Measurement of Performance of Transit Agencies using Value-Addition Process

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Abstract

Among enough methods of analyzing the financial statements of transit industries value-added (VA) analysis is a competent method to analyze the financial statements of transit industries. Operational expenses, depreciation and retained earnings are the few important factors that facilitate VA study. In this paper an attempt was made to study the selected public transport corporations / Transit agencies (Tamil Nadu, India) for a period of five years (1998-99 to 2002-03). Performance difference between the base year and subsequent years has been evaluated using net value added (NVA). Representational factors like employees, government, loan and capital to support the operations have been considered to study the application of VA. This paper identifies the wide use of performance indicators for the measurement of performance. A weightage-assigning model has been developed to consolidate the variation between the years and to compare the transit agencies (TAs).

***Key words** : Measurement of performance, Added value, Performance evaluation.*

Introduction

Financial restraints in public expenditures in recent years have resulted in calls for increased accountability and consequently, continuous efforts have to be taken improve the efficiency and effectiveness of public services (Carter et al. 1992; Foltin, 1999; Kopczynski and Lombardo, 1999; Kloot and Martin, 2000; Bowerman et al. 2001; Worthington and Dollery, 2002). Such efforts have often been become a part of a recent trend towards the results-oriented restructuring of government services (Chan, 2004). Performance measurement systems, if effectively linked to the revised strategies and accompanied with appropriate rewards can provide useful tools for restructuring organizational performance management in general (Kaplan and Norton, 1992). Measurement methods gaining more and more importance in productivity-based industries, because, it enhances output and improves standards (Charles parker, 2000). In this context, performance measurement (PM) using value added is one of the suitable tools to compare the organizations, which have similar type of functions/operations.

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Public enterprises have started realizing the importance of performance measurement. Especially, Transit Agencies (TAs) are showing more interest on voluminous data analysis collected from operations and maintenance of vehicles. There are several methods like Evaluating Performance through value added process, Growth rate evaluation etc., are available for the studies. Using such methods the evaluation measures have been developed, which are usually compared with that of other agencies and sectors. This has led to know about the nature of the agency performance and its "stack up" against other similar agencies. In the process of value-added analysis, the profit and loss account is needed to be prepared in the modified form showing the value-added by each contributing factor. This is said to represent the real objective for which an organization is actually working and place a completely new emphasis on the financial results of the organization in terms of positive contribution. Profit is merely one of the components in the value-added process. The welfare of the society is not by profit alone but also by other important component included in the value added process.

The revenue of an organization may be taken as a sum of two components viz. third party purchase plus value-added. How much value is ascertained by subtracting the third party purchase from the revenue. This VA is shared by (i) government (ii) employees (iii) financiers (iv) Industrialists/owners and (v) retained earnings (depreciation + profit). VA is important parameter to judge the efficiency of an enterprise. It indicates the net value or wealth created by the manufacturer during a specific period. No enterprise can survive or grow if it fails to generate wealth. An enterprise may exist without making profit but cannot service without adding value. An enterprise not making profits is bound to become sick but not adding value may cause its death over a period of time (Agarwal and Garg, 2003). Therefore, VA based performance measurement is getting more importance to enhance the overall efficiency of public transport companies/ TAs.

In India, State Transport Undertakings (STUs) / public TAs are considered to be the majority in providing passenger transport service to cater the needs of common / middle class of people living in urban, semi-urban and rural areas. In recent years, public transit agencies of this country are facing many challenges across various dimensions that include physical and financial management. Revenue management is the current requirement of these companies to improve service conditions. This is to be considered with sum of two components viz. third party purchase plus VA. Subtracting the third party purchase from revenue of the company may provide a result on value-addition.

Literature Review

Performances of organizations are evaluated using appropriate methods based on the improvements required time to time; at most performance measurement has the privilege to become the crown of quality control. It is useful to review the progress and to change the plans required to enhance production. Barrie Daniels

(1990) discussed the need for measurement within the management process, specifically the need for performance indicators. His studies examined the management process on performance to construct an action plan for defining performance indicators. Kay (1993) calculated the value by subtracting from the market value of organization's output the cost of inputs: Revenue Less (wages ad salaries, materials, capital costs) Equals Added value. He suggests that added value is a measure of the loss that would result to national income and to the international economy if the organization ceased to exist: Adding value in this sense is the central purpose of business activity. Charles Parker (2000) is a freelance journalist, based in Cornwall, UK, identified the reasons to study the performance (viz. to identify success, problems bottlenecks and wastes etc.). Celik Parken (2002) conducted a study to obtain comprehensive performance ratings to gauge the productive and service quality performance of a public transport company, functioning at Hong Kong. He developed a method called "operational competitiveness rating (OCRA) which was used to identify the cost and revenue efficiency of operations. Sulek and. Lind (2000) of Urban Transit Institute formulated a system to measure the performance of transit operations and discussed about quality, efficiency and effectiveness required for transit agencies.

TCRP report - 88 (2003) also highlights the reason to use performance measurement for transit operations through a detailed study on developing a system for the transit performance measurement. Agarwal and Garg (2003) have studied some of the transport corporations in India using value added concept. The results of these studies provide details about performance measurement and its importance. John Pucher and Nisha Korattyswaroopam (2004) discussed the problems; challenges to the public transport in India and suggested to strengthen the operations by improving the financial performance and quality of service.

Journals discussing transit performance and "The Motor Transport Statistics" (published by The Ministry of Surface Transport, New Delhi), and Performance reports published by Central Institute of Road Transport (CIRT) Pune also have been referred for studying the agencies.

Concept of VA measurement of performance

VA statement has been used to examine commercial as well as economic performance of the TAs. The economic performance of an operation can be measured as the difference between revenue (income) and cost of purchased goods and service obtained. The concept of VA is not limited with the profit targeted by an agency, it is considered as more than profit, which can be added by the agency. VA study examines internal performance (financial) of an agency, and it has the approach to VA concept; the following are the two important conceptual approaches to find VA

1. "Subtraction model" (Gross revenue – cost of purchased goods – in goods or services) – also called as product oriented approach.
2. "Additive model" (wages + interest + gross profit) –also called as income concept

VA statement is a voluntary statement with traditional accounts, which provides information in such a manner so that a layman can measure the performance of the enterprise in a broad sense. Value added is sometimes described as an extra wealth generated by selling goods or services to the customer, therefore it is also called as "wealth generated and distributed". This value added concept has now been applied as a measure of productivity. Management accountants also use it as a tool for evaluation of performance of an enterprise. It has been divided into three parts such as (i) generation of net value added (ii) application of net value added (iii) performance indicators in terms value added.

Wages, interest paid, gross profit and the cost incurred due to the goods purchase and services are the key factors to determine VA. Study on generation of net value added, application of net value added and performance indicators through VA could provide detail about the actual VA to the system. This may be considered as a type for evaluating performance of TAs. The figure 1 depicts the concept of study and how the study is routed.

Method of study

Present study on measurement of performance refers for a period of five years (1998-99 to 2002-03) in order to draw the trend in the performance of the selected transit agencies and to evaluate the performance using few selected physical and financial indicators. Seven transit agencies based on the year of starting of service and fleet strength has been selected for the present study.

(1) Tamil Nadu State Transport Corporation Limited (TNSTC), CBE- I, (2) TNSTC -VPM – I, (3) TNSTC KUM – I, (4) TNSTC -MDU – I, (5) TNSTC - SLM-I, (6) TNSTC -VPM – II, and (7) TNSTC -MDU – II.

The study is limited to the cost data available and provided as secondary data, which is having its own limitations. Additionally the required data for the study were obtained from CIRT, Pune, and Ministry of surface transport, New Delhi. Annual reports of the selected TA's have been referred for the above said period. Indian government is having certain difficulties to maintain constant price for petrol, diesel, lubricating oil and related products. This study did not consider the changes in the price of high-speed diesel and lubricating oil, because of the price variations.

Generation of NVA

In India, Transit agencies calculate their profit using financial statements every year. This provides an idea about the financial performance. Generally, TAs have been assigned some social responsibilities, but in actual practice it is not reflected through financial statements. VA study is found to be one of the suitable approaches, which enable the agencies to analyze their performances at macro level.

The VA may increase if the revenue level (which is the result of improving output/productivity

without increasing fare level) is increased. Reducing the material cost also may increase the VA. In economic terms, VA is therefore, the difference between the total revenue (TR) and total expenditure on the material and services purchased by the enterprise.

VA for an enterprise is given as follows:

TR – (material cost + cost on services) = Value Addition

VA for a transit agency has to be modified as follows, since miscellaneous expenses are to be considered as cost of services:

TR – (Material cost + Miscellaneous expenses or other expenses) = Value Added to TA

The term, "Total Revenue" (TR) is referred to traffic revenue generated, subsidy / reimbursement from Government and non-traffic revenue from operations.

"Material Cost" is referred as input to the passenger bus viz. Cost of diesel (daily consumed), Lubricant (consumed), leaf spring, auto spare cost, tyres, tubes cost, and batteries, cost incurred due to general items and reconditioning of items.

The NVA is calculated as follows:

NVA = (GVA) – (Depreciation)

Where,

GVA = Gross Value Added = (Total Revenue) – (Material cost + other expenses)

The term "Depreciation" is referred to the depreciation on moving (vehicles) and non-moving (land /depot facility /infrastructure) assets and "other expenses" referred to the expenses that are not directly accounted by the agencies.

Calculating the difference in performance (DIP) for a selected period of time using GVA and NVA provides awareness to the management to concentrate on specific problems. The data collected form agencies to find out the GVA and NVA is provided in Table-A in the annexure. It also provides the details of calculation and how the data were used to calculate the percentage of gross value added and net value added. Microsoft XL spreadsheet has been used to perform simple mathematical calculations and the following sample calculation provides the details about the way in which calculations were carried out in table A to find out GVA and NVA.

Sample calculation provided for the financial year1998-99 (Referred from Table-A from annexure).

Total revenue of the financial year (Rupees in Lakhs) = Rs.16335 (considered as 100 %)
Material +other costs = Rs.6832
Gross Value-Added (GVA) = Rs.16335-6832=Rs.9503 [GVA in % = (9503/16335) =58.17%]
Depreciation = Rs.1481
Net Value-Added (NVA) = Rs.9503 -1481=Rs.8022 [NVA in % = (8022 /16335) =49.10%]

DIP of the agencies has been calculated using the results of GVA and NVA. To find the DIP, 1998-99 has been considered as base year for the selected period. Figure 2 and 3 provides the variations in DIP of transit agencies in GVA and NVA. Sample calculation to find out the difference in performance (percentage of GVA) from 1998-99 to 1999-2000 is provided as follows:

$$\text{GVA (\%)} = \frac{\text{Difference in the value obtained in the base year 1998-99 and 1999-2000}}{\text{Value obtained in the base year 1998-99}} \times 100$$

$$= \frac{\left\{\begin{array}{c}\text{Value added to the Gross Amount in}\\ \text{Rupees in the year 1999-2000}\end{array}\right\} - \left\{\begin{array}{c}\text{Value added to the Gross Amount in}\\ \text{Rupees in the year 1998-99}\end{array}\right\}}{\text{Value added to the Gross Amount in Rupees in the year 1998-99}} \times 100$$

$$= \frac{55.98 - 58.17}{58.17} \times 100 = -3.75\%$$

Net Value added and its application

It is possible to view transport corporations as a public enterprise, since it has large group of claimants which includes employees, capital providers etc. excluding the government. For such an enterprise value-added as basis for performance appraisal is more suited since it is the value, which an organization adds either through production process or through providing service. Estimated Gross National Product (GNP) is the aggregate of value-added from all economic activities. Hence importance of value-added is emphasized. The increase in real GNP is one of the primary objectives of the planned economic development and therefore, this criterion is more appropriate than the profit. It includes wages and salaries of the employees in addition to items of social surplus like realized interests, taxes and profits. Employees (drivers, conductors and others), capital providing agents, loan providing agencies, government and retained profit for growth are the major contributors for the transport economics. The application of net value added is studied using the key factors like contribution to the employees, contribution to the government, contribution to loan and capitals.

Contribution to the employees (CE)

TA's are paying salary to both regular and temporary workers and bonus to all employees. As an additional benefit, employees are provided with EPF (employee's provident fund) and group insurance etc. House construction Loan and educational loan are the other benefits provided to the employees in addition to the above. Employees are considered as the backbone of

the transport companies and their contribution becomes one of the main factors in NVA.

The figure 4 shows the rate of variation in contributions to the employees for the selected period. This graph indicates that, the growth is almost negative and not in controlled level. Table B presented in annexure provides data for the calculations of CE and contribution to the employees is in increasing trend during the study period.

Contribution to the Government (CG)

NVA giving importance to the money contributed to the Government, since agencies are required to pay fees and taxes/duties to central (*Import duty and excise duty* viz. diesel oil, motor spirit, motor vehicles and auto spare parts) and state Govt. (sales tax on motor spirit, tyres, tubes, vehicle tax, passenger tax and motor vehicle tax). Road taxes, turnover duty, permit fees and miscellaneous taxes are some other charges paid to Govt. to operate vehicles.

The figure 5 shows the rate of variations in contributions to the government. Table B presented in annexure provides data for the study period. This also indicates that, financially there are no major changes in contribution to the government.

Contribution to loan and capital (CLC)

The following are the two forms of investments in most of the organizations.

1. Equity capital
2. Borrowed capital

The equity capital implies the share capital whether equity or preference in share capital. The borrowed capitals imply borrowings through debentures from financial institutions, banks or any other creditors. Interest paid on any of these is called an application of NVA towards contributors of capital and loans.

Capital structure of the government transport/ transit agency is supported by capital investment by state, central government and other means. The contribution towards the loan and capital is calculated as follows.

Contribution towards the loan and capital = {Total capital and liabilities} – {Current liabilities inclusive of short - term provisions and borrowings}

Figure 6 shows the rate of variations in contributions to loan and capital. Table B presented in annexure provides the data for CLC and the variations with reference to the financial years.

Retained earnings (RE)

The VA is a measurement applied to measure profitability of performance trends. Retained earning is the primary factor in VA to understand the present conditions of business. Agencies are expected to reduce the losses by effective management, so that better services can be provided to the society.

Figure 7 provides the details of difference in performance (DIP) in retained earnings. In general, agencies were having a very poor retained earning or it is a negative value for the entire study

period. Table B given in annexure provides the details of RE for all the five years. TA-2 and TA-3 is having some retained earning during the financial years from 1990-00 to 2002-03 and 2000-2003 respectively.

Performance indicators in measurement of performance

The added advantage of criteria based - VA is that, it helps to distinguish quantitatively between financial efficiency and economic efficiency based on both existing prices and invariable prices. There is no doubt, that, financial efficiency would be associated with the financial achievements, which is practically crucial for managing the affairs financially. It is also able to represent the financial ability of the agency. On the other hand, the financial efficiency may not be the actual managerial efficiency. Owing to this fact, lower level of efficiency of an agency may sometimes have high VA per employee. Hence the relatively elevated ticket money is charged to the passengers. On the contrary, efficient management may have lower VA as result of lowest ticket money charged to the passengers. Besides, the changes in the price, over a period of time of input-output are the impact of inflation. It does not get reflected in normal financial efficiency. But due to other factors such as lag in the fare and cost, does not get reflected adequately based on VA at the current prices.

The principal objective of evaluation is to estimate the VA, which is based on the constant prices of material inputs and stable fares. To eliminate the impact of variables like variation in input cost and revision of fare is also the VA objective. This would indicate a real economic efficiency reflecting managerial performance. Such modification is very useful in intra – firm comparison for a given period and for inter- firm comparison over a period.

The following are the few relevant indicators to know the performance of the TA through the concept of value added.

- Number of employees in service and the value added per employee,
- Net capital employed for the operations and the value added for capital,
- Total revenue per year and value added to the revenue,
- Fixed assets for the company and value added to fixed asset,
- Average number of buses held and value added per bus,
- Number of passengers carried and value added per passenger, and
- Total effective km and value added per effective km.

The following terms related to the above indicators provide the details about manpower utilization, utilization of resources and capital, revenue generated, fixed assets, passenger and bus kilometre.

Manpower utilization

Employees (drivers, conductors, and other maintenance staff) are the backbone of the transit agencies and utilization of manpower varies from agency to agency. Increasing the manpower to the requirements also will enhance the productivity and VA to the system.

To assess the efficiency of the agency, all factors contributing or influencing productivity approach and joint contribution by labour and capital are considered. However, in case of agencies, there is no need to take joint effect of manpower and capital because technically inter –firm (TA) variation in major capital assets, the vehicles, is found to be negligible. Therefore, it would be sufficient to concentrate only on single factor productivity approach taking into of account manpower productivity as a basis for evaluation variations in productivity in terms of value-added per employee and can be used to analyze the quantity of managerial efficiency. For a given level of fare, higher value –added by efficient utilization of the manpower needs lower bus staff ratio and thus the higher manpower productivity gets reflected in higher value added for employee.

$$\text{Value added per employee} = \frac{\text{Net value added}}{\text{No. of employees}}$$

Utilization of resources and capital

Increasing or decreasing the resources will create lot of changes in productivity. It is necessary to measure the productivity of a system through resources available. VA measures the wealth distribution of the company in terms of investment and other social responsibility. An investment does not itself generate growth or adds value. Therefore, the concept of value added can be directly linked with the concept of social profitability of an enterprise. The measure of VA must be applied in addition to profitability to measure the performance of a business. Thus the concept of value added measures the performance of an enterprise.

$$\text{Value added for capital employed} = \frac{\text{Net value -added}}{\text{Net worth}}$$

Revenue generated

Revenue may be measured in relation to the assets that are used to produce the earnings. Capital revenue turnover ratio is an index of productivity of capital. Value added to the revenue normally would have changes in every year based on the other factors.

$$\text{Value added to the revenue} = \frac{\text{Net value -added}}{\text{Total revenue}}$$

Added value to the assets (fixed)

Fixed assets are considered under the capital structure of the transit agencies. Productive assets are having much importance than the non-productive assets in a firm but all the capital of the transit agency is not fully invested in productive means.

$$\text{Value added (fixed assets)} = \frac{\text{Net value-added}}{\text{Total value of the fixed assets}}$$

Value added for the vehicle & passenger

Passenger traveled kilometers is the sum of the scheduled kilometres (Kms) of journeys traveled by the all the passengers carried by the transport vehicle and the value will be added to the passenger bus once if it is able to complete the scheduled kilometre for the productivity.

$$\text{Value added (generated) per passenger} = \frac{\text{Net value added}}{\text{Number of passenger carried while the vehicle is in service}}$$

$$\text{Value added (generated) per bus} = \frac{\text{Net value-added}}{\text{Number of buses held due to various reasons}}$$

$$\text{Value added (generated) per effective km} = \frac{\text{Net value-added}}{\text{Effective Crore Kms of vehicles in utilization for fleet}}$$

The agencies are normally having changes in the value-added for the above said indicators and it is reflected in the output produced by the agencies in every year. Table –C presented in annexure provides the data and calculations for the selected indicators A-G.

Evaluating the difference in performance would become useful to find the variations in a selected period. Figure 8 shows the variations in added value per employee for the period of five years. Figure 9 shows the variations in added value per capital employed. Figure 10 indicates the variations in value added to the revenue of the agencies. Figure 11 shows the variations in value added to the fixed assets accounted by the agencies. Figure 12 shows the value added per bus operated by the agencies to provide passenger transport service. Figure 13 shows the variations in value added per passenger. Figure 14 shows the variations in value added per effective kilometre of operation.

Sample calculation is provided below (for the results refer table C in annexure and figure 8) to find out the difference for the indicator A (1998-99 to 1999-2000):

$$\text{\% Of VA added/employee during the year 1998-99} = M = \frac{\text{Net value-added during the year 98-99}}{\text{Number of employees as per record during the year 98-99}} \times 100$$

$$M = \frac{8022}{8490} \times 100 = 94.48\%$$

$$\text{\% of VA added/employee during the year 1999-2000} = N = \frac{9047}{8874} \times 100 = 101.94\%$$

$$\text{\% of variation (1998-99 to 1999-2000) in value-added/employee} = \frac{N - M}{M} \times 100 = 7.89\%$$

Analyses using weightage assigning model

Growth of a transit agency is considered to be one of the most important factor because it clearly identifies the changes occurred over a period. This also provides an opportunity to find out the overall operational performance of transport operations. For the measurement of performance, it is necessary to have set of indicators (as discussed in the above sections) and to draw the trend in operations. The indicators related to physical and financial components of operations are known to be "universally used" in measurement and they provide a broad opinion about TAs through common analyses like indexing and weightage assigning methods.

In this paper, a standard weightage-assigning model has been used to understand the increased and decreased trends in performance of the agencies. Using the data of VA studies, bar charts had been constructed for GVA, NVA, CE, CG, CLC, RE and all the selected indicators (A-G) to know the growth of the agency during the study period. Using the bar charts assigning weightages were also carried out for the percentage of variation in value-added. Table 1 provides detailed information about the weightage assigned to the factors, based on the increase and decrease of performance in every year.

Table-2 provides a comparison between the transit agencies, which is helpful to understand the strength and the weaknesses of the agencies using all selected indicators (analyzes the operational performances). The total score of the agencies provided in table-2 indicates the performance (through VA) of the agencies and area in which the management attention is required to improve the transit operational performance.

Table 1 : Weightage assigned using bar charts based on growth rate variations

Sl. No.	Change in Growth / condition observed (overall) through bar chart for the period of five years	Weightage assigned (From 0 to10)
1	Growth changes from negative to positive	10
2	Growth changes from positive to negative	0
3	Positive growth is in increasing trend	9
4	Positive growth is in decreasing trend	4
5	Negative growth is in decreasing trend	7
6	Negative growth is in increasing trend	0
7	Positive Growth is increased but decreased in subsequent years	3
8	Positive Growth is decreased but increased in subsequent years	5
9	Negative Growth is increased but decreased in subsequent years	2
10	Negative Growth is decreased but increased in subsequent years	1

Table 2 : Score of the agencies on various factors and indicators

Factors / Indicators	TRANSIT AGENCIES						
	TA-1	**TA-2**	**TA-3**	**TA-4**	**TA-5**	**TA-6**	**TA-7**
Gross value added	0	07	07	04	0	0	10
Net value added	0	04	03	03	03	03	05
TOTAL SCORE	**0**	**11**	**10**	**07**	**03**	**03**	**15**
Contributions to employees	0	0	02	02	02	02	0
Contributions to the government	0	0	0	02	0	0	0
Contribution to loan and capital	10	0	0	0	0	0	0
Retained earnings	0	0	02	02	02	02	0
TOTAL SCORE	**10**	**0**	**04**	**06**	**04**	**04**	**0**
Indicator –A	10	05	10	10	10	10	10
Indicator –B	02	02	01	0	07	03	0
Indicator –C	01	05	04	03	03	04	05
Indicator –D	10	05	03	03	10	10	10
Indicator –E	10	10	03	10	10	10	10
Indicator –F	10	10	10	10	10	10	10
Indicator –G	10	10	10	03	10	10	10
TOTAL SCORE	**53**	**47**	**34**	**39**	**60**	**57**	**55**

A - Number of employees & Value added per employee (In thousands)

B - Net capital employed (Rupees in Lakhs) & Value added for Capital employed

C - Total revenue (Rupees in Lakhs) & Value added to total revenue in Rupees

D - Fixed assets (Rupees in Lakhs) & Value added to fixed assets

E - Average number of buses held & Value added per bus (Rupees in Lakhs)

F **-** Number of Passenger carried (In Lakhs) & Value added per passenger (Rupees in Lakhs)

G - Effective Lakhs Km. & Value added per effective Km (Rupees in Lakhs)

Results and discussion

There are number of ways available to enhance the efficiency of TAs. Analyzing the existing data is also providing an opportunity to improve the same. The following observations provided few useful information's to the agencies

1. GVA is the result arrived from cost factors like material cost, which is represented by fuel, lubricants, tyre, tubes, spares and reconditioning materials. Table A presented in annexure shows that, the percentage of GVA varies from 49 to 57%. This indicates the increase of material costs in every year. Therefore, it is necessary to increase the revenue of the agencies to meet out the expenses. It seems, TA-7 could maintain less material and other costs within control levels. Figure 2 shows that, the variation (%) in GVA is non-uniform and it are found to be negative in values except for TA-4 and TA-7.

2. NVA is the component of GVA. It also refers depreciation on assets in every financial year. Table A shows the depreciation values, which varies year to year and agency to agency. For example the highest depreciation cost of Rs.1481Lakhs is recorded (TA-1) during the year 1999-98 and the lowest during the year 2002-03 (Rs.295 Lakhs –TA-7). TA-7 improved the NVA during 2002-03 (52.66%) because of an average material cost and lowest depreciation on assets. Figure 2 shows the growth of the agencies in NVA. TA-4 and TA-7 were able to record higher NVA during the study period. The study invites the attention of TA-1 to reduce the material and other costs.

3. Excessive or increased number of employees and wages will reduce the added-value to the agencies. It is observed that, the wages to the employees is in increasing trend (refer CE in table B).

   During the year 2002-03 TA-1 (Table B) recorded the maximum contribution to the employees through salary and other benefits (Ra.12, 246 Lakhs). This indicates TA-1 has to go through the number of employee's per bus to balance the bus-staff ratio.

4. One part of the revenue of TAs has been paid to the government in the form of taxes; Contribution to the government in the form of taxes did not reduce during the study period. The amount paid as taxes is found to be non-uniform among the agencies and it is one of the unavoidable burdens to TAs in every year. TA-1 recorded the tax maximum of Rs.1415 Lakhs (Table B presented in annexure) during the year 2002-03 and TA-4 recorded the minimum of Rs.537 Lakhs during the year 1998-99.

5. TAs raises their fund through collecting money from public and private parties in the form of public shares and fixed deposits. The collected money is fully utilized to enhance the operations. Table B (presented in annexure) and table 2 indicate that, TA-1 could raise the fund to the required level in the form of fixed deposits and maintains sufficient capital for operations.

6. Financial problems are avoided by the companies since they have good retained earnings in every year. As per the data, TA-2 is able to show good retained earnings during the financial years 1999-00 to 2002-03 but the agency could not produce a good

growth on NVA because of other reasons like increased material cost, loan, asset management and depreciation. Generally, the agencies were unable to have good retained earnings.

7. Performance indicators are considered to be the most important support to evaluate the function of TAs. The seven indicators selected for the study provides an overall performance view about the agencies. To evaluate and conclude, a weightage assigning model has been developed and used to rate the agencies. The score of the agencies with reference to the bar charts are presented in table 2. The following are some of the observations made with reference to the indicators.

(i) Agencies have to maintain the bus-staff ratio to the required level, but the increased ratio may result increase in salary and it may lead to financial burden. Value added per employee is in increasing trend. The score (refer table 2) obtained by the agencies indicates the variations in growth in value added per employee.

(ii) TA-4 and TA-7 have to increase the net capital employed to enhance the operational facilities.

(iii) Results of VA in TA-1 in total revenue is found to be negative even though the revenue is up to the level. This agency has to provide a topmost care on expenses. Control on expenses may raise the VA to the agency.

(iv) VA to fixed assets is in increasing trend in TA-1, TA-5, TA-6 and TA-7. Decreasing trend in grow is recorded in TA-2, TA-3 and TA-5.

(v) VA per bus is in increasing trend and TA-7 had the highest increase with reference to the base year.

(vi) VA per passenger is in increasing trend with all the agencies and it is important to note that, in recent years Indian public transport vehicles were able to get a good occupational ratio.

(vii) VA to the passengers is in increasing trend. Customers (passengers) have started using the public TAs effectively than other modes of transportation. Figure 13 shows the increased value to the passengers during the study period.

(viii) Figure 14 shows the increased value-added per passenger kilometre provided by TAs. This show the benefit to the passengers is in higher level and services provided by the TAs may be up to the satisfactory level.

(ix) Overall growth of the TA-5 is comparatively good (Table-2) and it followed by TA-6, TA-7 and TA-5.

Suggestions for improvement

Performance measurement, at present, is considered to be one of the basic requirements of all public transport corporations / State transport undertakings / transit agencies functioning at Tamil Nadu, India. The state and central government always aims to provide an efficient transport service to public in addition to other basic facilities. In recent years, government of India provides special attention to improve infrastructural facilities. In addition to the provisions by the government, the agencies also have to take most care in the areas, in which

they have lagged to provide highest satisfaction to the customers.

1. Agencies have to review the management policies to improve the operational performance.
2. State transport undertakings have to consider and review the growth of private operators. It is suitable to discuss the reasons for their success.
3. Public transit agencies have to think about the 100 percent implementation of Total Quality Management concepts for the current fleet management /operations.
4. India is a developing country, has to review the possibilities of implementing the latest technological approaches like intelligent transport system to improve the operational efficiency.
5. The management has to review the workload to the employees, wages and new recruitment. Attending these items will reduce the financial burden to the agencies.
6. Expenses must be controlled to the satisfactory level, so that, the added value to service factors will become positive.
7. Good maintenance management programs like Total Preventive Maintenance will increase the effective service and it will reduce the number of road calls during operations.

Conclusion

Performance measurement is one of the tools used to evaluate the operations of the transit agencies. Value added concepts enhance the performance measurement using growth rate evaluation. The GVA, NVA and Performance indicators using value-addition are the few important contributing elements to evaluate the efficiency of agencies. An attempt made in this paper to evaluate the difference in performance of the agencies using value added concept and performance indicators. A comparison was made in between the seven transit agencies for the period of five years to analyze the operational behaviours, input and output. The study on comparison was highlighted by the weightage assigning model, which was developed to identify the growth of the agencies using bar charts. With reference to the scores obtained by the agencies, various points in strength and weakness have been discussed. Performance Measurement using indicators could provide better understanding about agencies in connection with employees, capital employed, total revenue, fixed assets, average buses held, passenger carried and effective kilometres provided by the vehicles.

References

- **Agarwal R. S. and Garg M. K.** (2003). *Performance Evaluation through value added – A study of selected STUs,* Indian Journal of Transport Management, Vol. 27(4), pp. 496-516.
- **Andy Neely**, (2003). *The challenges of performance measurement*, The Journal of management decision, Vol.42/8, pp.1017-1023.
- **Asbjorn Rolstadas**, (1998). *Enterprise performance measurement*, International

Journal of Operations and production management, Vol.18, No.9/10, pp.989-999.

- **Bagade M. V.** (1979). *Management Information System based effective depot organisation*, Central Institute of Road Transport, Pune, India.
- **Bagade M. V and Paranjpe**, (1994). *Forms of STUs and their Functioning – A comparative study*, Working Paper number 5, published by Central Institute of Road Transport, Pune, India.
- **Barrie Daniel**, (1990). *Performance Indicators*, Journal of Work Study, Vol.39, No.5, Published by MCB UP Limited.
- **Bowerman, M., Ball, A. and Francis, G.** (2001). *Benchmarking as a tool for the modernisation of local government*, Financial Accountability & Management, Vol. 17 No. 4, pp. 321-329.
- **Carter, N., Klein, R. and Day, P.** (1992). *How Organizations Measure Success: The Use of Performance Indicators in Government*, Routledge, New York, NY.
- **Celik parken**, (2002). *Measuring the operational performance of a public transit company*, International Journal of Operational and Production Management, Vol.22, No.6, pp 693-720.
- **Chan, Y.C.L**. (2004). *Performance measurement and adoption of balanced scorecards: a survey of municipal governments in the USA and Canada*, International Journal of Public Sector Management, Vol. 17 No. 3, pp. 204-21.
- **Charles parker**, (2000). *Performance Measurement*, The Journal of work study, Vol. 40, No.2, pp 63-66.
- **Compendium of Transport Terms**, (1982). Published by Central Institute of Road Transport, Pune, India.
- **David Walters**, (2002). Added *value-Enterprise value and competitive advantage*, The Journal of Management Decision, Vol.40/9, pp21-30.
- **Foltin, C.** (1999). *State and local government performance: it's time to measure up!* The Government Accountants Journal, Vol. 48 No. 1, pp. 40-6.
- **John C Groth,** (1996). *The value measure*, The Journal of Management Decision, Vol.32, No.1, pp.12-14.
- **Joanne M Sulek and Mary R. Lind,** (2000). *A systems model for evaluating transit performance*, Journal of Public Transportation, Vol. 3, No. 1, 2004, pp 29-47.
- **John Pucher and Nisha Korattyswaroopam**, (2004). *The Crisis of Public Transport in India:Overwhelming needs but limited resources*, Journal of Public Transportation, Vol. 7, No. 4, 2004. Available at: *http://www.nctr.usf.edu/jpt/pdf/JPT 7-4.pdf* Browsed during the year2005.
- **Kay, J.** (1993), *Foundation of Corporate success*, Oxford University Press, Oxford.
- **Kaplan, R. S. and Norton, D. P.** (1992). *The balanced scorecard: measures that drive performance*, Harvard Business Review, Vol. 70 No. 1, pp. 71-9.

- **Kloot, L. and Martin, J.** (2000). *Strategic performance management: a balanced approach to performance management issues in local government*, Management Accounting Research, Vol. 11 No. 2, pp. 231-51.
- **Kopczynski, M. and Lombardo, M.** (1999). Comparative performance measurement: insights and lessons learned from a consortium effort, Public Administration Review, Vol. 59 No. 2, pp. 124-34.
- **Lesile de chernatony and Flona Harris**, (2000). Added value: Its nature, Roles and sustainability, The European Journal of Marketing, Vol. 34, No.1/2, 2000, pp 39-56.
- **Ministry of Road Transport and Highways,** (2003). *Motor transport statistics.* New Delhi, India. Available at: *http://morth.nic.in/mts.htm.* Browsed during the year 2005.
- **Neely, A.D., Mills, J., Platts, K., Gregory, M. and Richards, H.** (1994). "*Realising strategy through measurement*", International Journal of Operations & Production Management, Vol. 14, No. 3, pp. 140-152.
- **Padam. S and Singh S. K**, (2001). *Urbanization and urban transport in India: The sketch for a policy.* Transport Asia Project Workshop. Accessible at: *http://www.deas.harvard.edu/TransportAsia/workshop_papers/Padam-Singh.pdf.* Browsed during the year2005.
- **Patankar P.G**. (1982). *Road Passenger Transport in India*, Published by Central Institute of Road Transport (Training and Research), Pune, India.
- **State transport undertakings Profile and performance** 1998-99 to 2002-03, published by Central Institute Of Road Transport (Training and Research), Pune, India.
- **TCRP**, Research Results Digest, (October 1994) – Number 3, *Total Quality Management in Public Transportation*. Project report published by Transportation Research Board National Research council.
- **TCRP**, Research Results Digest, (October 2003) – Number 56, a summary of TCRP Report 88: *A guidebook for developing a transit performance measurement system*. Report published by Transportation Research Board of the National Academies. Accessible at: *http://gulliver.trb.org/publications/tcrp/tcrp report 88/summary Doc.pdf.* Browsed during the year2005.
- **TCRP** Report 54, (1999). *Management Toolkit for Rural and Small Urban Transportation Systems, Planning And Administration,* Public Transit Research Sponsored by the Federal Transit Administration in Cooperation with the Transit Development Corporation, published by National Research Council, National academy press, Washington, D.C. Accessible at: *http://gulliver.trb.org/publications/tcrp/tcrp_rpt_54-a.pdf.* Browsed during the year2005.
- **Worthington, A.C. and Dollery**, B.E. (2002). *An analysis of recent trends in Australian local government*, International Journal of Public Sector Management, Vol. 15 No. 6, pp. 496-515.

FIGURES

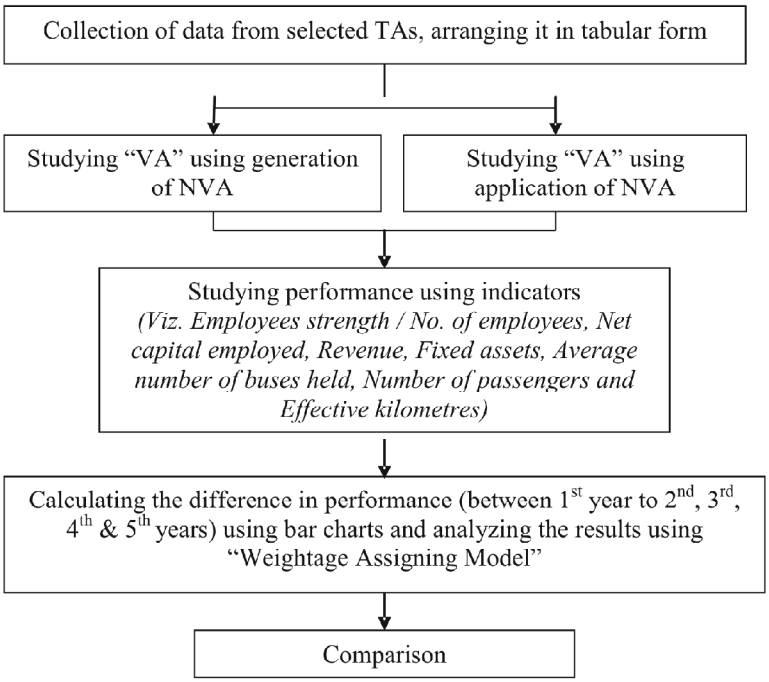
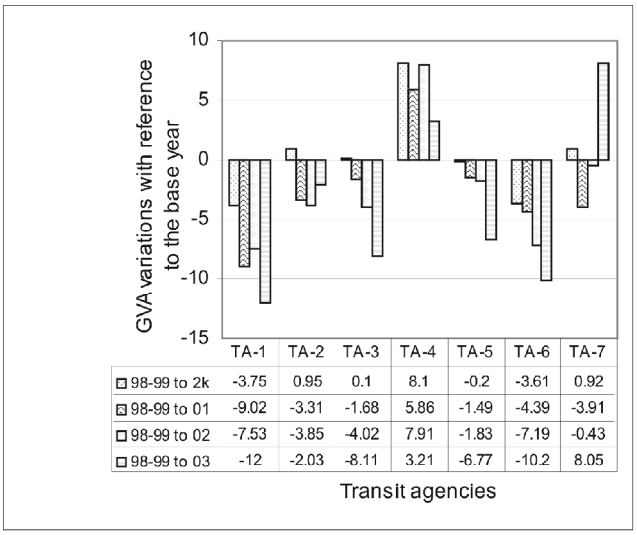


Figure 1: Flow chart showing the study concept



	TA-1	TA-2	TA-3	TA-4	TA-5	TA-6	TA-7
98-99 to 2k	-3.75	0.95	0.1	8.1	-0.2	-3.61	0.92
98-99 to 01	-9.02	-3.31	-1.68	5.86	-1.49	-4.39	-3.91
98-99 to 02	-7.53	-3.85	-4.02	7.91	-1.83	-7.19	-0.43
98-99 to 03	-12	-2.03	-8.11	3.21	-6.77	-10.2	8.05

Figure 2: Variations (%) in GVA

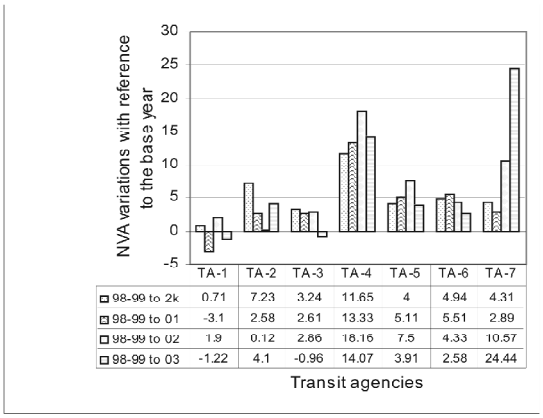


Figure 3: Variations (%) in NVA

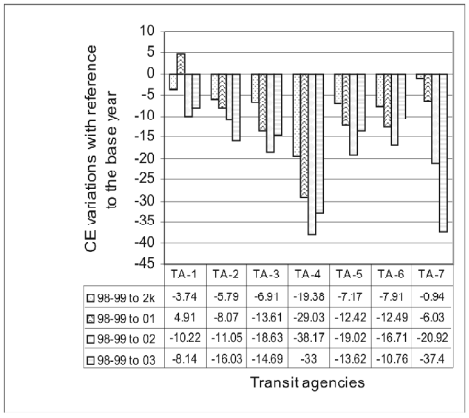


Figure 4: Variations (%) in contributions to the employees (CE).

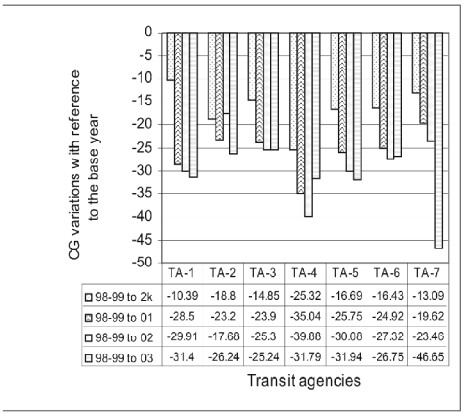


Figure 5: Variations (%) in contribution to the government (CG)

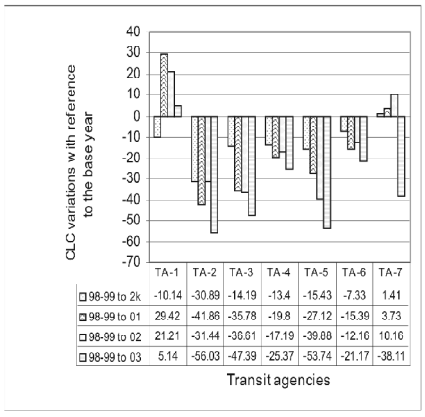


Figure 6: Variations (%) in contributions to the loan and capital (CLC)

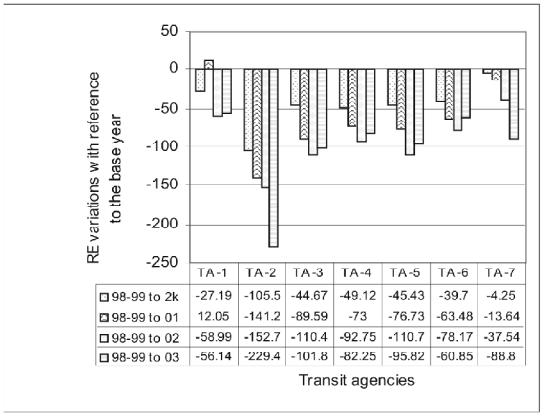


Figure 7: Variations (%) in retained earnings (RE)

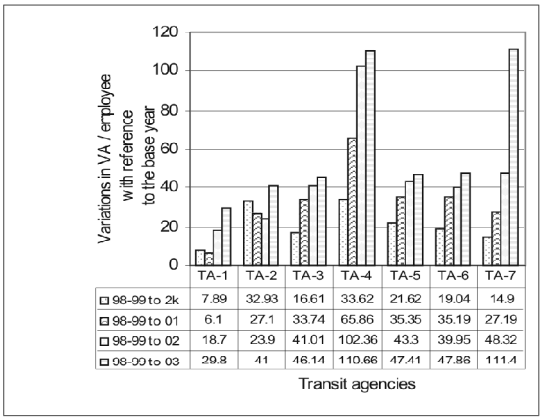


Figure 8: Variations (%) in VA / employee

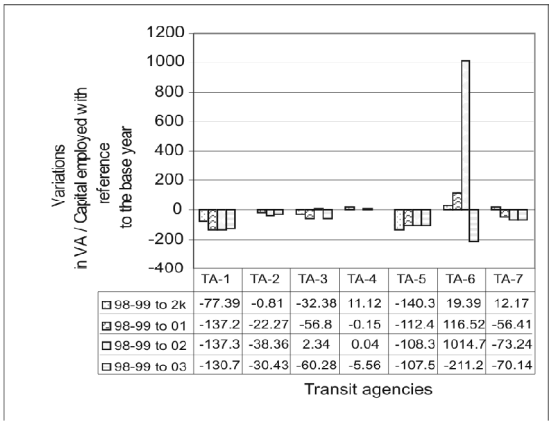


Figure 9: Variations (%) in VA/capital employed

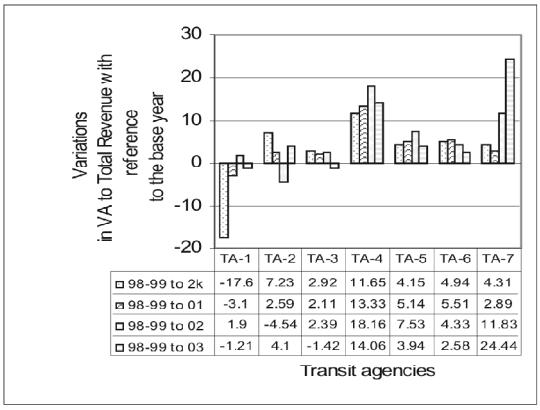


Figure 10: Variations (%) in VA with respect to the total revenue

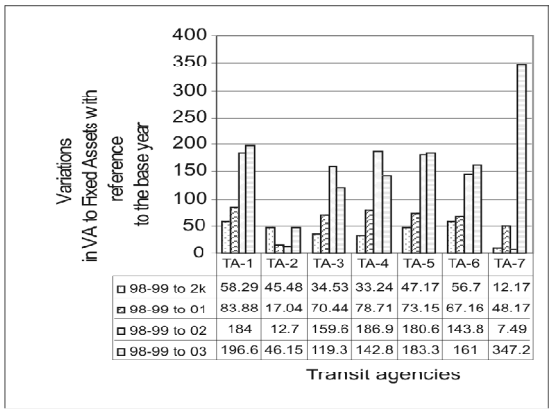


Figure 11: Variations (%) in VA with respect to the fixed assets

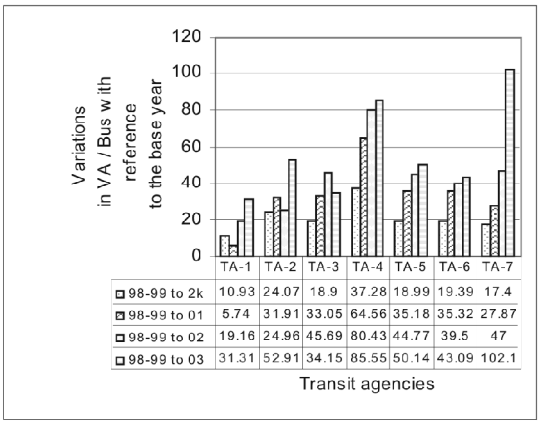


Fig 12: Variations (%) in VA per bus

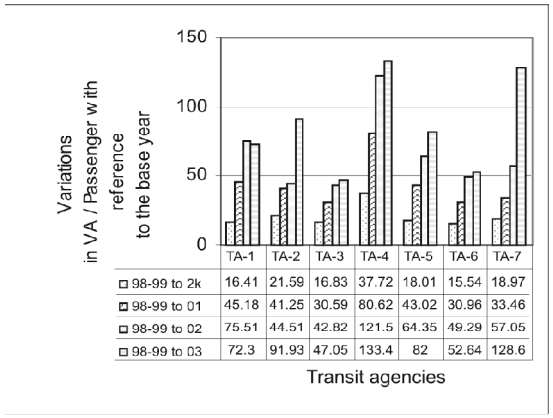


Fig 13: Variations (%) in VA per passenger

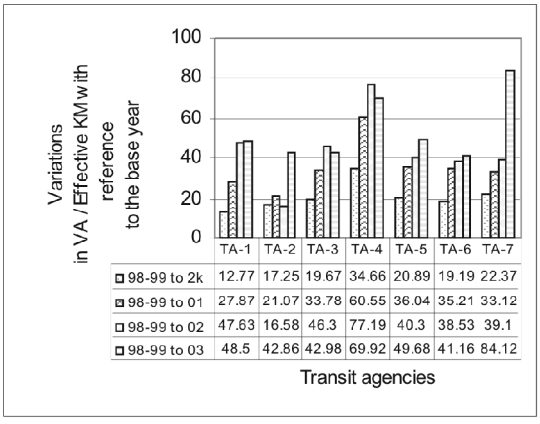


Fig 14: Variations (%) in VA per effective Km

Annexure

Table - A : Generation of Net Value Added (Rupees in Lakhs*)

Period	TRANSIT AGENCY-1					TRANSIT AGENCY - 2				
	TR	LMOC	GVA	LD	NVA	TR	LMOC	GVA	LD	NVA
1998-99	16335 (100%)	6832 (41.82%)	9503 (58.17%)	1481 (9.06%)	**8022 (49.10%)**	14971 (100%)	6761 (45.16%)	8210 (54.83%)	1238 (8.26%)	**6972 (46.57%)**
1999-00	18291 (100%)	8050 (44.01%)	10241 (55.98%)	1194 (6.52%)	**9047 (49.46%)**	17461 (100%)	7794 (44.63%)	9667 (55.36%)	947 (5.42%)	**8720 (49.93%)**
2000-01	24093 (100%)	11341 (47.07%)	12752 (52.92%)	1287 (5.34%)	**11465 (47.58%)**	20025 (100%)	9408 (46.98%)	10617 (53.01%)	1050 (5.24%)	**9567 (47.77%)**
2001-02	25058 (100%)	11579 (46.20%)	13479 (53.79%)	939 (3.74%)	**12540 (50.04%)**	20721 (100%)	9796 (47.27%)	10925 (52.72%)	1263 (6.09%)	**9662 (46.62%)**
2002-03	27620 (100%)	13481 (48.80%)	14139 (51.19%)	741 (2.68%)	**13398 (48.50%)**	23162 (100%)	10718 (46.27%)	12444 (53.72%)	1215 (5.24%)	**11229 (48.48%)**

Period	TRANSIT AGENCY - 3					TRANSIT AGENCY - 4				
	TR	LMOC	GVA	LD	NVA	TR	LMOC	GVA	LD	NVA
1998-99	12960 (100%)	5751 (44.37%)	7209 (55.62%)	842 (6.49%)	**6367 (49.12%)**	10709 (100%)	5176 (48.33%)	5533 (51.66%)	785 (7.33%)	**4748 (44.33%)**
1999-00	15023 (100%)	6658 (44.31%)	8365 (55.68%)	745 (4.95%)	**7620 (50.72%)**	12916 (100%)	5702 (44.14%)	7214 (55.85%)	820 (6.34%)	**6394 (49.50%)**
2000-01	16896 (100%)	7656 (45.31%)	9240 (54.68%)	722 (4.27%)	**8518 (50.41%)**	15171 (100%)	6873 (45.30%)	8298 (54.69%)	675 (4.44%)	**7623 (50.24%)**
2001-02	17116 (100%)	7978 (46.61%)	9138 (53.38%)	488 (2.85%)	**8650 (50.53%)**	16058 (100%)	7105 (44.24%)	8953 (55.75%)	540 (3.36%)	**8413 (52.39%)**
2002-03	17709 (100%)	8658 (48.89%)	9051 (51.10%)	435 (2.45%)	**8616 (48.65%)**	16866 (100%)	7872 (46.67%)	8994 (53.32%)	464 (2.75%)	**8530 (50.75%)**

Period	TRANSIT AGENCY - 5					TRANSIT AGENCY - 6				
	TR	LMOC	GVA	LD	NVA	TR	LMOC	GVA	LD	NVA
1998-99	12893 (100%)	5647 (43.79%)	7246 (56.20%)	1182 (9.16%)	**6064 (47.03%)**	10982 (100%)	4957 (45.13%)	6025 (54.86%)	1091 (9.93%)	**4934 (44.92%)**
1999-00	14987 (100%)	6581 (43.91%)	8406 (56.08%)	1075 (7.17%)	**7331 (48.91%)**	12494 (100%)	5887 (47.11%)	6607 (52.88%)	716 (5.73%)	**5891 (47.15%)**
2000-01	16687 (100%)	7449 (44.63%)	9238 (55.36%)	988 (5.92%)	**8270 (49.55%)**	14085 (100%)	6697 (47.54%)	7388 (52.45%)	711 (5.04%)	**6677 (47.40%)**
2001-02	16827 (100%)	7544 (44.83%)	9283 (55.16%)	775 (4.60%)	**8508 (50.56%)**	14667 (100%)	7199 (49.08%)	7468 (50.91%)	593 (4.04%)	**6875 (48.87%)**
2002-03	17498 (100%)	8330 (47.60%)	9168 (52.39%)	616 (3.52%)	**8552 (48.87%)**	15300 (100%)	7763 (50.73%)	7537 (49.26%)	485 (3.16%)	**7052 (49.09%)**

Period	TRANSIT AGENCY - 7				
	TR	LMOC	GVA	LD	NVA
1998-99	10694 (100%)	5304 (49.59%)	5390 (50.40%)	864 (8.07%)	**4526 (42.32%)**
1999-00	11500 (100%)	5650 (49.13%)	5850 (50.86%)	773 (6.72%)	**5077 (44.14%)**
2000-01	12682 (100%)	6540 (51.56%)	6142 (48.43%)	619 (4.88%)	**5523 (43.54%)**
2001-02	13302 (100%)	6627 (49.81%)	6675 (50.18%)	450 (3.38%)	**6225 (46.79%)**
2002-03	16456 (100%)	7494 (45.53%)	8962 (54.46%)	295 (1.79%)	**8667 (52.66%)**

(Indian Money Rupees One Lakh = US $ 2100 approximately)

TR- Total Revenue, LMOC- Less Material and Other Costs, GVA-Gross Value-Added,

LD-Less Depreciation, NVA-Net Value-Added

Table B : Application of Value added (Rupees in Lakhs)

Period	TRANSIT AGENCY - 1				TRANSIT AGENCY - 2			
	CE	CG	CLC	RE	CE	CG	CLC	RE
1998-99	7982 (99.90%)	1235 (15.39%)	599 (7.46%)	-1794 (-22.36%)	6099 (87.47%)	1096 (15.72%)	435 (6.23%)	-658 (-9.43%)
1999-00	8665 (95.77%)	1248 (13.79%)	607 (6.70%)	-1473 (-16.28%)	7186 (82.40%)	1113 (12.76%)	376 (4.31%)	45 (0.51%)
2000-01	11968 (104.38%)	1262 (11.00%)	1108 (9.66%)	-2873 (-25.05%)	7693 (80.41%)	1155 (12.07%)	347 (3.62%)	372 (3.88%)
2001-02	11202 (89.33%)	1353 (10.78%)	1135 (9.05%)	-1150 (-9.17%)	7618 (78.84%)	1192 (12.33%)	394 (4.07%)	458 (4.74%)
2002-03	12246 (91.39%)	1415 (10.56%)	1052 (7.85%)	-1314 (-9.80%)	8248 (73.45%)	1302 (11.59%)	308 (2.74%)	1371 (12.20%)

Period	TRANSIT AGENCY - 3				TRANSIT AGENCY - 4			
	CE	CG	CLC	RE	CE	CG	CLC	RE
1998-99	6007 (94.34%)	946 (14.85%)	965 (15.15%)	-1551 (-24.35%)	6532 (137.57%)	537 (11.31%)	734 (15.45)	-3055 (-64.34%)
1999-00	6692 (87.82%)	964 (12.65%)	991 (13.00%)	-1027 (-13.47%)	7091 (110.90%)	540 (8.44%)	856 (13.38%)	-2093 (-32.73%)
2000-01	6942 (81.49%)	963 (11.30%)	829 (9.73%)	-216 (-2.53%)	7442 (97.62%)	560 (7.34%)	945 (12.39%)	-1324 (-17.36%)
2001-02	6640 (76.76%)	960 (11.09%)	831 (9.60%)	219 (2.53%)	7156 (85.05%)	572 (6.79%)	1077 (12.80%)	-392 (-4.65%)
2002-03	6934 (80.47%)	957 (11.10%)	687 (7.97%)	38 (0.44%)	7682 (92.16%)	658 (7.71%)	984 (11.53%)	-974 (-11.41%)

Period	TRANSIT AGENCY - 5				TRANSIT AGENCY - 6			
	CE	CG	CLC	RE	CE	CG	CLC	RE
1998-99	6000 (98.94%)	993 (16.37%)	581 (9.58%)	-1510 (-2.49%)	4968 (100.68%)	874 (17.71%)	545 (11.04%)	-1453 (-29.44%)
1999-00	6733 (91.84%)	1000 (13.64%)	594 (8.10%)	-996 (-13.58%)	5462 (92.71%)	872 (14.80%)	603 (10.23%)	-1046 (-17.75%)
2000-01	7149 (86.65%)	1003 (12.15%)	576 (6.98%)	-478 (-5.79%)	5883 (88.10%)	888 (13.29%)	624 (9.34%)	-718 (-10.75%)
2001-02	6817 (80.12%)	974 (11.44%)	490 (5.75%)	227 (2.66%)	5765 (83.85%)	885 (12.87%)	667 (9.70%)	-442 (-6.42%)
2002-03	7309 (85.46%)	953 (11.14%)	379 (4.43%)	-89 (-1.04%)	6336 (89.84%)	915 (12.97%)	614 (8.70%)	-813 (-11.52%)

Period	TRANSIT AGENCY - 7			
	CE	CG	CLC	RE
1998-99	5887 (130.07%)	836 (18.47%)	1264 (27.52%)	-3461 (-76.46%)
1999-00	6541 (128.83%)	815 (16.05%)	1438 (28.32%)	-3717 (-73.21%)
2000-01	6750 (122.21%)	820 (14.84%)	1600 (28.96%)	-3647 (-66.03%)
2001-02	6405 (104.03%)	890 (14.29%)	1937 (31.11%)	-3007 (-48.30%)
2002-03	7057 (81.42%)	854 (9.85%)	1498 (17.28%)	-742 (-8.56%)

CE – Contribution to Employees, CG – Contribution to Government, CLC – Contribution to Loan and Capitals and RE - Retained Earnings

Table-C: Data and calculations for the performance indicators A-G

YEAR	TRANSIT AGENCY - 1						
	A	B	C	D	E	F	G
(1998-99)	8490 (94.48)	1002 (800.59)	16335 (49.10)	3088 (259.77)	1081 (742.09)	6400 (125.34)	1700 (471.88)
(1999-00)	8874 (101.94)	5000 (180.94)	22363 (40.45)	2200 (411.22)	1099 (823.20)	6200 (145.91)	1700 (532.17)
(2000-01)	11436 (100.25)	-3850 (-297.79)	24093 (47.58)	2400 (477.70)	1461 (784.73)	6300 (181.98)	1900 (603.42)
(2001-02)	11180 (112.16)	-4200 (-298.57)	25058 (50.04)	1700 (737.64)	1418 (884.34)	5700 (220.00)	1800 (696.66)
(2002-03)	10925 (122.64)	-5451 (-245.80)	27620 (48.51)	1739 (770.50)	1375 (974.47)	6204 (215.97)	1912 (700.78)

(Figures in parenthesis indicates the percentage of value calculated for the indicators using NVA)

YEAR	TRANSIT AGENCY - 2						
	A	B	C	D	E	F	G
(1998-99)	7051 (98.87)	1586 (439.59)	14971 (46.57)	2559 (272.45)	995 (700.70)	3500 (199.20)	1500 (464.80)
(1999-00)	6634 (131.44)	2000 (436.00)	17461 (49.93)	2200 (396.36)	1003 (869.39)	3600 (242.22)	1600 (545.00)
(2000-01)	7612 (125.68)	2800 (341.67)	20024 (47.77)	3000 (318.90)	1035 (924.34)	3400 (281.38)	1700 (562.76)
(2001-02)	7519 (122.51)	3400 (270.94)	20722 (44.45)	3000 (307.06)	1052 (875.66)	3200 (287.87)	1700 (541.88)
(2002-03)	8054 (139.42)	3672 (305.80)	23161 (48.48)	2820 (398.19)	1048 (1071.46)	2937 (382.32)	1691 (664.04)

YEAR	TRANSIT AGENCY - 3						
	A	B	C	D	E	F	G
(1998-99)	6780 (93.90)	-226 (-2817.2)	12900 (49.35)	1911 (333.17)	918 (693.57)	4100 (155.29)	1400 (454.78)
(1999-00)	6958 (109.51)	-400 (-1905.0)	15000 (50.80)	1700 (448.23)	924 (824.67)	4200 (181.42)	1400 (544.28)
(2000-01)	6782 (125.59)	-700 (-1216.8)	16900 (50.40)	1500 (567.86)	923 (922.86)	4200 (202.80)	1400 (608.42)
(2001-02)	6532 (132.42)	-300 (-2883.3)	17116 (50.53)	1000 (865.00)	856 (1010.5)	3900 (221.79)	1300 (665.38)
(2002-03)	6278 (137.24)	-770 (-1118.9)	17709 (48.65)	1179 (730.78)	926 (930.45)	3773 (228.35)	1325 (650.26)

YEAR	TRANSIT AGENCY - 4						
	A	B	C	D	E	F	G
(1998-99)	7018 (67.65)	-4291 (-110.65)	10709 (44.33)	1781 (266.59)	944 (502.96)	4500 (105.51)	1100 (431.63)
(1999-00)	7073 (90.40)	-5200 (-122.96)	12916 (49.50)	1800 (355.22)	926 (690.49)	4400 (145.31)	1100 (581.27)
(2000-01)	6793 (112.21)	-6900 (-110.47)	15171 (50.24)	1600 (476.43)	921 (827.68)	4000 (190.57)	1100 (693.00)
(2001-02)	6145 (136.90)	-7600 (-110.69)	16058 (52.39)	1100 (764.81)	927 (907.55)	3600 (233.69)	1100 (764.81)
(2002-03)	5985 (142.52)	-8163 (-104.49)	16867 (50.57)	1318 (647.19)	914 (933.26)	3464 (246.24)	1163 (733.44)

YEAR	TRANSIT AGENCY - 5						
	A	B	C	D	E	F	G
(1998-99)	6674 (93.54)	100 (90.86)	12897 (6064.00)	2800 (47.01)	939 (216.57)	4100 (645.79)	1400 (147.90)
(1999-00)	6634 (106.56)	-300 (110.50)	14969 (-2443.6)	2300 (48.97)	954 (318.73)	4200 (768.44)	1400 (174.54)
(2000-01)	6708 (129.19)	-1100 (122.98)	16687 (-750.00)	2200 (49.43)	945 (375.00)	3900 (873.01)	1400 (211.53)
(2001-02)	6534 (109.65)	-1700 (130.21)	16827 (-500.47)	1400 (50.56)	910 (607.71)	3500 (934.94)	1400 (243.08)
(2002-03)	6385 (122.64)	-1883 (133.93)	17498 (-454.16)	1394 (48.87)	882 (613.48)	3177 (969.61)	1319 (269.18)

YEAR	TRANSIT AGENCY - 6						
	A	B	C	D	E	F	G
(1998-99)	6103 (80.84)	800 (616.75)	10982 (44.92)	2100 (234.95)	837 (589.48)	3000 (164.46)	1200 (411.16)
(1999-00)	6121 (96.24)	800 (736.37)	12494 (47.15)	1600 (368.18)	837 (703.82)	3100 (190.03)	1202 (490.09)
(2000-01)	6109 (109.29)	500 (1335.4)	14085 (47.40)	1700 (392.76)	837 (797.73)	3100 (215.38)	1201 (555.95)
(2001-02)	6076 (113.15)	100 (6875.0)	14667 (46.87)	1200 (572.91)	836 (822.36)	2800 (245.53)	1207 (569.59)
(2002-03)	5899 (119.54)	-1028 (-685.99)	15300 (46.09)	1150 (613.21)	836 (843.54)	2809 (251.05)	1215 (580.41)

YEAR	TRANSIT AGENCY - 7						
	A	B	C	D	E	F	G
(1998-99)	6742 (67.13)	-500 (-905.2)	10694 (42.32)	1700 (266.23)	875 (517.25)	3500 (129.31)	1200 (377.16)
(1999-00)	6582 (77.13)	-500 (-1015.4)	11500 (44.14)	1700 (298.64)	836 (607.29)	3300 (153.84)	1100 (461.54)
(2000-01)	6468 (85.38)	-1400 (-394.5)	12682 (43.54)	1400 (394.5)	835 (661.43)	3200 (172.59)	1100 (502.09)
(2001-02)	6323 (99.57)	-2600 (-242.15)	13302 (47.33)	2200 (286.18)	828 (760.38)	3100 (203.09)	1200 (524.66)
(2002-03)	6107 (141.91)	-3207 (-270.25)	16456 (52.66)	728 (1190.52)	829 (1045.47)	2932 (295.60)	1248 (694.47)

A - Number of employees & Value added per employee (In thousands)

B - Net capital employed (Rupees in Lakhs) & Value added for Capital employed

C - Total revenue (Rupees in Lakhs) & Value added to total revenue in Rupees

D - Fixed assets (Rupees in Lakhs) & Value added to fixed assets

E - Average number of buses held & Value added per bus (Rupees in Lakhs)

F **-** Number of Passenger carried (In Lakhs) & Value added per passenger (Rupees in Lakhs)

G - Effective Lakhs Km. & Value added per effective Km (Rupees in Lakhs)