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Navigating Cost Control Challenges in West Bengal's Bus Transport Corporations: A Study

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A B S T R A C T

Background: Several factors are influencing the deteriorating situation in West Bengal bus transport corporations. In addition, the lack of government finances is severely obstructing progresses in performance. The present study explores the primary factors that affect the performance and efficacy of two selected bus transport corporations in West Bengal.

Materials and Methods: To establish performance metrics, we use ten years' data from the reports of the Transport Research Wings of India and others. We examine the cost composition of the selected bus corporations by determining prime factors such as personnel costs. Subsequently, we compare the productivity of personnel to the national-level performance yardstick.

Results: The results indicate a substantial performance disparity in comparison to the national benchmark and possibilities for improving the effectiveness of staff performance.

Conclusion: The actual results show that there is an opportunity for NBSTC and SBSTC to custom their staff more productive way.

Keywords: ***Additional Cost, Bus Transport, Performance, Staff Productivity,***

1. Introduction

Road transport holds a critical place because it allows people to move, and with that movement, the economy evolved. After gaining independence, India recognised the need for a well-organised, efficient public transport system. Parliament passed the Road Transport Corporation Act in 1950, which resulted in the establishment of State Road Transport Corporations (SRTCs). To improve the living standards of the people, SRTCs can adequately meet the growth in economic and social needs. Furthermore, bus road transport has developed into a cost-effective choice for the public because of its efficient mobility in urban and rural areas. Further, with the massive increase in passenger numbers, road transport has become the dominant mode of transportation in India. Therefore, research has proven that the publicly owned, sustainable mass transportation system is the most effective solution compared to other modes of transport. As State Road Transport Corporations grew, a strong need emerged to address the various issues that SRTCs faced. Since their establishment, most SRTCs have consistently operated at a deficit and required financial support from the government. Various operational flaws have contributed to the losses incurred by these SRTCs. Over the years, these public transport companies have faced significant challenges such as overstaffing, limited autonomy in adjusting fares, inflexible cost structures, poor fuel efficiency, and high levels of debt. In light of reduced financial assistance from governments, these organisations have encountered significant challenges and are largely navigating through a difficult, pressing situation with limited external support.

Like other states, the situation of West Bengal Road Transport Corporations is deteriorating and is being influenced by several issues. The Calcutta State Transport Corporation (CSTC), primarily operating within urban Kolkata, provides bus services in West Bengal. The services of North Bengal State Transport Corporation (NBSTC) and South Bengal State Transport Corporation (SBSTC) are typically in the rural parts and adjoining intercity services of the state. In the financial year 2019-20, a fleet of about 2,200 buses operated in West Bengal, collectively travelling around 1,600 lakh kilometers. During this period, the state government allocated over Rs. 425 crore in annual subsidies to support the operations of three transport corporations in the region (Annual Audit Report, 2019-20). The accrued losses of these transportation units have become an unbearable burden for the state's transportation department as well as the state's taxpayers. SRTCs, which are essential for meeting societal needs, receive crucial support from the government in the form of subsidies. It's noteworthy that these subsidies and budgetary support play a key role in sustaining transport operations. Additionally, the state government has a significant influence on SRTC revenues by regulating their fares. Given that the cost structure of public sector social utilities should not be measured in terms of profitability, but loss due to waste and inefficiency should be ruthlessly reduced (K.K. Duet). The Comptroller and Auditor

General recommends that the losses of these transportation corporations were largely due to a lack of financial management planning, inefficient operations, and monitoring, all of which could have been avoided with better management [Audit Report (Commercial) on West Bengal, 2011]. Hence, the study attempts to investigate the inefficiency in the financial dimension of the SRTCs in West Bengal and examine the unnecessary costs which may be cut down.

2. Literature Review

India has a vast and varied transport sector that serves the needs of more than 13,000 lakh people. With a road network of approximately 64 lakh km, it boasts the second largest road network globally (Road Transport Year Book 2018-19, MORTH). According to the National Transport Development Policy Committee, road transport carries 90 per cent of total passenger traffic. According to **White (1993),** the bus industry had experienced substantial changes in the role of public authorities, as well as in service offerings, performance, and public funding. However, the bus industry was experiencing financial difficulties, despite the efficiencies that had been implemented. In the International Journal of Public Sector Management, **Vijayaraghavan (1995)** examined strategic alternatives available to State Road Transport Undertakings (SRTCs) in India. The research suggested the notion of strategic alternatives within the framework of SRTCs, specifically addressing cost-cutting measures. However, it acknowledged the intricate nature of strategic planning by refraining from presenting cost-cutting as the sole solution. **Anjaneyulu's (1996)** study, "Performance of the Andhra Pradesh State Road Transport Corporation", aimed to assess the performance of APSRTC. The key areas that were emphasised were the improvement of workforce productivity, the enhancement of fuel efficiency, and the reduction of the financial disparity between revenues and costs within the organisation. **Mekoth and George (2005)** analysed subsidies for State Road Transport Undertakings (SRTCs) in India and proposed that financial assistance should enhance operational effectiveness and efficiency, linking subsidies to quantifiable improvements in service standard and management practices. By tying financial support to measurable performance results, they aimed to promote accountability and sustainability in India's public transport industry. In the Transportation Research journal, **Badami and Haider (2007)** examined the complex issue of striking a balance between financial sustainability and affordability in the public bus system in urban India. The study highlighted a crucial predicament – the scarcity of financial resources posed a challenge for bus corporations in implementing cost-cutting strategies, impeding their pursuit of financial sustainability while simultaneously maintaining affordable prices for the public. **Kumar's (2011)** research, published in "Benchmarking: An International Journal", examined the efficiency of State Road Transport Corporations in India, identifying areas for significant improvement. The study indicated that SRTCs faced inefficiencies in resource use and cost management, such as overstaffing, poor fleet management, and ineffective route planning. Kumar suggested that State Road Transport Corporations adopt streamlined operations and explore cost-effective technologies. **Mahalingu and Madegowda's (2012)** study, published in the Indian Journal of Transport Management, focuses on improving the financial well-being of State Road Transport Undertakings (SRTCs) in India. They emphasise the importance of efficient cost management and revenue optimisation strategies. Key recommendations include stringent cost control, optimising resource use, improving fuel efficiency, and aligning staffing with operational needs. **Srinivas (2013)** conducted a comprehensive evaluation titled "Performance Evaluation of A.P. State Road Transport Corporation (APSRTC) with A Perceptional Focus on Turnaround." The study revealed several key findings affecting APSRTC's performance, including unsustainable fare policies and rising operating expenses. Srinivas recommends prioritising cost reduction measures, conducting meticulous cost-benefit assessments, and implementing better financial management practices. **Vishnu and Kumar (2014)** used Data Envelopment Analysis (DEA) to evaluate the efficiency of road transport companies in southern India. They found significant inefficiencies in staff deployment and fuel consumption, with excessive fuel use per passenger kilometre and high staff ratios per schedule, indicating overstaffing or inefficient staff allocation. **Kovvali and Prasad (2015)** emphasise improving the financial sustainability of State Road Transport Undertakings (SRTCs) through targeted cost-cutting strategies. These include reducing operational expenses through route optimisation and administrative streamlining; optimising bus staff ratios to maintain efficiency without compromising service; and cutting fleet maintenance costs through preventive maintenance. **Katke and Laxman (2017)** investigated the operational practices of State Road Transport Undertakings (SRTCs). The research emphasises the importance of implementing prudent financial management practices to reduce financial risk and improve effectiveness in the public transportation sector. **Raghavendra and Devi (2018)** investigated a substantial discrepancy in staff and material costs between private and public bus companies that operate within the state. The potential inefficiencies in operational strategies between the two sectors are underscored by this disparity, which highlights areas where improvements in cost management practices could benefit both public and private bus operators in Karnataka. **Dev and Biswas (2020) examine the bus system in Lucknow, scrutinising its financial aspects and the institutions involved.** According to their research, the public bus service has been facing persistent financial losses that have impacted both its daily operations and overall profitability. Hence, the primary idea of the study is to collect data related to West Bengal SRTCs and examine whether operation expenses can be made more efficient and thus reduced or not. Given that cost containment is the most critical factor, the current study aims to achieve the following objectives:

1) To identify the additional staff cost of selected West Bengal-based SRTCs due to inefficient use of staff in reference to the national average.
2) To analyse interrelationships concerning additional staff costs across selected West Bengal-based SRTCs.
3) To compare how far the additional staff cost can be implemented as a result of cost-cutting strategies.

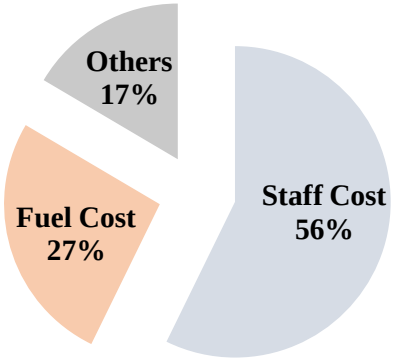
3. Material And Methods

The present study focuses on the operational challenges faced by the NBSTC and SBSTC. To gain a deeper comprehension and interpretation of the current state of affairs, an exploratory study design was chosen. Data from secondary sources is compiled over a 10-year period, from 2010-11 to 2019-20, in conjunction with the study preference. Due to the lack of very recent data, the study does not include the most current scenario. The data provided was gathered from multiple published sources, including the Association of State Road Transport Undertakings Report, Annual Administrative Reports of SRTCs, various issues of the Central Institute of Road Transport (India), and the statistical abstract on the Government of West Bengal. The study compares the statistics on staff performance of NBSTC and SBSTC with the all-India average within the selected time frame. The low staff productivity has been investigated to identify the usual cost. The selected figures are accurately understood as an economic component in light of the research's goal. Further, we used the non-parametric Kruskal-Wallis test in JAMOVI (version 2.3.28.0) to see if the population variances of selected parameters were significant.

4. Result And Discussion

Analysis of the cost structure of SRTCs is required to judge the efficiency in utilising staff, fuel, spares, tyres, depreciation, interest, tax and other charges in terms of the total cost of operating service. **Chart 1** shows that staff costs account for a significant portion of SRTC operational expenditure, accounting for more than half of the total cost during the study period. The fuel cost follows, accounting for approximately 27% of the total cost. The remaining charges, such as tyres, spares, and depreciation, are set together as the other cost. Since SRTCs primarily use a historical cost approach (STU Profile and Performance Report), determining operational efficiency in monetary terms is quite challenging. Therefore, the main objective of the study is to gather historical data from selected SRTCs during the study period. Then, analyse it using national standards, establish the standard cost, and examine the additional operational costs incurred due to inefficiency.

Chart 1: Operating Expenditure proportion of Indian SRTCs



Source: STUs Profile and Performance Report 2019-20, Pune, India

The algorithm for the analysis is outlined in **figure 1**:

Figure-1			
Step 1	***Step 2***	***Step 3***	***Step 4***
Calculation of Standard Number of Staffs Required, as per All India Basis of NBSTC and SBSTC.	Consideration of ***Actual number of Staff*** and **Actual Staff Cost p.a** incurred in respect of Staff Exists of NBSTC and SBSTC.	*Determination of the* ***Standard Staffs Cost p.a*** *of NBSTC and SBSTC by* *= (Actual Cost p.a ÷ Actual number of Staffs)* × Standard Number of Staffs	Differentiate between the annual Actual Staff Cost and the annual Standard Costs (from Step 3) to determine the annual additional costs incurred by NBSTC and SBSTC.
Methodology References: *Performance Audit relating to Statutory Corporations in West Bengal for the year ended March 31st, 2009, chapter III, page no 70(CAG)*			

Calculation of* Additional *Costs due to Low Staff Productivity: The efficient use of personnel is a significant part of the performance measures in transport services. Staff costs include the cost of drivers, conductors, traffic supervisors, workshop maintenance, administration, and others. Staff productivity is calculated as:

= Effective Kilometre operated per year / (Total Staff × 365 Days)

Table 1: Calculation of additional cost due to low staff productivity of NBSTC and SBSTC **(From 2010-11 to** 2019-20**):**

Sl. No.	**Particulars**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**
1.	Individual Staff Productivity of SRTCs per day as per all India Avg. (Kms)	56.00	56.5	58.6	55.9	58.83	59.65	61.82	63.26	64.04	65.71
2. (1×365)	Individual Staff Productivity of SRTCs per year as per all India Avg. (Kms)	20,440	20,623	21,389	20,404	21,473	21,772	22,564	23,090	23,375	23,984
3.	Revenue Earnings Km run p.a (in Lakhs)										
	NBSTC	402	384	404	362	378	559	574	605	653	616
	SBSTC	378	363	359	356	358	448	471	526	650	649
4. (3/2)	Standard No. of Staff Required as per all India Avg.										
	NBSTC	1,967	1,862	1,889	1,774	1,760	2,568	2,544	2,620	2,794	2,568
	SBSTC	1,849	1,760	1,678	1,745	1,667	2,058	2,087	2,278	2,781	2,706
5.	Actual No. of Staff available										
	NBSTC	3,959	3,690	3,410	3,111	3,001	3,778	3,709	3,226	3,300	3,122
	SBSTC	2,388	2,316	2,244	2,031	2,148	2,117	2,042	2,316	2,793	2,695
6.	Actual Staff Cost p.a. (Rs. in Lakh)										
	NBSTC	12,452	10,577	9,562	9,834	12,829	14,292	15,641	16,656	17,323	16,558
	SBSTC	6,806	6,964	7,189	7,013	8,302	8,134	9,593	9,259	10,378	12,266
7. (6/5)×4	Standard Staff Cost p.a. (Rs. in Lakh)										
	NBSTC	6,187	5,337	5,297	5,608	7,524	9,715	10,728	13,527	14,667	13,620
	SBSTC	5,270	5,292	5,376	6,025	6,443	7,907	9,804	9,107	10,333	12,316
8. (7-6)	Additional Staff cost due to low Staff productivity (Rs. in Lakh)										
	NBSTC	**6,265**	**5,240**	**4,265**	**4,226**	**5,305**	**4,577**	**4,913**	**3,129**	**2,656**	**2,938**
	SBSTC	**1,536**	**1,672**	**1,813**	**988**	**1,859**	**227**	**-211**	**152**	**45**	**-50**

Source:

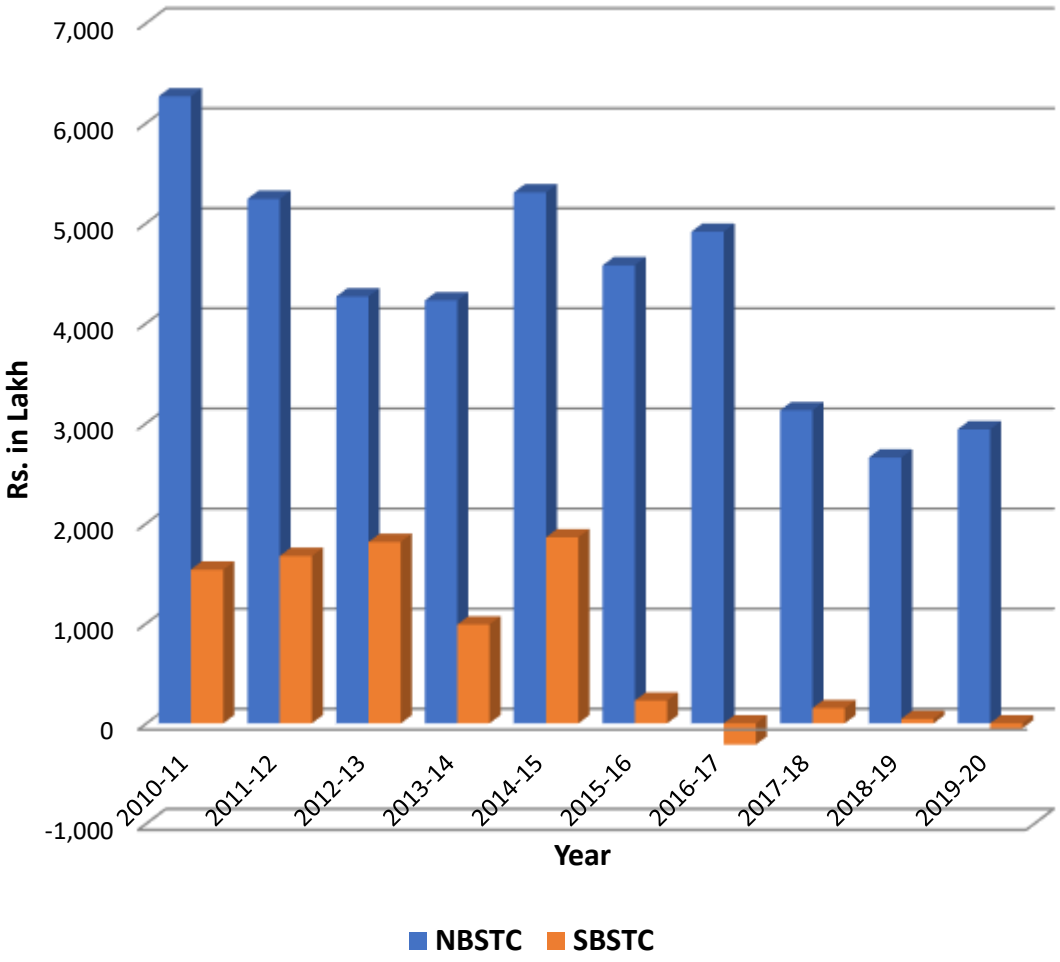
1. Serial no. 1, 3, 5 and 6 Compiled from Annual Report of SRTCs, Transport Research wings, MORTH, GOI, New Delhi.

2. Serial no. 2, 4, 7 and 8 calculated by authors based on available data.

Table 1 exhibits a measurement of additional cost due to low staff productivity of SRTCs in West Bengal. The methodology used in this calculation is an extension of the work done in the CAG report to show that low staff productivity results in excess staff costs. Efficient personnel utilisation is critical in evaluating transport service performance. Staff costs include drivers, conductors, traffic supervisors, workshop maintenance, administration, and related expenses. Table 1 shows additional staff costs due to low productivity at NBSTC and SBSTC.

Further, Chart 2 demonstrates, there was a progressive decline in additional expenses due to the workforce's low productivity. Primarily, NBSTC had to incur an extra expense of Rs.6265 lakh in 2010-11 due to the excess number of staff. However, it has been seen that NBSTC is gradually reducing its additional staff cost, which is a good indicator of cost reduction. This was indicating NBSTC's management taking corrective action to control its personnel. While adopting the SBSTC's observation, management exercised good cost control and progressively began to favourable personnel cost in respect to national average during 2016-17 and 2019-20.

Chart 2: Additional Cost due to low Staff Productivity



For statistical analysis we apply the above additional staff cost data of NBSTC and SBSTC in JAMOVI statistical software. T**able 2** demonstrates that the p-value of the Shapiro-Wilk test results is less than 0.001, indicating that the data may not be normally distributed. As a result, the two-sample Mann-Whitney U test was chosen as a non-parametric alternative to the two-sample independent t-test. Using 0.05 as the threshold of significance, the observed p-value of 0.001 indicates that the performance is significantly different.

Table -2: Statistical Results of Additional Staff Cost of NBSTC and SBSTC

Normality Test (Shapiro-Wilk)

	W	p
Additional Staff cost	0.796	<.001

Note. A low p-value suggests a violation of the assumption of normality

Homogeneity of Variances Test (Levene's)

	F	df	df2	p
Additional Staff cost	0.684	1	18	0.419

Note. A low p-value suggests a violation of the assumption of equal variances

Independent Samples T-Test

		Statistic	p
Additional Staff cost	**Mann-Whitney U**	9.00	0.001

Note. H_a $\mu_{NBSTC} \neq \mu_{SBSTC}$

5. Conclusion

The empirical findings indicate that there is a significant opportunity to increase the staff productivity of NBSTC and SBSTC. The staff costs were significantly higher than the national average for both SRTCs. The concerns may include high staff strength and salary discrimination. To be scale-efficient, appropriate staff norm must be implemented. More effort is needed to optimise the situation for surplus employees. However, in the case of staff productivity concerns, SBSTC results are better, even though statistical significance has been found in regard to incurring staff costs between NBSTC and SBSTC. Overall, there are possibilities to improve the effectiveness of staff performance, which can be done by combining effective monitoring of key metrics with appropriate policy initiatives by both NBSTC and SBSTC.

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