

CHAPTER - III

PHYSICAL PERFORMANCE OF MSRTC

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CHAPTER-3

STUDY OF PHYSICAL PERFORMANCE OF MSRTC.

Overall growth and development of MSRTC cannot give clear idea about the sectoral performance of the corporation. Hence in the present chapter an attempt is made to judge physical performance of the corporation during the period from 1980-81 to 89-90. The meaning of term 'physical performance' is taken as the performance regarding visible items. Various indicators like no. of routes, villages covered, population served, no. of kms. operated, Long distance & Night services, Luxury & Semi Luxury services, Inter State services, no. of buses, percentage of fleet utilisation, average daily kms per vehicle kms per litre of oil & diesel etc. have been used to evaluate physical performance of the corporation. This chapter is again divided into following parts :

1. Traffic performance.
2. Fleet performance.
3. Mechanical Engineering Performance.
4. Regionwise Physical Performance.

3.1) Traffic Performance :

Here the meaning of word 'Traffic Performance' is taken as day to day transport business carried on by the MSRTC. Following indicators are used to evaluate the traffic performance of the corporation.

Information of Routes.

Village covered.

Population Served.

Km.s. under operation.

Long distance and Night Services.

Luxury and Semi-Luxury services.

Inter State operations.

3.1)1) Information of Routes :

Route is the path or the way which is used for transportation. M.S.R.T.C. uses roads as the routes for its vehicles. Information of routes includes number of routes, route Kms, average route distance and road conditions. Table 3.1 gives idea about information of routes.

Table 3.1

In case of number of routes, it is increased from 10794 in 1980-81 to 17046 in 1989-90. This shows total increase of 57.92% and annual increase of 5.79% over the decade from 1980-81 to 1989-90. Annual route kms. operated increased from 6.89 * Lakhs in 1980-81 to 10.90 Lakhs in 1989-90. It shows total increase of 58.20% and annual increase of 5.82%

Table 3.1

Information of Routes

Sr. No.	Particulars	80-81	81-82	82-83	83-84	84-85	85-86	86-87	87-88	88-89	89-90	Total Increase	Annual Increase/Dec.
1.	No. of Routes	10794	10070	11596	11755	12539	13205	14351	15428	16167	17046	57.92	5.79
2.	Route kms (in lakhs).	6.89	7.12	7.26	7.30	7.87	8.36	9.06	10.00	10.28	10.90	58.20	5.82
3.	Avg. route distance (Kms)	63.83	64.28	62.59	62.08	62.75	63.28	63.11	64.83	63.60	63.94	63.67	(avg.)
4.	Surface of Road (%)												
	Cement concrete	0.62	0.33	0.30	0.24	0.21	0.17	0.09	0.08	0.07	0.07	-	-
	Ashpalt & Tar	42.50	45.12	45.11	45.05	46.18	46.69	45.98	47.20	46.20	46.20	-	-
	Water Bound Macadam.	56.26	54.65	54.69	54.71	53.61	53.14	53.93	52.72	53.73	53.73	-	-

(Source- Annual Reports at MSRTC
from 1980-81 to 89-90.)

over the decade. The corporation has registered average route distance of 63.67 kms. over the decade. It means that corporation is broadening its services. It is trying to cover more and more area under its operations to provide adequate services.

For the study purpose, roads are divided into three categories i.e. cement concrete roads, Ashpalt and Tar roads, and Water bound Macadam roads. Analysis of road surface in operation indicates that near about 54 to 55% of the road surface falls under Water Bound Macadam roads, that is called as Kutchcha. This is an important reason which adversely affects quality of transport service. This also creates problems of maintenance of vehicles and improvement of services. It is observed that near about 45 to 46% of the road surface falls under asphalt & Tar roads & only 0.07% under cement concrete roads. Further percentage of cement concrete roads shows decreasing trend over the decade. Unless these improper road conditions are removed the quality of transport service cannot be improved.

3.1.2) Villages Covered :

One of the main objective of the corporation is to provide more adequate transport services. Hence it is necessary to access its services in terms of this objective. Evaluation of transport services in terms of villages covered will serve this purpose. For study purpose villages are divided into following categories.

Villages getting direct services,
Villages getting service on 3 Kms.
Villages getting service on 3 to 5 kms.
Villages getting service on 5 to 8 kms.
Villages getting service on 8 or more kms.

Table 3.2 gives idea about the villages covered by the corporation under its operations.

Table 3.2

It is observed that percentage of villages getting direct S.T. Services increased from 46.09% in 1980-81 to 50.49% in 1989-90. Thus it shows total increase of 31.24% and annual increase of 3.12% over the decade. Further percentage of villages getting services upto 3 kms. decreased from 28.19% in 1980-81 to 22.80% in 1989-90. Right now near about 80 to 82% villages are getting direct services of the corporation.

As far as other categories are concerned, similar type of decreasing trend is observed over the decade. Percentage of villages getting services on 3 to 5 kms. decreased from 12.40% in 1980-81 to 9.32% in 1989-90 showing total decrease of 24.84% and annual decrease of 2.48% over the decade. Percentage of villages getting services on 5 to 8 kms. also decreased from 6.67% in 1980-81 to 3.83% in 1989-90 showing total decrease of 32.58% and annual decrease of 3.25% during the same period. While percentage of villages getting services on 8 more kms. also decreased from 6.65% in 1980-81 to

Table 3.2

Village Served

(Figures in percentage)

No. Particulars	80-81	81-82	82-83	83-84	84-85	85-86	86-87	87-88	88-89	89-90	Total INC/ DEC (%)	Annual INC/ DEC (%)
1. Direct Service	46.09	49.04	50.33	51.37	52.13	54.10	55.92	56.74	59.40	60.49	31.24	3.12
2. Up to 3 Kms.	28.19	26.25	25.84	25.33	25.00	23.82	23.76	23.50	23.12	22.80	-19.13	-7.91
3. 3 to 5 kms.	12.40	12.45	12.11	11.95	11.73	11.15	10.49	10.33	9.68	9.32	-24.84	-2.48
4. 5 to 8 Kms.	6.67	6.27	6.09	5.87	5.60	5.52	4.90	4.71	3.90	3.83	-32.58	-3.25
5. Above 8 Kms.	6.65	5.99	5.63	5.48	5.54	5.41	4.93	4.72	3.90	3.56	-48.47	-4.84

(Source- Annual Reports of MSRTC from
1980-81 to 89-90)

3.56% in 1989-90 showing total decrease of 48.47% and annual decrease of 4.84% over the period.

It means that corporation is trying to cover more and more villages under its operations. Percentage of villages getting direct services is increasing rapidly day by day. It is trying to lessen the number of villages which are not getting direct S.T. Services and reduce inconvenience within services. Hence corporation has set a target that "where there is a road there is a bus". Thus corporation is right on the track as its target.

3.1.3) Population Served :

Another factor that indicates expansion of transport services in the rural area is the percentage of population served. Again for the study purpose population is divided into following categories.

Population getting direct S.T. Services.

Population getting services on \leq 3 kms.

Population getting services on 3 to 5 kms.

Population getting services on 5 to 8 Kms.

Table 3.3 indicates population served by the Corporation over the decade from 1980-81 to 1989-90.

Table 3.3

It is observed that percentage of population getting direct S.T. Services increased from 73.54% in 1980-81 to

Table 3.3

Population Covered

(Figure in percentage)

No. Particulars	80-81	81-82	82-83	83-84	84-85	85-86	86-87	87-88	88-89	89-90	Total INC/ DEC.	Annual INC/ DEC
1. Direct Service	73.54	75.14	75.80	76.39	76.82	78.10	78.96	79.75	80.52	81.50	10.82	1.08
2. Up to 3 Kms.	15.31	13.84	13.46	13.20	13.06	12.30	12.19	11.78	11.72	11.72	-11.15	-2.71
3. 3 to 5 kms.	5.80	5.93	5.85	5.74	5.55	5.37	5.06	4.90	4.50	4.29	-26.04	-2.60
4. 5 to 8 kms.	3.11	3.03	2.96	2.85	2.79	2.57	2.26	2.16	1.97	1.91	-38.59	-3.85
5. Above 8 kms.	2.24	2.06	1.93	1.82	1.78	1.66	1.53	1.41	1.29	1.15	-48.77	-4.87

(Source- Annual Reports of MSRTC

from 1980-81 to 89-90)

81.50% in 1989-90. Thus it shows total increase of 10.82% and annual increase of 1.08% over the decade. It clearly indicates that number of people getting direct S.T. services is increasing day by day.

On the other hand all other categories shows decreasing trend over the decade. Percentage of population getting services on 3 kms. decreased from 15.31% in 1980-81 to 11.15% in 1989-90 showing total decrease of 27.18% and annual decrease of 2.71% over the decade. Percentage of population getting services on 3 to 5 kms. decreased from 5.80% in 1980-81 to 4.29% in 1989-90. showing total decrease of 26.04% and annual decrease from 3.11% in 1980-81 to 1.91% in 1989-90 showing total decrease of 38.59% and annual decrease of 3.85% during the said period. While percentage of population getting services on 8 or more kms. also decreased from 2.24% in 1980-81 to 1.15% in 1989-90. Thus it shows total decrease of 48.77% and annual decrease of 4.87% over the said period.

It is observed that percentage of population getting direct S.T. services is increasing day by day. At present 82% people of the total population get S.T. services at their native place. Thus corporation is broadening its services all over the state. But still there is near about 18% of the population is not getting direct services. The Corporation has an opportunity to expand its services in the future.

3.1.4) Kilometers Under Operations :

Kilometers under operations is one of the important factor that indicates operational coverage of the corporation. Certain indicators like Number of gross Kms., effective Kms., Dead Kms., Percentage of dead Kms to effective Kms., load factor etc. are used to judge operational coverage of the corporation. The Table 3.4 gives information about the same.

Table 3.4

Gross Kms. means total Kms. available for operations. It is observed that Number of gross Kms. increased from 74.26 crores in 1980-81 to 129.80 Crores in 1989-90. It shows total increase of 96.38% and annual increase of 9.63% during the decade from 1980-81 to 1989-90.

As far as effective Kms. is concerned there is also an increasing trend over the decade. Effective Kms. means Kms. actually operated by the corporation. Number of these Kms. increased from 73.50 crores to 128.10 crores during the same period. Thus it is clear that rate of increase in effective kms. is less than that of gross Kms.

It is observed that number of dead kms. as well as percentage of dead Kms. to effective Kms. shows increasing trend over the decade. Dead Kms means Kms not operated by the corporation. Number of Dead Kms. increased from 0.75 crores in 1980-81 to 1.70 crores in 1989-90 showing a continuous increasing trend. While percentage os dead Kms.

Table 3.4

Kilometers under Operations of MSRTC
from 1980-81 to 89-90.

No. Particulars	80-81	81-82	82-83	83-84	84-85	85-86	86-87	87-88	88-89	89-90	Total INC/ DEC (%)	Annual INC/ DEC (%)
1. Gross Kms (in crores)	74.26	80.82	30.70	82.89	87.79	96.16	104.82	112.94	122.41	129.80	96.38	9.63
2. Effective Kms (in crores).	73.50	79.94	79.79	81.94	86.69	94.97	103.38	111.36	120.70	128.10	74.28	7.42
3. Dead Kms (in crores).	0.75	0.88	0.90	0.95	1.09	1.18	1.44	1.58	1.71	1.70	-	-
4. % of Dead Kms to effective Kms.	1.03	1.11	1.14	1.17	1.27	1.25	1.40	1.42	1.41	1.33	-	-

(Source- Annual Administration Reports of

MSRTC from 1980-81 to 89-90)

to effective Kms. also increased from 1.03% to 1.33% during the said period. Although the percentage of dead kms. to effective kms. is negligible it shows an increasing trend and hence it is not a good sign for the corporation.

3.1.5) Long Distance and Night Services :

The corporation provides long distance services and night services to the passengers. Long distance services are the services having route length of 250 Kms or more than that. The table 3.5 gives idea about these services.

Table 3-5

It is observed that total number of long distance services increased from 665 in 1980-81 to 1029 in 1989-90. Thus it shows total increase of 54.73% and annual increase of 5.47% over the decade from 1980-81 to 1989-90. Region Pune is leading in long distance service with highest number of trips i.e. 339 and Region Nagpur is lagging behind with lowest mark of only 172 trips.

In case of night services number of such trips increased from 265 in 1980-81 to 391 in 1989-90. This shows total increase of 58.29% and annual increase of 5.82% over the said period. Region Bombay is leading with highest number of trips i.e. 146 and region Nagpur is lagging behind all other with lowest number of trips i.e. 24.

Table 3.5

Long Distance & Night Services Provided by MSRTC.
from 1980-81 to 1989-90.

£ (Figure in Nos.)

Regions	80-81		81-82		82-83		83-84		84-85		85-86		86-87		87-88		88-89		89-90		Total		Annual		
	LD	NS	LD	NS	LD	NS	LD	NS	LD	NS	LD	NS	LD	NS	LD	NS	LD	NS	LD	NS	INC	DEC	INC	DEC	
Aurangabad-115	35	120	38	130	41	131	41	131	41	141	41	153	45	170	53	199	63	209	70	224	86	72.30	109.75	7.23	10.
Nagpur	101	15	88	14	83	13	82	14	85	13	97	17	132	18	145	18	160	22	172	24	107.22	84.61	107.2	84.	
Pune	231	116	206	105	194	92	203	89	245	96	219	107	224	105	274	122	321	130	1339	135	74.74	46.73	7.47	4.	
Bombay	218	99	233	105	241	107	255	101	180	111	185	103	220	129	258	143	253	143	294	146	21.99	36.44	2.19	3.	
Total ..	665	265	647	262	648	253	671	245	651	261	654	272	746	305	876	346	943	365	1029	391	54.73	58.29	5.47	5.	

(Source- Annual Administration Reports of MSRTC.
from 1980-81 to 89-90.)

Thus corporation is providing more and more long distance and night service and thereby facilitating passengers in saving their time and money.

3.1.6) Luxury and Semi Luxury Services :-

As the services provided by the private transporters were inconvenient, it was one of the main objective of the corporation to provide comfortable services to the public. The corporation is providing luxury and semi luxury services and hence it is necessary to judge its performance in this area. Certain indicators like number of trips, effective Kms., number of passengers carried, traffic receipts and earnings per Km. under these services are used for evaluation purposes. Table 3.6 gives information about these services for the decade from 1980-81 to 1989-90.

Table 3.6

It is observed that number of effective kms. operated under these services increased from 22.95 Lakhs (consolidated figure) in 1980-81 to 366.77 Lakhs (consolidated figures) in 1989-90. Thus it shows total increase of 1598.12% and annual increase of 159.81% over the decade. Further number of passengers carried under these services increased from 19.44 lakhs in 1986-87 to 64.13 lakhs in 1989-90. (The data is not available for the previous six years). Thus number of passengers carried shows total increase of 329.88% and annual increase of 32.98% over the period of last 4 years. Thus it clearly indicates that corporation is providing more and more luxurious services to the public.

Table-3.6

Luxury & Semi-Luxury Services provided by M.S.R.T.C.
from 1980-81 to 89-90.

No. Particulars	80-81		81-82		82-83		83-84		84-85		85-86		86-87		87-88		88-89		89-90		Total INC/DEC Consolidated
	L	SL	L	SL	L	SL	L	SL	L	SL	L	SL	L	SL	L	SL	L	SL	L	SL	
1. Effective km (In lakhs).	22.95	30.00	24.45	33.76	47.98	58.39	107.30	103.64	229.93	81.75	254.4	96.52	270.25	1598.12	-	-	-	-	-	-	-
2. Passengers carried (in lakhs).	NA	NA	NA	NA	NA	NA	19.44	17.23	29.39	14.48	39.4	17.94	46.19	329.88	-	-	-	-	-	-	-
3. Traffic Recei- pts. (in lakhs)	53.24	87.71	93.60	212.40	298.15	371.57	672.39	723.2	1131.84	618.6	1309.16	722.90	149.05	1637.90	-	-	-	-	-	-	-
4. Earning per Km. (In paise.)	NA	NA	629.41	621	636	627	698.	492	754	514	749	554	-	-	-	-	-	-	-	-	-

(Source-Annual Administration Reports of
MSRTC from 1980-81 to 89-90)

As there is increase in luxury and semi luxury services the traffic earnings are also increasing under these services. Traffic receipts under these services increased from Rs. 53.24 Lakhs in 1980-81 to Rs. 872.04 Lakhs in 1989-90. It shows total increase of 1637.94% and annual increase of 163.79% over the decade. Further earnings per Km. also increased from 629.41 paise in 1983-84 to 749.00 paise in 1989-90. It means that corporation is operating these services profitably.

But the only thing is that the percentage of these services is only 2.86% of the total business. The corporation has an opportunity to expand these services in future.

3.1.7) Inter State Operations :

One of the main objective of the corporation is to provide proper and sufficient services to the public. The Corporation is trying to provide more adequate services. It is trying to expand its services all over the state and at the same time it has been operating inter state routes also. The Corporation has entered various agreements with the governments of Karnataka, Madhya Pradesh, Andhra Pradesh, Gujarat and Goa. The corporation operates these services jointly with the help of concerned state government as well as independently. Certain indicators like number of routes, Kilometres, operated traffic receipts and earnings per Km. under these operations are used to judge these interstate operations. Table 3.7 gives information about these operations.

Table 3.7

It is observed that number of interstate routes operated increased from 268 in 1980-81 to 541 in 1989-90. Thus it shows total increase of 101-86% and annual increase of 10.18% over the decade.

As far as effective Kms. operated under these operations increased from 4.07 crores in 1988-89 to 4.47 crores in 1989-90. This shows total increase of 9.82% during the two years. Traffic receipts of 9.82% during the two years. Traffic receipts under these operations increased from Rs. 20.57 crores to Rs. 25.06 crores during these two years showing total increase of 21.82%. Further earnings per Km. increased from 505 paise in 1988-89 to 561 paise in 1989-90 showing total increase of 11.08% over the two years. (Remaining data is not available for the first 8 years).

Thus corporation is expanding its interstate operation at the same time is operating these services profitably.

3.2 Fleet performance :

Fleet performance is one of the important indicator of physical performance. The word "Fleet" denotes total number of vehicles held by the corporation. The evaluation of fleet performance in-dicates whether the corporation has made gainful use of its vehicles or it has failed to do so. The various indicators are used to judge the fleet performance of the corporation. It includes average daily

Table-3.7

Inter State Operations

No. Particulars	80-81	81-82	82-83	83-84	84-85	85-86	86-87	87-88	88-89	89-90	Total INC/DEC	Annual INC/DEC
1. No. of Routes	268	270	269	279	294	295	303	370	540	541	101.86	10.18
2. Effective Kms (in crores).	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	4.07	4.47	9.82	0.98
3. Traffic Recei- pts (Rs. in crores).	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	20.57	25.06	21.82	2.18
4. Earning per km (in paise)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	505	561	11.08	1.10

(Source- Annual Administration Reports of MSRTC.
from 1980-81 to 89-90.)

kms. per vehicle, percentage of fleet utilisation, percentage of buses off road to the total number of buses, load factor etc. The table 3.8 gives information about the fleet performance of the corporation during the period of ten years from 1980-81 to 89-90.

Table 3.8

It is observed that fleet strength of the corporation is increased from 9172 in 1980-81 to 1989-90. This shows total increase of 54.38% and annual increase of 5.43% over the same period. Thus corporation is providing more and more buses and trying to provide adequate service to the public. Further 54.38% increase in buses has brought up 74.28% increase in effective kms. Hence increased buses have produced better results for the corporation.

In case of average daily kms. per vehicle, it is increased from 252.1 kms to 280.1 showing total increase of 11.10 and annual increase of 1.11% over the decade. Average daily no. of buses on the road also increased from 7939 to 12530 during the same period.

Further corporation has registered varying trend of fleet utilisation. Percentage of fleet utilisation is varying between 85% to 88% over the decade. Average percentage of fleet utilisation is 87.22% for the decade. It means that near about 12 to 15% buses are not in use due to mechanical faults or incompleteness. Average

Table-3.8

Fleet Performance of M.S.R.T.C.

from the year 1980-81 to 89-90.

No. Particulars	1980-81	81-82	82-83	83-84	84-85	85-86	86-87	87-88	88-89	89-90	Total incre- ase.	Annual growth rate.
1. Fleet strength	9172	10028	10395	10273	10596	11042	11622	12569	13386	14160	54.38	5.43
2. Average Daily kms. per vehicle.	252.1	253.1	248.4	253.7	257.6	267.9	273.5	277.8	281.1	280.1	11.10	1.11
3. Avg.daily no of buses on the road.	7939	8652	8802	8826	9221	9714	10357	10954	11762	12530	57.82	5.78
4. % of fleet utili- sation.	87.1	86.3	85.2	85.9	87.0	88.0	89.1	87.2	87.9	88.5	87.22 (Avg.)	-
5. % of buses of road to the total no.of vehicles.	8.29	7.79	7.34	6.67	5.77	5.14	5.10	7.00	7.10	6.40	6.66 (Avg.)	-
6. Load factor	81.36	12.51	69.48	73.96	77.07	78.35	80.07	81.33	80.22	79.72	77.44 (Avg.)	-

(Source -Annual Reports of MSRTC From
1980-81 to 89-90).

percentage of buses off road to total no. of vehicles is 6.66% over the decade. This indicates efficiency with which the vehicles are treated for mechanical maintenance. Here the corporation has an opportunity to improve its fleet utilisation. The corporation has not made better use of its vehicles. Figure 3.1 remarkably indicates fleet utilisation of the corporation for the decade.

As far as load factor is concerned it shows a varying trend for the decade. It is an important indicator of fleet performance. Load factor is also called as occupation ratio. It is the ratio of no. of seat Kms. operated to the no. of seat Kms. produced. This ratio depends upon fare particulars and it is calculated by following formula.

$$\text{OC Ratio} = \frac{\text{Earnings per km.} \times 100}{\text{Fare per km} \times \text{Seating capacity.}}$$

It is observed that corporation has registered average load factor of 77.44% over the decade. It is seen that corporation has registered highest ratio of 81.36% in 1980-81 and lowest ratio of 69.48% in 1982-83. It means that corporation is using only 78% capacity of its vehicles. Still it is not using 22% odd capacity of its vehicles.

To sum up, the fleet performance of the corporation is showing steady improvement over the decade. But still there is an opportunity to improve the fleet utilisation in future.

3.3) Mechanical Engineering Performance :

'Mechanics' is the science of force and motion, Mechanism or Mechanisation is the use of advanced technology, modern machinery in the process at work. Use of modern machinery helped man to achieve higher productivity and efficiency. Hence the process of evolution of transport business indicates that the modern vehicles supported by advanced mechanisation replaced old and slow going means of transport. But the production and maintenance of these vehicle is very important. The corporation has created a seperate 'Auto Engineering Department' for this purpose.

The corpoartion has three Central workshops at (i) Dapodi (Pune) (ii) Chikalthana (Aurangabad) and (iii) Hingana (Nagpur). They are mainly engaged in building new bodies and reconditioning of Engines and Fuel Injection Pumps. The corporation has eight tyre retreading plants which are located at Pune, Kolhapur, Nagpur, Nasik, Nanded, Jalgaon, Ratnagiri and Latur respectively. The tyre retreading plants at Kolhapur and Ratnagiri are using 'Indag Cold Process' which does not need a boiler therefore aboids pollution, Steam heated system is used at Nasik , while electrical heated Elgi Cold system is used at Latur. The board has approved the proposal to convert Nagpur and Jalgaon plants into cold process system. The activities other than body building and Engine Reconditioning are decentralised throughout the divisional workshops. So the mechanical ~~part~~

performance of the corporation depends upon the alertness and efficiency of these central and Divisional Workshops. The table 3.9 gives information about the mechanical Engineering Performance of the Corporation.

The gainful use of vehicles as well as safety regularity and reliability of transport services depends upon mechanical Engineering performance. The corporation has started workshops and Tyre Retreading Plants which are engaged in production and maintenance of vehicles. And hence it is necessary to evaluate mechanical Engineering performance of the Corporation. The present study has used following various parametres for this purpose. These includes average daily kilometres per vehicle, Kms per Litre of Oil, Kms. per Litre of diesel, Average life of engine and rate of break downs. Table 3.9 gives information about mechanical Engineering performance of the corporation over the period of decade from 1980-81 to 1989-90.

Table 3.9

It is observed that average daily kms. per vehicle have shown an increasing trend over the decade. It is increased from 252.1 Kms. to 280.1 Kms. during the period of ten years. It shows that total increase of 11.10% and annual increase of 1.11% over the decade.

Table-3.9

Mechanical Engineering Performance .

(Figure in Nos.)

No.	Particulars	1980-81	81-82	82-83	83-84	84-85	85-86	86-87	87-88	88-89	89-90	Total INC/ DEC (%)	Annual INC/DEC (%)
1.	Avg.daily kms per vehicle.	252.1	253.1	248.4	253.7	257.6	267.9	273.5	277.8	281.1	280.1	11.10	1.11
2.	Kms.per litre (Oil)	262	282	309	336	355	378	458	499	524	536	105.34	10.53
3.	Kms.per litre(Diesel)	4.16	4.17	4.23	4.24	4.26	4.27	4.30	4.32	4.32	4.35	10.45	1.04
4.	Avg. life of vehicle (lakh kms.)	4.08	4.05	4.40	4.63	4.55	4.51	4.51	4.56	4.55	4.63	13.48	1.34
5.	Avg. life of Engine (Lakh kms.)	2.50	2.54	2.61	2.79	2.83	2.91	2.82	2.94	3.12	3.28	31.2	3.12
6.	Rate of break downs per 100000 kms.	7.6	7.1	6.3	6.2	5.5	5.1	4.5	4.9	5.1	5.2	-31.58	-3.15

(Source- Annual Administration Reports of MSRTC

from 1980-81 to 89-90.)

As far as kms. per litre of oil and kms. per litre of diesel are concerned, both have shown an increasing trend. Kilometers per litre of oil increased from 262 in 1980-81 to 538 in 1989-90 showing total increase of 105.34% and annual increase of 10.53% over the decade (Ref. Fig. 3.3) while kms. per litre of Diesel is increased from 4.16 to 4.35 during the same period. This indicates increased productivity of the vehicles as well as efficiency in oil and diesel consumption. Figure 3.2 indicates this remarkably.

It is observed that average life of vehicle and average life of engine is also increased during the same period. Average life of vehicle is increased from 4.08 lakh kms. in 1980-81 to 4.63 Lakhs kms in 1989-90. Showing total increase of 13.48% and annual increase of 1.34% over the decade. While average life of engine is increased from 2.50 lakh kms. to 3.28 lakh kms. showing total increase of 31.20% and annual increase of 3.12% over the decade. It means that corporation has successfully improved quality of its vehicles. It has got better vehicles that could give more and more service to the corporation.

Further rate of break downs shows decreasing trend over the decade. It is decreased from 7.6 per lakh kms. to 5.2 per 1 lakh kms. during the period. Thus it shows total decrease of 31.58% and annual decrease of 3.15 over the decade.

Figure 3.1

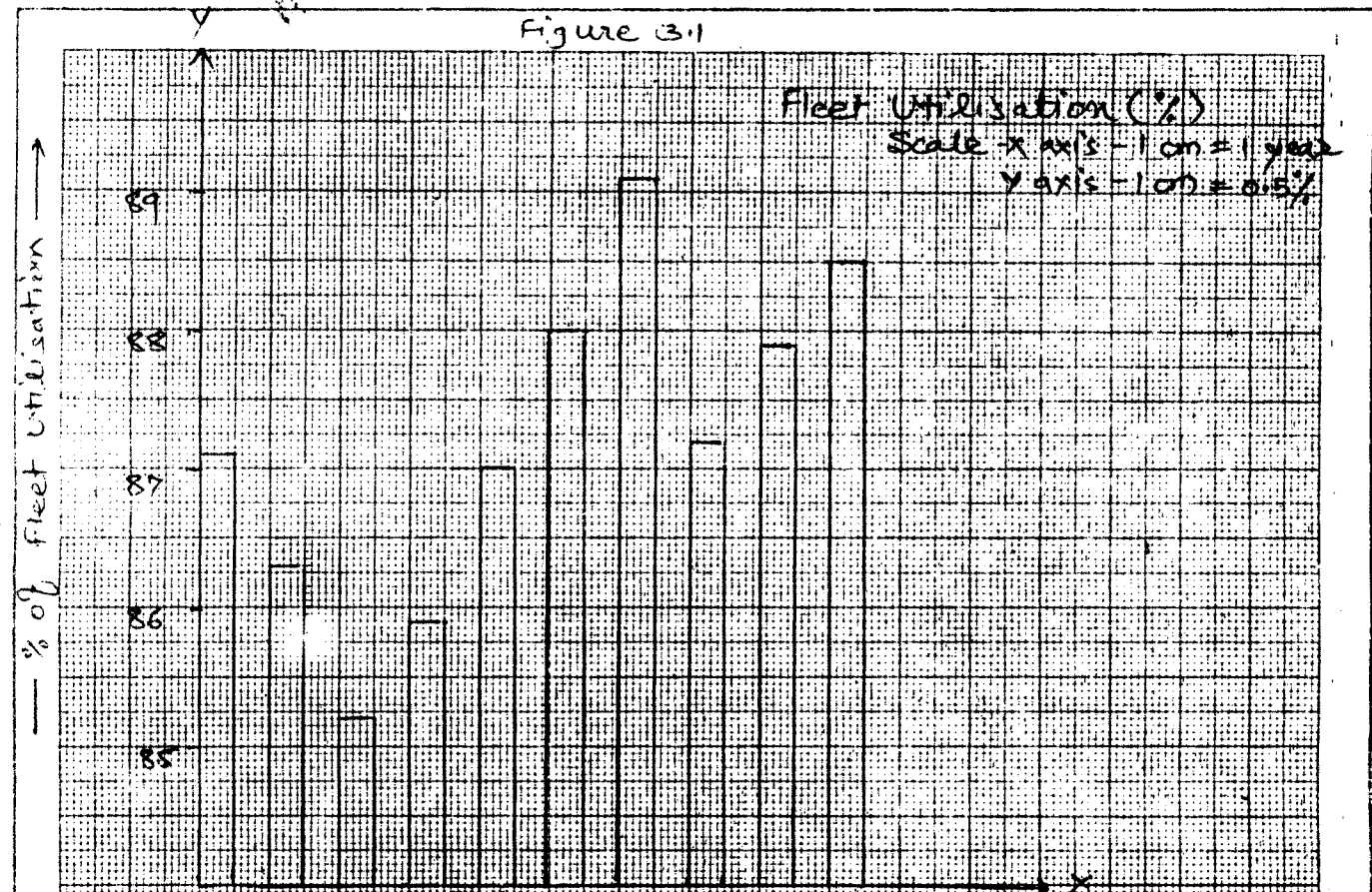


Figure 3.2

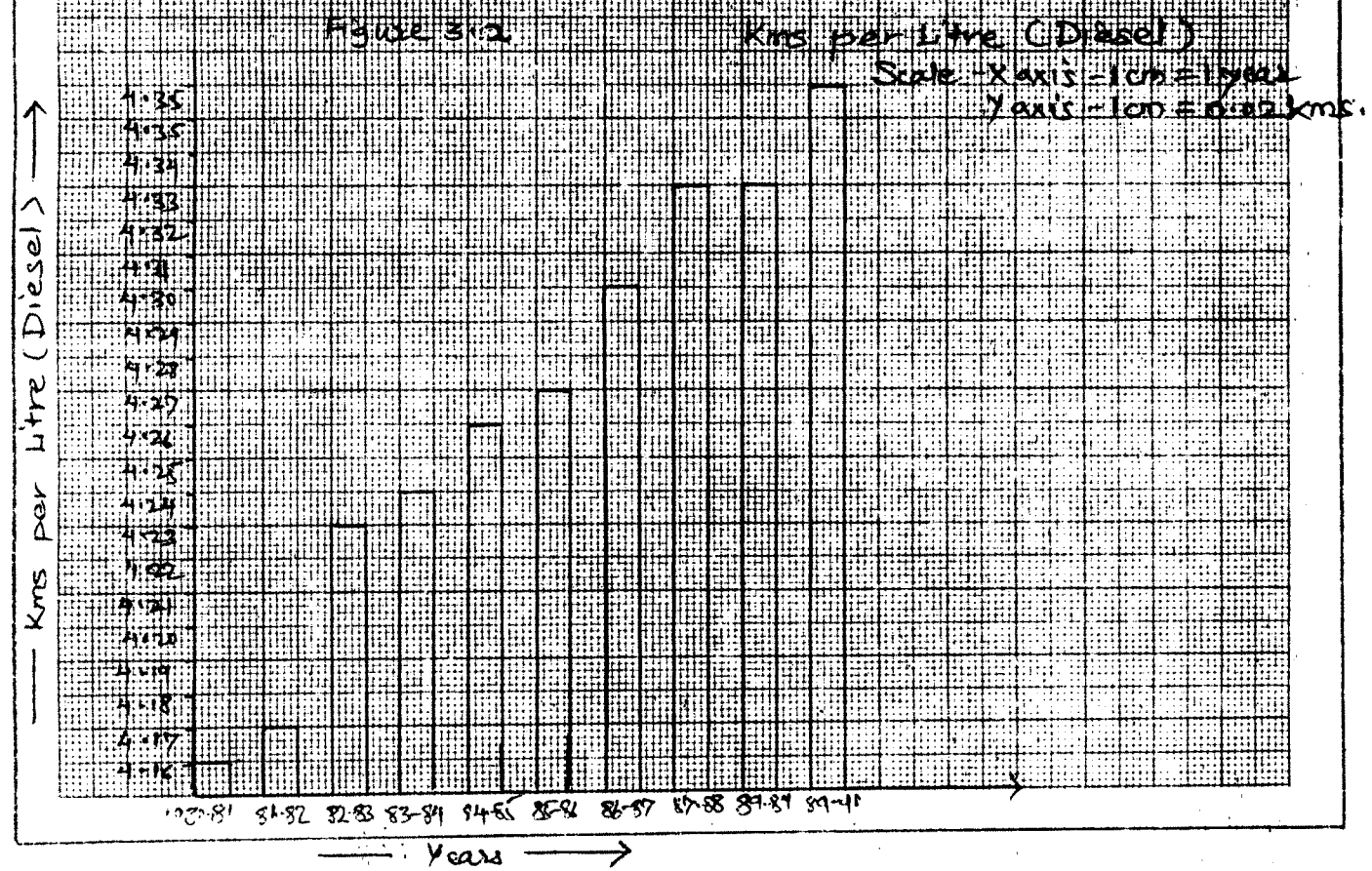
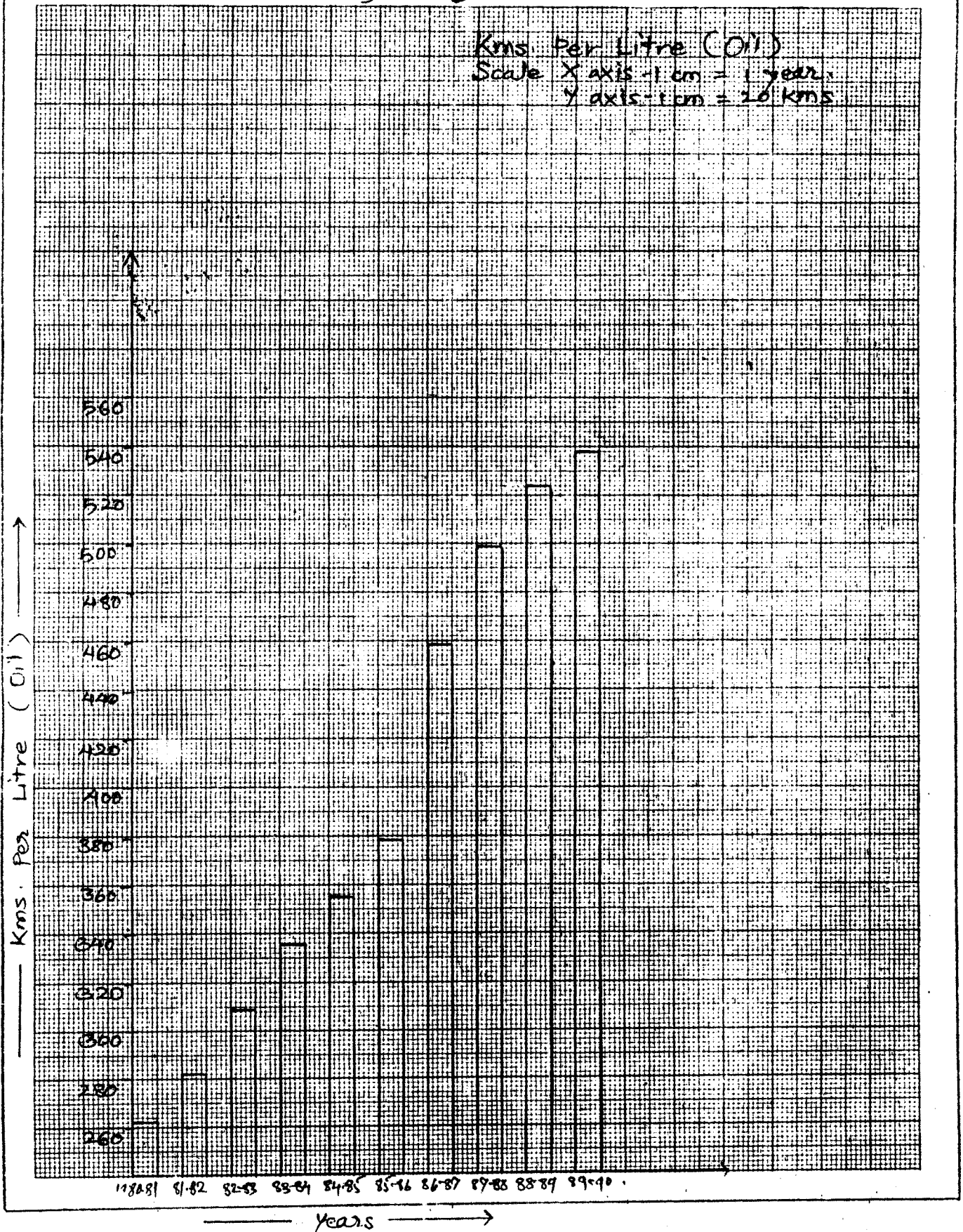


Figure 3.3



The study of the table shows that all indicators have a favourable trend during the period of ten years. It means that the mechanical performance of the corporation is good. There are various reasons supporting this excellent mechanical performance which may include. Introduction of advanced mechanisation in the transport field, use of proper materials for the construction of vehicles, proper maintenance of vehicles, improved road conditions etc. These factors helped corporation to improve the capacity, speed and security of vehicles. It enables corporation to make fuller utilisation of its vehicles. In all we can say that mechanical Engineering performance of the corporation is very good and the whole credit goes to Auto Engineering Department. As the performance is improving day by day we can say that there is still an opportunity to improve it more better in the future.

3.4) Regionwise Physical Performance :

Overall physical performance do not indicate whether Corporation has made well balanced development or it has failed to do so. Hence in order to find out the fact, it is necessary to study Regionwise Physical Performance of the Corporation. There are various parameters used for this purpose. These include route Kilometres, effective kms., percentage of dead kms to effective kms, fleet utilisation, rate of breakdowns, etc. The Table 3.10

shows Regionwise Physical performance of the corporation during the period of decade.

Table 3.10

It is observed that different regions shows varying physical performance during the decade. In case of route kms. which we get by multiplying number of routes with that of average route distance, region Pune is leading with 3.48 Lakh kms. contributing 31.98% of the total route kms. in 1989-90. It shows total increase of 60.36% and annual increase of 6.03% over the period of decade from 1980-81 to 1989-90. Region Bombay comes second with 3.15 lakhs kms. contributing 28.94% of total route kms. during 1989-90. Further it shows total increase of 50% and annual increase of 5.0% over the decade. Region Nagpur stands third with 2.13 Lakh kms. contributing 19.57% of total route kms. during 1989-90. It shows total increase of 62.59% and annual increase of 6.25% over the same period. While Region Aurangabad is lagging behind all others with lowest mark of 2.12 Lakh kms. contributing 19.48% of total route kms. in 1989-90. Further it shows total increase of 64.34% and annual increase of 6.43% over the decade.

In case of effective kms. region Bombay is leading with highest Number of effective kms. i.e. 41.08 crores contributing 32.04% of total effective kms. in 1989-90.

Table 3.10

Regionwise Physical Performance of M.S.R.T.C. from the year 1980-81 to 89-90.

Year	Route kilometers (Lakhs)				Effective kms (Crores)				% of Dead kms to effective kms.				% Fleet Utilisation							
	A	N	P	B	Total	A	N	P	B	Total	A	N	P	B	Average	A	N	P	B	Average
80-81	1.29	1.31	2.17	2.10	6.88	12.88	15.73	23.02	22.61	74.26	0.86	1.45	0.15	1.23	1.03	86.0	84.1	91.0	16.2	87.1
81-82	1.38	1.30	2.24	2.18	7.10	14.24	16.09	24.76	24.63	79.92	0.96	1.51	0.72	1.31	1.11	87.3	81.5	90.02	85.0	86.3
82-83	1.48	1.34	2.26	2.17	7.25	14.38	15.64	24.80	24.88	79.70	1.04	1.59	0.74	1.31	1.14	86.0	79.9	90.8	83.9	85.3
83-84	1.44	1.35	2.41	2.08	7.28	14.75	15.93	25.78	25.46	81.90	0.96	1.54	0.79	1.44	1.17	83.8	82.5	90.7	85.0	85.9
84-85	1.50	1.48	2.64	2.23	7.85	15.21	16.71	27.13	27.62	86.67	0.65	1.72	0.66	1.62	1.27	85.0	84.4	90.1	86.9	87.0
85-86	1.54	1.61	2.70	2.43	8.28	16.47	18.32	29.24	30.93	94.96	0.84	1.38	0.90	1.74	1.25	87.0	85.4	91.5	87.0	88.0
86-87	1.70	1.72	2.86	2.75	9.03	17.63	19.92	31.28	34.34	103.37	0.97	1.34	0.89	2.11	1.39	87.4	87.2	92.3	88.5	89.12
87-88	2.00	1.87	3.06	3.06	9.99	19.35	21.95	33.35	36.70	111.35	0.96	1.26	0.91	2.22	1.42	86.05	85.7	89.6	86.3	87.15
88-89	2.04	1.95	3.35	3.12	10.46	21.19	24.51	36.12	38.88	120.7	0.99	1.31	0.94	2.16	1.42	88.21	87.08	89.5	86.8	87.87
89-90	2.12	2.13	3.48	3.15	10.88	22.84	26.04	38.14	41.08	128.1	1.09	1.19	0.92	2.17	1.33	87.34	89.17	90.72	86.7	88.49
% to total Buses.	19.48	19.57	31.98	28.94	100	17.61	20.31	29.74	32.04	100	-	-	-	-	-	-	-	-	-	-
Total INC/DEC	64.34	62.59	60.36	50.0	58.13	77.32	65.54	65.68	81.68	72.50	-	-	-	-	-	86.41	84.69	90.574	86.23	87.223
Annual INC/DEC	6.43	6.25	6.03	5.0	5.81	7.73	6.55	6.56	8.16	7.25	-	-	-	-	-	Avg.	Avg.	Avg.	Avg.	Avg.

Note :-

- A- Aurangabad,
- N- Nagpur,
- P- Pune.
- B- Bombay

NA - Data not available.

(Source- Annual Administration Reports of MSRTC from 1980-81 to 89-90)

(Table 3-10 Continued)

Passengers carried (Crores)		Average Vehicle Utilisation Kms.						Rate of break downs Per 1 lakh kms.						Kms. per litre of Diesel								
		A	N	P	B	A	N	P	B	A	N	P	B	A	N	P	B	Ave.				
20.22	21.30	33.68	43.80	119.00	275.5	248.8	256.3	238.6	252.1	5.6	7.6	7.0	9.2	7.6	NA	NA	NA	NA	NA	NA	NA	NA
21.47	21.54	35.31	49.19	127.31	276.6	243.0	258.2	243.1	253.1	5.8	7.1	6.0	8.9	7.1	NA	NA	NA	NA	NA	NA	NA	NA
21.95	22.12	36.93	49.37	130.37	273.3	240.2	255.9	234.2	248.4	5.9	7.3	4.3	8.0	6.3	NA	NA	NA	NA	NA	NA	NA	NA
23.45	23.36	39.58	53.99	140.38	260.0	243.2	261.8	239.2	253.7	6.4	6.9	4.1	7.6	6.2	NA	NA	NA	NA	NA	NA	NA	NA
24.61	24.88	42.56	59.25	151.3	280.1	245.4	264.4	247.8	257.6	5.8	5.1	4.1	6.9	5.5	NA	NA	NA	NA	NA	NA	NA	NA
27.92	27.35	46.13	67.88	169.88	289.6	257.6	273.4	258.7	267.9	5.7	4.7	4.0	6.1	5.1	NA	NA	NA	NA	NA	NA	NA	NA
30.15	31.41	50.09	75.81	187.46	295.1	264.0	277.6	265.4	273.4	4.6	3.9	3.4	5.8	4.5	NA	NA	NA	NA	NA	NA	NA	NA
31.27	34.41	52.13	87.1	204.91	297.5	273.5	279.3	269.4	277.7	5.6	4.0	3.4	6.5	4.9	4.37	4.42	4.4	4.4	4.15	4.15	4.31	4.31
33.69	36.36	55.96	91.76	217.77	298.5	285.4	286.5	265.5	281.1	5.8	3.7	3.3	7.2	5.1	4.34	4.51	4.41	4.41	4.1	4.1	4.31	4.31
35.52	39.04	60.24	96.52	233.32	298.3	285.9	281.9	265.9	280.0	5.6	5.0	3.5	6.6	5.2	4.34	4.59	4.44	4.44	4.12	4.12	4.34	4.34
14.91	16.39	25.30	41.37	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75.66	83.28	76.65	124.93	96.06	8.27	14.91	9.98	11.44	11.06	5.68	5.54	4.31	7.28	3.75	4.35	4.50	4.416	4.416	4.123	4.123	4.32	4.32
7.56	8.32	7.88	12.49	9.60	0.82	1.49	0.99	1.14	1.10	-	-	-	-	-	-	-	-	-	-	-	-	-

01

Region Pune comes second with 38.14 crores contributing 29.74% of total effective kms. in 1989-90. It shows total increase of 65.68% and annual increase of 6.56% over the decade. Region Nagpur stand third with 26.04 crores kms. contributing 20.31% of total effective kms. in 1989-90. It shows total increase of 65.54% and annual increase of 6.55% over the decade. On the otherhand region Aurangabad is lagging behind with lowest number of effective kms. i.e. 22.84 crores contributing 17.81% of total effective kms. in 1989-90. It shows total increase of 77.32% and annual increase of 7.73% over the decade.

The third indicator is the percentage of Dead kms. to effective kms. operated during the year. Dead kms. means the number of kms. not operated by the regions. The percentage of Dead kms. to effective kms. denotes the number of kms not operated and their proportion with the effective kms. during the year. In this case the Region Aurangabad shows a varying trend during the period of ten years with the highest mark of 1.09% during the year 1989-90 and the lowest one 0.84% during the year 1985-86. The region Nagpur also shows a varying trend but the highest mark of 1.72% during the year 1984-85 and the lowest one 1.19% during the year 1989-90. The region Pune also shows a varying trend with the highest mark of 0.94% during the year 1988-89 and the lowest 0.72% during the year 1981-82. While the region of Bombay shows an increasing trend with

the lowest mark at 1.31% during the year 1981-82 and the lowest mark at 1.31% during the year 1981-82 and the highest mark at 2.17% during the year 1989-90. In all we can say that the Region of Pune has brought maximum number of Kilometres under its operations while the Region Bombay is not so alert in this case. Both the Region at Bombay and Region Nagpur has an opportunity to expand their services and decrease the number of dead kms.

The fleet utilisation denotes the use of vehicles by the regions. It indicates whether the regions have made fuller use of their vehicles or they have failed to do so. The region Aurangabad shows varying trend with the highest mark of 88.21% during the year 1988-89 and the lowest mark of 83.80% during the year 1983-84. The average percentage of fleet utilisation comes 86.41%. The region Nagpur also shows a varying trend with the highest mark of 89.17% during the year 1989-90 and the lowest mark of 79.9% during the year 1982-83. The average fleet utilisation comes 84.69%. The region Pune shows commanding position in this case with the highest mark of 90.8% during the year 1982-83 and the lowest 89.51% during the year 1988-89. The average fleet utilisation of this region is 90.57%. The region Bombay shows a varying trend with the highest mark of 88.5% during the year 1986-87 and the lowest one 83.9% during the year 1982-83. The average fleet utilisation for Region of Bombay is 86.23%. In all we can say that the Region Pune has got commanding position as far as fleet

utilisation is concerned. On the other hand the Region Nagpur is lagging behind in this case. The Region Nagpur, Bombay and Aurangabad have not made fuller utilisation of their vehicles. They have an opportunity to improve their fleet utilisation.

As far as the number of passengers carried during the year is concerned, the Region Bombay is in a commanding position, with the total number of 98.52 crores (contributing 41.37 of total) passengers during the year 1989-90. The Region Pune, Nagpur, and Aurangabad have got the total number of passengers 60.24 crores (25.30%), 39.04 Crores (16.39%) and 35.52 Crore Passengers (14.91) during the year 1989-90. Although the number of passengers carried depends upon the number of vehicles available and the rate of increase in vehicles, the rate of increase in number of passengers carried in case of Bombay Region (124.93%) is more than the rate of increase in vehicles and hence it is in a commanding position above all other regions.

Average vehicle utilisation indicates the average daily kilometres operated by the vehicle which forms the part of fleet utilisation. The region Aurangabad is in a commanding position with the highest mark of 298.39 kms. and the region of Bombay is far away from all other regions with the lowest mark at 265.98 kms. The region Pune comes second with the highest mark of 286.50 kms. during the year 1988-89 and the Region of Nagpur the third with the highest mark of

285.95 kms. during the year 1989-90.

As far as the rate of break downs per 1 lakh kms. is concerned, the table shows that the Region Pune shows highest mark of 6 per 1 Lakh kms (1982-83) and the lowest 3.3 per 1 Lakh kms. during the year 1988-89. Further it shows consistantly a decreasing trend. The region Bombay is worst in this case with the highest mark of 8.9 per 1 Lakh kms. during the year 1982-83 and the lowest 5.8 per 1 lakh kms. during the year 1986-87. The region Aurangabad shows highest mark of 6.4 during the year 1983-84 and the lowest mark of 4.6 during the year 1986-87. While the region Nagpur indicates the highest mark of 7.3 during the year 1982-83 and the lowest mark of 3.7 during the year 1988-89. Thus we can say that the Region Pune is in a commanding position with the less number of break downs which is the sign of excellent mechanical performance, while the Region Bombay is the most region with higher rate of breakdowns which is the sign of poor mechanical performance.

Again the kms. per litre of diesel indicates the rate of fuel consumption which is concerned with the mechanical engineering performance . The Region Nagpur is occupying drivers seat with the highest mark of 4.59 kms. per litre of diesel. Region Pune comes second with 4.44 kms, the Region Aurangabad stands third with 4.37 kms. and the Region Bombay is lagging behind with 4.10 kms. per litre at Diesel.

At there are various indicators of Physical performance and the table shows varying performance of the regions in all cases, it is very difficult to judge over superiority of a particular region, There is not a particular single region leading in all cases. But the study of table shows that as far as route kms. during the year, percentage of Dead kms. to Effective kms, Percentage of fleet utilisation and the rate of breakdowns per 1 lakh kms. is concerned the Region Pune is in a commanding position in all these four cases. And hence it has got overall superiority in physical performance. The region Bombay has got superiority in case of Effective kms. during the period and the number of passengers carried during the year. The Region Aurangabad is in a commanding position for the vehicle utilisation while the Region Nagpur is superior in case of fuel consumption.

REFERENCE

Annual Administration Report of MSRTC from 1980-81
to 1989-90.