



A STUDY ON THE OPERATIONAL EFFICIENCY OF KERALA STATE ROAD TRANSPORT CORPORATION (KSRTC)

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ABSTRACT

The study on the operational efficiency of Kerala State Road Transport Corporation aims to analyse the various costs that affect the profitability of the firm. This study also determines the revenue required per year to achieve break even. The type of research used for the study is quantitative research and the main sources of data is secondary. The tools used for the study include ratio analysis and cost analysis. The study found that the possibility of achievement of breakeven situation is also a challenging task for KSRTC. They must come up with radical steps to improve the financial situation of KSRTC which is severely caused by the current operating procedures.

KEYWORDS : Operational efficiency, profitability, cost, breakeven sales

INTRODUCTION

The Kerala State Road Transport Corporation (KSRTC) is one of the oldest state-run public transport systems in India. Started as the Travancore State Transport division in 1937, it was transformed into an autonomous corporation called KSRTC by the Government of Kerala on 1st April, 1965. The firm was outlined to give palatable, viable, monetary and properly coordinated explorer organization to the people of Kerala. For sure, in any event, following 86 years of presence, one can see that the firm has not achieved this objective in a couple of respects. KSRTC currently incurs huge losses due to operational and managerial inefficiencies. The financial sickness of KSRTC is mainly due to huge expenditure on pensions, salaries, interest on loans taken for working capital needs, and purchase of technical know-how and machinery. KSRTC's earnings are not enough to meet the huge expenses, even though it has failed to pay salary on time. One government after another has been writing off its debts and giving grants, setting a bad precedent - and KSRTC's financial situation is still not recovering

Review Of Literature

- **Dr. Indu Vijayan (2018)** carried out research in which she distinguished between the big cost and least confirmation types of charges applied by KSRTC. In Kerala, a cost alteration is carried out by PISCO, an inquiry office. Kerala's state government is likely to support the cost fixing; however, Karnataka had a different board that was only responsible for confirming fixation. A modified charge rectification Committee should be assigned by each road transport corporation to prevent accidents, according to the supervising director of Karnataka RTC, and this recommendation comes with almost no mention of government support. Among the 55 Road Transport Corporations, the researcher determined that only Karnataka, Bangalore, and Maharashtra are profiting; the other's situation was extremely awful. The researcher also discovered that Kerala's transportation sector is expanding irregularly, which should encourage short-distance travellers to develop their transportation strategies and long-distance travellers to prepare organisations, reducing the Corporation's market share.
- **Dr. K. Saravana (2016)** conducted research and sorted out a few factors that unfairly affect travellers' satisfaction, including transportation costs, benefits, outside-of-Kerala organisation, travel comfort, discounted rates, worker attitudes toward travellers, additional vehicle organisations during festival seasons, and various workplaces and organisations. Experts determined that local organisations and organisations outside of Kerala should need development and that the agent's method to

working toward adventurers was ideal. He provided innovative solutions to raise customer satisfaction levels, including Wi-Fi, car tracking, online reservations, and exceptional vehicle support services.

- **Dr. Harendra Mohan Singh (2014)**, in his article titled Revenue from Road Transport India, halted the salaries that accrued from the transport sector overall, as well as the obligations of the state's moving system to the economy and the various operational cost structures. He set up essential goals, such as (I) focusing on the pay period of states and concentration on road transport areas, (II) examining the plan of road Taxation in India, and (III) concentrating on the rate part of road transport GDP in full-scale GDP, to accomplish this.
- **D. Narayana (2011)** conducted a study in which the researcher compared the KSRTC and private stage carriages as two types of public transportation in Kerala (PSC). According to the author, KSRTC's financial difficulties and its appalling performance probably went unnoticed by the general public, which led to the over-advancement of private stagecoaches in Kerala. This study discusses how this public road transportation system might be operated financially. To address the underlying fixed costs, the maker in this case is aiming to enhance the pay of the transportation industry. Allotment, partnerships, Advanced Revenue with Capital Change, multi-part obligations, concessional admission for students, and the related assignment should be taken into account as manufacturer-recognised variables that serve to recover the legitimate cost. According to the manufacturer, the factors that affect the cost document for stage carriage operations are (a) fuel, (b) lubricants, (c) tyres and tubes, (d) spare parts and maintenance work, (e) taxes and protection, (f) crew compensation, and (g) cost of capital and depreciation. He learned about the PISCO cost list, PISCO-related benefits, the impact of the student discount on overall costs, and the choice to set the least expensive portion.

The National Council of Applied Economic Research (2007) organised an evaluation in which the subject matter expert concentrated on the financial gains from challenge and its impact on advantage, efficiency, and market structure. Experts examined the effects of state measures on challenges in isolated public vehicles of various states using three types of data, including competition, efficiency, and composite customer satisfaction. Internal Learning and Outside Learning are the two phases in which the assessment is proceeding. In the past, he looked at state policies that affected how the Indian States' public transportation systems were performing, and his final decision was to take a close

look at a few new nations. A model of franchising and competitive bidding for commercial and non-commercial routes was put forth as the survey's conclusion.

- **Dr. Sanjay K. Singh (2000)** organised an emphasis on the specialised features and effectiveness of the Indian State Road Undertaking. To assess the general viability of those undertakings, the survey examines the distinctive features of the state road transport undertaking in the context of a trial of medium- and large-sized Indian states. That is why the audit's creator anticipates that it will be useful in revisiting the continuing public initiatives connected to India's state-run transportation undertakings. The capacity of the state transport undertaking should be evaluated in light of the cost factor, which is influenced by elements like the association's qualifications and plan, the unique characteristics of the state in question, and the organization's concept.
- **Dr. K Gopalakrishnan Nair (1992)** in his hypothesis, focused on the utilitarian pieces of metropolitan Road Transport the board. He framed the investigation given components, for instance, studying travel revenue, stockroom region, fleet dispersion, vehicle arranging and backing. Essential objective of the audit was to find money related and various levelled pieces of Trivandrum city advantages and review public travel needs.

Problem Statement

Since the firm is offering a service to the public, they are obliged to give low-cost transport services to the needed people. But this is possible only through efficient management of money and through proper cost analysis. In other states, the respective government takes the initiative to buy buses for their transport. In Kerala, the support from the government is minimal. So, the firm took loans to buy and rent buses at a higher interest rate. This has created a huge burden to the firm. Improper route allocation is also one of the factors that deteriorate the overall profitability and productivity of the firm.

Objectives Of The Study

- To study the service operations of KSRTC.
- To analyse the various cost that contributes to profitability.
- To find the Break-Even Sales of KSRTC.

Research Design

The study is analytical in nature. The method used for the collection of the data is secondary. The secondary data has been collected through published annual reports of KSRTC, journals, articles on the topic, internet and previous research papers which focused on the financial performance of KSRTC.

Period Of The Study

The data collected for a period of 3 years starting from 2020-21 to 2022-23.

Tools Used For The Study

- Ratio Analysis
- Cost Analysis

Occupancy Ratio

The occupancy ratio for a particular year is the ratio of number of buses operated per year to the total number of buses allotted for that year. Occupancy ratio helps a researcher understand the utilization rate of buses for that particular year.

$$\text{Occupancy Ratio} = \frac{\text{Operated Buses}}{\text{Total No. of Buses}}$$

Table 1: Tabulation of occupancy ratio

Year	Operated Buses	Total Buses	Occupancy Ratio
2020-21	7,45,494	20,16,068	0.37

2021-22	8,86,820	20,00,565	0.44
2022-23	4,85,649	8,27,631	0.59
Average			0.467

From the above table, it can be seen that the occupancy ratio during the year 2020-2021 was 0.37, in 2021-2022 it increased to 0.44 which implies that more buses are utilized during the latter year. It further increased to 0.59 during the year 2022-2023. Only 46.7% of the buses are operating. Since bus utilization rate is directly proportional to the operating revenue, more buses must be operated to generate revenue.

Earnings Per Kilometre

Earnings per kilometre (EPKM) is the total earnings generated by the firm per kilometre operated through public transport service. Earnings per kilometre is used to identify the unit value of the operating revenue of the firm derived from the number of kilometres operated.

$$\text{Earnings per KM} = \frac{\text{Operating Revenue}}{\text{Operated KM}}$$

Table 2: Tabulation of EPKM

Year	Operating Revenue (Rs.)	Operated KM	EPKM (Rs. per km)
2020-21	7,52,16,90,312	22,91,68,970	32.82
2021-22	10,14,47,14,744	28,10,56,117	36.09
2022-23	7,09,10,90,652	16,18,75,900	43.81
Average			37.57

The EPKM during the year 2019-2020 was Rs. 32.82, in 2020-2021 it increased to Rs. 36.09 which implies that more earnings being generated per kilometre during 2021-22. It further increased to Rs.43.81 during the year 2022-2023. The average EPKM is only Rs37.57, which is not sufficient for meeting the expenses.

Earnings Per Bus

Earnings per bus (EPB) refers to the total earnings generated by the firm per bus operated through public transport service. Earnings per bus is used to identify the unit value of the operating revenue of the firm derived from the number of buses operated.

$$\text{Earnings per bus} = \frac{\text{Operating Revenue}}{\text{Operated Buses}}$$

Table 3: Tabulation of EPB

Year	Operating Revenue (Rs.)	Operated Buses	EPB (Rs. per bus)
2020-21	7,52,16,90,312	7,45,494	10089.54
2021-22	10,14,47,14,744	8,86,820	11439.43
2022-23	7,09,10,90,652	4,85,649	14601.27
Average			12043.41

From the above table and chart, it can be seen that the EPB during the year 2020-2021 was Rs. 10,089.54, in 2021-2022 it increased to Rs. 11,439.43 which implies that more earnings being generated per bus during the latter year. It further increased to Rs. 14,601.27 during the year 2022-2023. It implies a positive trend in the generated earnings through public transport service and it is expected to further increase in the coming years. Since bus EPB is directly proportional to the operating revenue, the higher the EPB the higher will be the generated revenue.

Staff Productivity

Staff productivity is an evaluation of the proficiency of a driver or conductor involved in the service. Productivity might be assessed with regards to the result of a staff in a particular timeframe. It is the ratio of the number of kilometres operated per day to the staff strength per day.

$$\text{Staff Productivity} = \frac{\text{No. of kilometres operated per day}}{2 \times \text{Staff strength per day}}$$

Table 4: Tabulation of staff productivity

Year	Operated KM	Staff Strength	Staff Productivity Km/bus/per day)
2020-21	6,84,086	602	568.18
2021-22	7,70,017	598	643.83
2022-23	10,44,361	589	886.55
Average			699.52

It has been seen that the staff productivity during the year 2020-2021 was 568.18 km per staff per day, in 2021-2022 it increased to 643.83 km per staff per day which implies that more distance being covered per day on average by staffs during the latter year. It further increased to 886.55 km per staff per day during the year 2022-2023. Higher the staff productivity, higher will be the revenue generated through the service.

Vehicle Productivity

The Vehicle Productivity is the ratio of the number of kilometres operated per day to the number of buses operated by the firm per day. The formula to calculate the vehicle productivity is given below.

$$\text{Vehicle Productivity} = \frac{\text{No. of kilometres operated per day}}{\text{No. of buses operated per day}}$$

Table 5 Tabulation of vehicle productivity

Year	Operated KM	No. of Buses	Vehicle Productivity (km per bus per day)
2020-21	6,84,086	2,226	307.32
2021-22	7,70,017	2,430	316.88
2022-23	10,44,361	3,134	333.24
Average			319.15

The vehicle productivity during the year 2019-2020 was 307.32 km per bus per day, in 2021-2022 it increased to 316.88 km per bus per day which implies that more distance being covered per day on an average by buses during the latter year. It further increased to 333.24 km per bus per day during the year 2022-2023. Higher the vehicle productivity, higher will be the revenue generated through the service.

Break-even Sales

Break-even sales (BES) allude to the sales esteem at which an organization procures no benefit no misfortune. At the end of the day, the break-even sales deals are how much income that definitively covers the decent costs and the variable costs of a business. The equation for break-even sales can be inferred by partitioning the fixed costs of an organization by its PV ratio.

$$\text{Break Even Sales (in rupees)} = \frac{\text{Total Fixed Costs}}{\text{PV Ratio}}$$

$$\text{PV Ratio} = \frac{\text{Contribution} \times 100}{\text{Total Sales}}$$

$$\text{Contribution} = \text{Total Sales} - \text{Total Variable Costs}$$

Table 6: Calculation of BES for the Fy2022

BES FOR THE FY 2022	
Particulars	Amount
Total Fixed Costs	□ 29,15,01,92,973
Total Variable Costs	□ 10,34,40,67,490
Total Sales	□ 12,23,74,46,521
Contribution	□ 1,89,33,79,031
PV Ratio	15.472%
BES	□ 1,88,40,59,77,748
BREAK EVEN SALES	□ 18,841 crores

From the above table, it is evident that the firm is facing huge losses for the past years as the Total Sales is very much less than the Total Costs (Total Fixed Costs + Total Variable Costs). So, in order to achieve a no profit no loss situation (break-even), the firm has to generate a total revenue of approximately Rs. 18,841 crores per year according to the data from the financial year 2022.

Cost Analysis

The cost analysis involves deciding cash worth of data sources such as work, raw material, etc. called as the overall cost of production which helps in choosing the ideal level of production.

Fuel & Spares Cost As A Percentage Of Total Cost

Fuel and spares cost as a percentage of total cost is the ratio of fuel and spares cost to the total cost incurred to the firm. This ratio helps to get an idea about the portion of total cost required to buy the fuel and spare parts for the daily operations of the firm.

$$\text{Fuel \& Spares Cost to Total Cost Ratio} = \frac{\text{Fuel \& spares cost} \times 100}{\text{Total cost}}$$

Table 7: Tabulation of fuel & spares cost to total cost ratio

Year	F&S Cost (Rs.)	Total Cost (Rs.)	F&S Cost/Total Cost (%)
2020-21	10,78,32,07,145	34,49,66,19,865	31.26
2021-22	3,87,10,56,311	26,29,14,24,546	14.72
2022-23	8,30,51,15,375	30,11,60,60,827	27.58

The fuel and spares cost to total cost ratio during the year 2019-2020 was 31.26%, in 2021-2022 it decreased to 14.72% which implies that the fuel and spare parts bought during the latter year was significantly lesser. The main cause of that downfall was due to the lockdown during the corona virus outbreak. It further increased to 27.58% during the year 2022-2023. It implies that in the coming years, the price as well as demand of fuel and spare parts will continue to increase. Higher the fuel and spares cost to total cost ratio, higher will be the expenses to the firm. This ratio must be reduced to generate profit.

Staff Cost As A Percentage Of Total Cost

Staff cost as a percentage of total cost is the ratio of staff cost to the total cost incurred to the firm. This ratio helps to get an idea about the portion of total cost required to pay salaries to the employees of the firm. Also, this ratio gives an insight about the portion of expenses used for paying salaries to the employees.

$$\text{Staff Cost to Total Cost Ratio} = \frac{\text{Staff cost} \times 100}{\text{Total cost}}$$

Table 8: Tabulation of staff cost to total cost ratio

Year	Staff Cost (Rs.)	Total Cost (Rs.)	Staff Cost/Total Cost (%)
2019-20	9,42,09,88,513	34,49,66,19,865	27.31
2020-21	9,15,14,26,425	26,29,14,24,546	34.81
2021-22	10,31,20,24,888	30,11,60,60,827	34.24

The staff cost to total cost ratio during the year 2020-2021 was 27.31%, in 2021-2022 it increased to 34.81% profit. But sufficient and efficient workforce must be required for proper running of the firm.

Other Operating Costs As A Percentage Of Total Cost

The other operating costs include all the costs other than fuel cost and staff cost such as repairs and maintenance costs, insurance and tax costs, general and administrative expenses. Other operating costs as a percentage of total cost is the ratio of other operating costs to the total cost incurred to the firm.

$$\text{Other Operating Costs to Total Cost Ratio} = \frac{\text{Other Operating costs} \times 100}{\text{Total cost}}$$

Table 9: Tabulation of other operating costs to total cost ratio

Year	Other Operating Costs (Rs.)	Total Cost (Rs.)	Other Operating Costs/Total Cost (%)
2020-21	3,45,53,96,822	34,49,66,19,865	10.02
2021-22	1,83,59,84,294	26,29,14,24,546	6.98
2022-23	2,45,95,45,408	30,11,60,60,827	8.17

From the above table, it can be seen that other operating costs to total cost ratio during the year 2020-2021 was 10.02%, in 2021-2022 it decreased to 6.98% which implies that the operating costs during the latter year was significantly lesser. The main cause of that was due to the lack of operations in the firm during the lockdown period caused by the corona virus outbreak. It further increased to 8.17% during the year 2022-2023. Higher the ratio, higher will be the expenses to the firm. This ratio must be reduced to generate profit.

Non-operating Costs As A Percentage Of Total Cost

The non-operating costs include debt charges and superannuation (pension) charges. Non-operating costs as a percentage of total cost is calculated as the ratio of the non-operating costs to the total cost incurred to the firm. These costs also affect the profitability of the firm.

$$\text{Non Operating Costs to Total Cost Ratio} = \frac{\text{Non operating costs} \times 100}{\text{Total cost}}$$

Table 10: Tabulation of non-operating costs to total cost ratio

Year	Non-Operating Costs (Rs.)	Total Cost (Rs.)	Non-Operating Costs/Total Cost (%)
2020-21	10,83,67,27,385	34,49,66,19,865	31.41
2021-22	11,43,29,57,516	26,29,14,24,546	43.49
2022-23	9,03,93,65,155	30,11,60,60,827	30.02

The non-operating costs to total cost ratio during the year 2020-2021 was 31.41%, in 2021-2022 it increased to 43.49% which implies that the non-operating costs during the latter year was significantly higher. The main cause of that was due to the lack of operations in the firm during the lockdown period caused by the corona virus outbreak. It further decreased to 30.02% during the year 2022-2023. Higher the non-operating costs to total cost ratio, higher will be the expenses to the firm. This ratio must be reduced to generate profit.

Findings

1. The occupancy ratios show an increasing trend. Only 46.7% of the buses are operating. The non-operating buses which may affect the profitability of the firm.
2. The earnings per kilometre shows an increase in the period of study. But the EPKM is only an average of Rs37.57, which is not sufficient to meet the expenses.
3. The earnings per bus shows a positive trend over the last years. The Earnings per bus is on average of Rs 12043.41 only.
4. The staff productivity shows a positive trend over the last years. Higher the staff productivity, higher will be the effectiveness of service operations of the firm.
5. The vehicle productivity on average is 319.15. The number of buses operated is to be improved in order to increase the revenue.
6. The break-even analysis shows that the firm is facing huge losses for the past years as the Total Sales is very much less than the Total Costs. So, in order to achieve a no profit no loss situation (break-even), the firm has to generate a total revenue of approximately Rs. 18,841 crores per year according to the data from the financial year 2022.
7. The fuel and spares cost to total cost ratio shows a

decrease from the year 2021 to 2022 and then continued to increase in the year 2023. The main cause of that downfall was due to the lockdown during the corona virus outbreak. The price as well as demand of fuel and spare parts is expected to increase in the coming years. Higher the fuel and spares cost to total cost ratio, higher will be the expenses to the firm. This ratio must be reduced to generate profit.

8. The staff cost to total cost ratio shows an increase from the year 2021 to 2022 and then continued to decrease slightly in the year 2023. Higher the staff cost ratio, higher will be the staffs' expenses to the firm. This ratio must be reduced to generate profit. But sufficient and efficient workforce must be required for proper running of the firm.
9. The other operating costs to total cost ratio show a decrease in cost from the year 2020 to 2021 and then continued to increase in the year 2022. Higher the ratio, higher will be the expenses to the firm. This ratio must be reduced to generate profit.
10. The non-operating costs to total cost ratio show an increase in costs related to debt and superannuation (pension) charges from the year 2021 to 2022 and then continued to decrease in the year 2023. Higher the non-operating costs to total cost ratio, higher will be the expenses to the firm. This ratio must be reduced to generate profit.

Recommendations

- KSRTC should make use of more buses for their public transportation service to generate revenue. Non-operating buses taking up most portion of the operating costs must be disposed.
- EPKM and EPB can be increased only if there are proper working buses with adequate mileage.
- Highly efficient Enterprise Resource Planning software such as SAP must be implemented into KSRTC's database to increase their productivity. It also lets the firm get updated with the current technology.
- Majority of the operating cost is comprised by fuel and spare parts cost (around 45%). KSRTC should take immediate steps to improve the fuel efficiency of vehicles by replacing electric vehicles or dual fuel mode vehicles. It drastically reduce the operating cost of the firm in the long run.
- Employees must be given proper training in order to increase the man productivity and efficiency of the fleet. There must be performance appraisal based on the productivity.
- Initiatives should be take taken to improve the non-operating income of KSRTC.
- KSRTC should consider, on an experimental basis, a private operator in highly loss-making depots, to see if break-even profits can be reaped.
- Initiatives like GPS and GPRS should be implemented to track the buses and also for the time management of buses. Even if KSRTC is providing online reservation system, the efficiency of the system should be improved in accordance with the global standards.
- A PPP model for the working and operation of KSRTC can be considered.
- KSRTC should rework on the current pension schemes or entrusting the obligation of pension fund management to SBI or LIC. It will strategically impact the net profitability of the firm.
- Even if the company is passing through severe financial crisis, vigilance must be taken regarding not to take loan for meeting the working capital requirements. It will make the conditions worse.

CONCLUSION

KSRTC is a public sector corporation which ensures low-cost transport services to the public. The immense hike in fuel price

and political intervention over the years has drastically affected the operations of KSRTC. The possibility of achievement of breakeven situation is also a challenging task for KSRTC. This can be achieved through effective allocation of services especially long route services. The city circular buses cannot be run efficiently due to the immense traffic in various locations around Kerala. Hence, a replacement of the city circular buses to electric buses can bring about an enormous impact on the net profitability of KSRTC. They can also think about a PPP model in the operation of loss making routes and also in the various operations of KSRTC..

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