

**FACTORS AFFECTING ON COST MANAGEMENT OF PASSENGER ROAD
TRANSPORT UNDERTAKINGS IN KARNATAKA**

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ABSTRACT

Transportation connects people from one place to another place. India is a very big country which is having a widespread distribution of population in different geographical areas. The cost of transportation is huge due to several factors. 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 know the major factors which are affecting on the cost of operation of the undertakings. A structured questionnaire is prepared and circulated to 6 passenger road transport undertakings operating in Karnataka state. Purposive sampling method is deployed for the selection of respondents. Questions are prepared on the basis of 3 major criteria's namely Material cost, labour cost, other cost factors (tax cost, depreciation cost and administration and other cost). Due attention is given to the common factors which are applicable for the passenger road transportation industry. Collected data is tabulated and analysis is done with the help of Friedman's two-way anova test. The analysis shows that the material cost factor is major cost factor for all the State Road Transport undertakings (RTUs) and private Road Transport undertakings (RTUs). Some labour cost factors are applicable for some undertakings only. Administrative and other cost factors are least cost factors for the undertakings. While making an individual undertaking wise comparison of material cost factors, labour cost factors and other cost factors, a significant difference is found within State RTUs as well as Private RTUs. But while comparing State RTUs and Private RTUs on an average rank basis it is found non-significant. Hence, study is concluded that there is no significant difference in the factors of cost between State Road Transport Undertakings and Private Road Transport Undertakings.

Key Words: *Passenger road transport undertakings, cost factors.*

1) Introduction

Transportation connects people from one place to another place. India is a very big country which is having a widespread distribution of population in different geographical areas. The cost of transportation is huge due to several reasons. It is essential to study the factors which are affecting on cost management in the passenger road transport sector. 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 know the major factors which are affecting on the cost of operation of the undertakings.

2) Meaning

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.

3) Transportation Sector in Karnataka

Karnataka 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. The public bus transport in Karnataka is managed by the Karnataka State Road Transport Corporation (KSRTC). It was set up in 1961 for providing adequate, efficient, economic and properly coordinated road transport services. 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 (Kalaburagi) 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, Shimoga, Chikkamagalur Chitradurga and Udupi districts. Omni bus and Maxi cabs are also other modes of road transportation in the state; especially where KSRTC does not have buses or run very few.

4) Review of Literature

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

Studies on Factors affecting Passenger Road Transport Undertakings

Sunil Kumar, (2011)¹ was conducted a study to explore the most influential factors explaining its variations across SRTUs. Data envelopment analysis (DEA) models, namely Andersen and Petersen's super-efficiency models, have been utilized to compute various efficiency scores for individual SRTUs. A censored Tobit analysis was conducted to see which factors significantly explain the inter-SRTU variations in efficiency. The major findings of the DEA analysis were only five SRTUs define the efficient frontier and the remaining 26 inefficient undertakings had a scope of inputs reduction, albeit by the different magnitude; the extent of average overall technical inefficiency (OTIE) in these SRTUs is to the tune of 22.8 per cent, indicating that the sample SRTUs are wasting about one-fourth of their resources in the production operations; Tobit analysis highlighted that the occupancy ratio is an important determinant for all the efficiency measures, and it bears a positive relationship with overall technical and scale efficiencies.

Ramesh G, T.V Ramanayya, (2007)² attempted to extend the Economic Value Added Methodology to a State Passenger Road Transport Undertaking (SRTU) in India. The paper captured the opportunity cost of the three factors which make a significant difference to their performance: 1. Loss of revenue from providing concessional fares to students. 2. The Opportunity cost of providing services in interior rural areas. 3. The Opportunity cost of providing unviable urban schedules. Motor Vehicle Tax is another factor considered. The analysis showed that Economic Value Added (EVA) reflects the better performance of SRTUs than accounting profits. The analysis also showed that SRTU has a positive EVA under all alternatives for the six years considered, though it has been loss-making according to accounting statements.

Madhav G. Badami·Murtaza Haider· (2007)³ explored the factors that contribute to and affect efforts to improve the situation based analysis of the financial and operational performance of the public bus transit service. During the 1990s study is conducted in four metropolitan centres and four secondary cities. The Study found that there were persistent losses, owing to increasing input costs and declining productivity. Study found that the situation and the ability to address it are worse in the secondary cities when compared to the

metropolitan centres. Study suggested a disaggregated approach based on the needs and motivations of different groups in relation to public transit, along with improved operating conditions to address to the need of providing financially viable and affordable public bus transport services.

Made Gowda (1999)⁴ studied the implication of cost of concessional Travel on the working of State Road Transport Corporations (SRTCs) in India. They examined 36 SRTCs and found that the cost of concessional travel had remarkable bearing on the profit of the SRTCs and suggested that the Government should subsidise the same.

The review of literature shows that there are lot of research is taken in the field of various cost elements and individual transport undertakings and their financial performance basis only. But a comparison is required to know the factors which are influencing on the cost element of the passenger road transport undertakings. Studies regarding a comparison between cost management practices in state RTUs and Private RTUs is also very less. This study, has been made to fill these gaps and offer suggestions to the factors affecting on total cost management and the related aspects in passenger road transport undertakings.

5) Statement of the Problem

In India, the cost of operation in the transportation sector is increasing tremendously due to various reasons like, hike in the prices of the petroleum products, toll collection and the increase in the cost of labour 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. It also leads to increased cost of living in the urban areas and increase inflation.

6) Objectives of the Study

1. To study the factors affecting on total cost in passenger road transportation of State Road Transport Undertakings (RTUs) and Private Road Transport Undertakings (RTUs).
2. To give some suggestions based on the study to reduce the cost of operation of the undertakings.

7) Hypothesis of the Study

The following hypothesis has been formulated for the present study purpose.

H01: There is no significant difference in the factors of total cost in passenger road transportation of State Road Transport Undertakings and Private Road Transport Undertakings.

H1: There is a significant difference in the factors of total cost in passenger road transportation of State Road Transport Undertakings and Private Road Transport Undertakings.

8) Research Design / Method of Research

The study used cross-sectional design with a face-to-face administered survey questionnaire for data collection. The questionnaire was designed on the basis of measurement scales from earlier research and submitted to 10 experts for content validity analysis. Ten items found irrelevant were deleted, while other 18 were paraphrased subsequent to the suggestions made by experts in order to fit the study context. To carry out the study, the structured questionnaire technique is used to get insight about the issues (factors) explored in the present study.

9) Scope and Sampling Method:

This study is based on data collected from six road transport undertakings operating in Karnataka. The study followed purposive sampling design. Totally 60 respondents from six undertakings were selected for the study. Selected managers or officers were approached to fill the developed questionnaire.

State Road Transport Undertakings

1. KSRTC (Karnataka state Road transport Corporation) Bengaluru.
2. NWKRTC (North West Karnataka Road Transport Corporation) Hubballi.
3. NEKRTC (North East Karnataka Road Transport Corporation) Kalaburagi.

Private Road Transport Undertakings

1. VRL Logistics (Vijayananda Road Lines) Hubballi.
2. Sri Gajanana motor transport Company Ltd (SGMT.CO), Sagara, Shimoga dist
3. TCS (transport in co-operative services) Koppa, Chickmagalur dist.

Table -1: Selection of Respondents for Circulation of Questionnaire

SI No.	Name of the Undertakings	No. Depot Manager/ Concerned officer
01	KSRTC	18
02	NEKRTC	12
03	NWKRTC	10
04	VRL Logistics Ltd.	8
05	TCS Koppa	6
06	S.G.M.T Co Ltd.	6
	Total	60

Source: Primary data

10). Sources of Data:

The **primary data** for the study regarding factors affecting on passenger Road transport undertakings (Objective 1) are collected by using a structured questionnaire having 3 major parameters like a) Labour cost, b) Material cost, c) Other Cost (taxes, depreciation and administrative & other costs).

Data Collection and Tabulation Method

1. A Questionnaire has been prepared and circulated to all the 6 sample undertakings and opinions of the concerned officers were collected.
2. Average of the opinions of all divisional controller or depot manager or concerned officer in each of the undertakings were taken separately and tabulated.

11) Plan of Analysis

In order to examine the various objectives of the study, the collected data are classified, tabulated in a table. The data are analyzed by using several statistical tools & techniques, such as T-test, averages, Friedman's two-way Anova test, have been used. The overall fitness of the models is verified by the estimated values of 't' and 'f' ratios.

Steps for analysis are as follows:

1. After data obtained from Primary sources classification and tabulation carried out.
2. Both descriptive and inferential statistics applied for the data collected.
3. Inferential statistics consists of independent sample test ('t' test), and Friedman's two-way anova test (s).
4. The statistical inference is drawn based on the result obtained and tested for 5 per cent level of significance.

12) Data analysis and interpretation

An attempt is made to analyze the factors affecting the total cost management practices of the State Passenger Road Transport Undertakings and Private passenger road transport undertakings in Karnataka. For this purpose, the evaluation is made based on 3 major factors which are mainly considered for analysis of transport costing. Further, the three major factors in transport costing *viz.*, **Labour Cost, Material cost and other cost (tax cost, depreciation cost and Administration and other related cost)** are used as the criteria for analysis purpose. **Friedman's two-way Anova** test is used for testing the hypothesis.

12.1 Material Cost Factors

Table –2: Significance of the items of materials forming material cost (Rank wise).

Items of Material Cost	State Road Transport Undertakings Rank No.			Average Rank	Private RTUs Rank No.			Average Rank
	KSRTC	NEKRTC	NWKRTC		VRL	TCS	S.G.M. T Co	
1) Fuel, Diesel	1	1	1	1	1	1	1	1
2) Lubricating oil	6	4	5	5	5	5	5	5
3) Auto Spare Parts	3	3	3	3	4	3	4	3.67
4) Tyres, Tubes & Flaps	2	2	2	2	3	4	3	3.33
5) Batteries and electrical items	7	7	7	7	6	6	7	6.33
6) Other Store & Consumables	5	5	6	5.33	7	7	6	6.67
7) Reconditioning, Repair and Retreading of buses	4	6	4	4.67	2	2	2	2
8) Other charges	8	8	8	8	8	8	8	8
Value=$x^2(0.05) = 7$ d.f 14.07	Fr=20.11				Fr= 20.56			
	Fr= 12.59							

Source: Primary data

*Significant at 5per cent level of probability.

H01: There is no significant difference in the factors of material cost in the passenger road transportation of State Road Transport Undertakings and Private Road Transport Undertakings.

H1: There is a significant difference in the factors of material cost in the passenger road transportation of State Road Transport Undertakings and Private Road Transport Undertakings.

Interpretation: In case of State Road Transport Undertakings, the calculated value (Fr=20.11) is greater than the table value (14.07), it is found to be Significant that there is a significant difference in the factors of material cost in all the State Road Transport Undertakings. On the other hand, in Private Road Transport Undertakings, as the calculated value (Fr=20.56) is greater than the table value (14.07), it is found to be Significant that there is a significant difference in the factors of material cost in all the Private Road Transport Undertakings. While comparing the average rank with state RTUs and Private RTUs, the calculated value (Fr=12.59) is less than the table value (14.07) it becomes **Non-Significant**. Hence Hypothesis **H01₁ is accepted**, where there is no significant difference in the factors of material cost in passenger road transportation of State Road Transport Undertakings and Private Road Transport Undertakings.

12.2: Labour Cost Factors

Table –3: Significance of the items of cost forming Labour cost (Rank wise)

Items of Labour cost	State Road Transport Undertakings Rank No.			Average Rank	Private Road Transport Undertakings Rank No.			Average Rank
	KSRTC	NEKRTC	NWKRTC		VRL	TCS	S.G.M.T Co	
1. Salaries, wages and bonus etc	1	1	1	1	1	1	1	1
2. Welfare Cost & Provident Fund	2	2	2	2	3	3	3	3
3. Medical Allowances	3	3	3	3	4	5	5	4.67
4. Travel & other allowances	4	4	4	4	5	4	4	4.33
5. Other Labour Cost	5	5	5	5	2	2	2	2
x² (0.05) 4 d.f =9.488	Fr=* 12.00				Fr=*11.47			
	Fr= 5.24							

Source: Primary data *Significant at 5 per cent level of probability. .

H01₂: There is no significant difference in the factors of labour cost in passenger road transportation of State Road Transport Undertakings and Private Road Transport Undertakings.

H1₂: There is a significant difference in the factors of labour cost in passenger road transportation of State Road Transport Undertakings and Private Road Transport Undertakings.

Interpretation: In case of State Road Transport Undertakings, the calculated value (Fr=12.00) is greater than the table value (9.488), it is found Significant that there is a significant difference in the factors of labour cost in all the State Road Transport Undertakings. On the other hand, in Private Road Transport Undertakings, the calculated value (Fr =11.47) is greater than the table value (9.488), it is found Significant that there is a significant difference in the factors of labour cost in all the Private Road Transport Undertakings. While comparing the average rank with state RTUs and Private RTUs, the calculated value (Fr =5.24) is less than the table value (9.488), it is found **Non-Significant**. Hence Hypothesis **H01₂ is accepted** that there is no significant difference in the factors of labour cost in passenger road transportation of State Road Transport Undertakings and Private Road Transport Undertakings.

12.3 : Other Cost Factors (Tax, depreciation, Administration and other cost)

Table – 4: Significance of the items forming under other cost (Rank wise)

Items of other cost	State Road Transport Undertakings Rank No.			Average Rank	Private Road Transport Undertakings Rank No			Average Rank
	KSRTC	NEKRTC	NWKRTC		VRL	TCS	S.G.M.T Co Ltd	
1. Motor Vehicle Tax	2	2	2	2	4	2	3	3
2. Depreciation	1	1	1	1	2	3	2	2.33
3. Administration & Other Cost	3	3	3	3	1	1	1	1
4. Financial cost (Interest)	5	5	5	5	3	4	4	3.67
5. Other- Non Operating cost	4	4	4	4	5	5	5	5
$\chi^2 = (0.05)$ 4 df =9.488	Fr=*12.00				Fr=*10.67			
	Fr=5.64							

Source: Primary data

*Significant at 5per cent level of probability.

H01₃: There is no significant difference in the factors of other cost in passenger road transportation of State Road Transport Undertakings and Private Road Transport Undertakings.

H1₃: There is a significant difference in the factors of other cost in passenger road transportation of State Road Transport Undertakings and Private Road Transport Undertakings.

Interpretation: In case of State Road Transport Undertakings, the calculated value (Fr=12.00) is greater than the table value (9.488). It is found significant that there is a significant difference in the factors of other cost in all the State Road Transport Undertakings. Similarly, in case of Private Road Transport Undertakings the calculated value (Fr=10.67) is greater than the table value (9.488), which is found Significant that there is a significant difference in the factors of other cost in all the Private Road Transport Undertaking. While comparing the average rank with state RTUs and Private RTUs, the calculated value (Fr=5.64) is less than the table value (9.488), it is found **Non-Significant**. Hence Hypothesis **H01₃ is accepted** that there is no significant difference in the factors of other cost in passenger road transportation of State Road Transport Undertakings and Private Road Transport Undertakings.

While making an individual undertaking wise comparison of the material cost factors, labour cost factors and other cost factors, a significant difference is found within the State Road Transport Undertakings as well as Private Road Transport Undertakings. But while comparing State Road Transport Undertakings and Private Road Transport Undertakings on an average rank basis it is found **non-significant**. Hence, it is concluded that there is no significant difference in the factors of cost between State Road Transport Undertakings and Private Road Transport Undertakings.

13. Findings of the study

- a) **Material Cost Factor:** While comparing material cost factor in State Road Transport Undertakings and Private Road Transport Undertakings, the calculated value (**12.59**) is less than the table value (**14.07**) which is found **Non-Significant**. Hypothesis **H01₁ is accepted** that there is no significant difference in the factors of material cost in passenger road transportation of State Road Transport Undertakings and Private Road Transport Undertakings.
- b) **Labour Cost Factor:** In Labour cost factor, while making a comparison between State Road Transport Undertakings and Private Road Transport Undertakings, the calculated value (**5.24**) is less than the table value (**9.488**), which is found **Non-Significant**. Hypothesis **H01₂ is accepted** that there is no significant difference in the factors of labour cost in passenger road transportation of State Road Transport Undertakings and Private Road Transport Undertakings.
- c) **Other cost Factors:** In other cost factors, while making a comparison between State Road Transport Undertakings and Private Road Transport Undertakings, the calculated

value (5.64) is less than the table value (9.488), which is found Non-Significant. Hypothesis **H01₃ is accepted** that there is no significant difference in the factors of other cost in passenger road transportation of State Road Transport Undertakings and Private Road Transport Undertakings.

14. Suggestions.

1. Public RTUs like KSRTC, NEKRTC and NWKRTC should focus on reduction of material cost, labour cost items.
2. Private RTUs have to concentrate on the reduction of other and administrative cost items.
3. Fuel consumption is a major cost factor for all the undertakings, Government has to provide the fuel in a subsidised rates to the passenger road transport undertakings, which may reduce their cost of operation.
4. Advanced techniques should be adopted in the undertakings to reduce the cost of operation and improve their efficiency.

15. Conclusion

Transportation plays an important part in the economic development of the country like India. Even though these undertakings are able to get a nominal profit, there are some problems involved in their cost management system because of the various unavoidable factors. The undertakings have to concentrate on the management of these issues and factors. Then only they can reduce their cost of operation as well as increase their efficiency. It is ultimately benefiting to the passengers who are mainly depending on these means of transportation.

16. References

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Questionnaire

Please put Rank number in the following boxes.

Name of the undertaking and Address:

1. Material cost factors

1. Please rank the significance of the following items of materials forming material cost

Items of Material Cost	Rank No.
1) Fuel, Diesel	
2) Lubricating oil	
3) Auto Spare Parts	
4) Tyres, Tubes & Flaps	
5) Batteries and electrical items	
6) Other Store & Consumables	
7) Reconditioning, Repair and Retreading of Passenger Buses	
8) Other charges	

2. Labour cost factors

Items of Labour Cost	Rank No.
1. Salaries, wages and bonus etc	
2. Welfare Cost & P.F	
3. Medical Allowances	
4. Travel & other Allowances	
5. Other Labour Cost	

3. Other cost factors

Items of Other Cost	Rank No.
1. Motor Vehicle Tax	
2. Depreciation	
3. Administration & Other Cost	
4. Financial cost (Interest)	
5. Other-Non Operating cost	
