector (14.785) as compared to Public sector (12.266). The percentage of contribution of fuel expenses in the total cost is 36% to 37% in public sector, but in private sector it constitutes 50 % to 54 %.
- Motor vehicle tax, depreciation and administration and other expenses are found similar in both public sector and private sector passenger Road transport.
- The Average total operating cost per Km found higher in Private sector (28.772) as compared to Public sector (26.594).
- The Average Total cost per Km found higher in Private sector (29.779) as compared to Public sector (27.609).
- There exists significant positive relationship between Average Total cost and Average operating cost (r=0.9996*) among public sector and Private sector undertakings.
- There exists significant positive relationship between Average Total cost and Average revenue (r=0.9980*) among public sector and Private sector undertakings.

14. Conclusion

From the study we can conclude that labour cost and material cost are the major components of cost of operation. There is a significant difference found in public sector as well as private sector undertakings regarding the labour cost and material cost component only. But other cost factors are almost same in both the types of undertakings.

In a highly competitive environment, State Transport Undertakings (STUs) cannot raise the fare beyond the affordability of common man. It is observed that personnel wage level overtook all other inputs in STUs. It is also observed that 70% to 80 % cost is shared by personnel and material. With the principle of selectivity, cost control can be effective only in these areas. Further, analysis of Labour cost revealed that crew productivity is the key to control labour cost, while in case of fuel and tyre, controlling rate of consumption will help to control the material costs. STUs could develop their own strategy to control material and labour costs.

15. Scheme of suggestions

15.1 Suggestions to Passenger Road Transport Undertakings

15.1.1 Measures to control Labour cost: Labour cost is more in public sector undertakings(10.972) than private sector (5.043) undertakings the following suggestions are given here.

- KSRTC, NEKRTC and NWKRTC should streamline their accounting system, administration, establishment and personnel etc. Administrative cost can be controlled by streamlining systems in accounting.
- Public sector undertakings can reduce their labour cost through reduction in number of hierarchy of officers.
- Customized 'personnel information system', 'accounting information system', 'inventory management system' 'MIS' etc. software packages not only bring in efficiency but also control the staff strength. (Bagade,M.V 2005)
- KSRTC, NEKRTC and NWKRTC can adopt time and motion study, works study and movement it can reduce the cost. Some good techniques should be followed.

- The administrative overhead cost can be controlled by modernization of systems and full-fledged computerization, while mechanical staff needs to be revised as and when vehicle technology is improved with works study techniques, in case of operational staff, crew productivity is the key result area.
- Span of control in the administration can be widened to large number of employees in public sector undertakings.
- Incentives and benefits should be introduced to the employees and officers only based on their performance not on seniority basis.

Periodical training should be provided to drivers, it will increase their efficiency and reduces cost per KMs. Only experienced drivers should be hired after the driving test.

15.1.2. Controlling material cost

Average material cost is found more in private sector (14.785) than public sector (12.266). Especially TCS and S.G.M.T co are spending (15.00) more on material cost. some suggestions are given n this regard.

1. Private sector undertakings are advised to purchase diesel, lubricants, spare parts in bulk manner either separately or through a co-operative basis.

2. Repair and maintenance of buses should be done in their own garage and stop the repairs of vehicles in outside agencies.

3. Especially TCS and S.G.M.T co are having more number of old model TATA, Ashok Leyland buses. These old model buses are consuming more fuel. It is more expensive to them. Other transport operators are purchasing new model of buses like TATA starbus, Eitcher which are giving more KMPL 7 to 8. It will save the fuel cost. It will helpful to these undertakings which are operating in hilly areas. TCS and S.G.M.T should replace their old model buses.

4. TCS should establish own workshop/Garages or franchised garages in some centre places like thirthalli, N.R Pura, Jayapura etc. to reduce cost. S.G.M.T Co should establish its own workshop in soraba, Hosanagara and thirthalli to reduce their operating cost.

5. Incentive scheme may be introduced to drivers and mechanics who are showing their efficiency in the reduction of cost .

15.1.3. Measures to reduce Tax, depreciation and administration cost.

1. Govt should reduce tax in some areas like customs, GST etc. to the passenger transport undertakings. GST should be covered to petroleum products, it will reduce the tax on fuel.

2. While purchasing the buses more attention should be given on the vehicle efficiency than cost , durability, own service centres etc.

3. Administration & other cost: Unnecessary spending on publicity, advertisements should be avoided and more number of offices should be reduced. Administration should be decentralized and they can establish branches in other places.

15.2 Suggestions to Government to reduce the cost.

- Toll charges are high and it leads to wastage of time and fuel. It should be reduced to passenger road transport undertakings.
- Government has to subsidize the diesel prices or reduce the tax on diesel prices for passenger road transport undertakings.
- Employee benefits and student pass amount should be reimbursed by State Govt in time to the passenger road transport undertakings.
- Better roads should be constructed and maintained in a proper manner.

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17. Annexure

Table -15: Total Number of kilometres operated by the undertakings. (Kms in Lakhs)

Sl no.	Name	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
1	KSRTC	8707.67	9242.56	9415.64	9882.25	9880.66	9684.00
2	NEKRTC	4294.94	4465.86	4488.44	4576.17	4548.43	4809.00
3	NWKRTC	4800.93	4946.74	5272.59	5503.19	5733.85	5840.00
4	VRL Logistics	372.86	630.90	717.59	734.19	634.01	604.00
5	TCS Koppa	63.02	63.03	62.57	61.93	61.31	61.00
6	S.G.M.T.Co	79.16	82.33	82.25	79.14	78.65	76.00

Table -16: Total Operating Cost of all the sample undertakings

Sl No.	Name of the Undertakings	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
1.	**KSRTC**	194772.52	222189.99	251694.17	296382.70	314796.18	302769.89
2	**NEKRTC**	84319.78	96345.42	111844.11	130219.85	140595.15	147854.35
3	**NWKRTC**	100978.23	112529.50	131332.12	157532.25	170510.43	170262.02
4	**VRL Logistics Ltd**	10166.96	17324.02	23881.65	26322.54	27592.76	26562.61
5	**TCS Koppa**	1291.71	1452.55	1514.81	1649.28	1678.00	1628.63
6	**S.G.M.T Co LTD**	1755.34	2010.48	2186.03	2289.86	2271.06	2081.22

Table No.17: TOTAL COST of all the sample undertakings (Rs in Lakhs)

Sl No.	Name of the Undertakings	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
1.	**KSRTC**	201663.34	229922.13	259058.80	304248.11	324817.96	312783.85
2.	**NEKRTC**	87643.35	99842.75	115433.25	135041.87	147354.83	152316.61
3.	**NWKRTC**	106303.92	118250.41	137731.02	163952.68	178164.71	177257.93
4.	**VRL Logistics Ltd**	10909.88	18611.31	25162.79	27567.12	28759.31	27130.65
5.	**TCS Koppa**	1334.62	1488.64	1569.43	1690.93	1714.66	1689.93
6.	**S.G.M.T Co LTD**	1788.05	2047.75	2233.33	2335.80	2325.51	2135.34

Table-18: Total Revenue of the Passenger Road Transport undertakings from 2010-11 to 2015-16. (Rs in Lakhs)

Name of the Undertakings	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
KSRTC	207868.29	231863.54	259233.00	296692.32	320468.94	317878.99
NEKRTC	86828.23	98035.59	114474.46	131847.21	146919.97	150125.10
NWKRTC	103259.47	115906.85	131399.67	157274.31	172856.72	173379.51
VRL LOGISTICS LTD	13608.59	22056.19	28934.54	31277.92	33423.80	32009.70
TCS Koppa	1339.66	1494.85	1575.82	1696.16	1720.71	1697.29
S.G.M.T Co LTD	1792.31	2003.28	2178.40	2246.71	2235.36	2250.11

Source: Table compiled using the data collected from the Annual Reports of sample Passenger Road Transport Undertakings from the year 2010-11 to 2015-16.