CHAPTER - IV

PHYSICAL AND FINANCIAL PERFORMANCE

DIVISIONWISE ANALYSIS

INTRODUCTION :

It is pointed out in Chapter I that the functioning of GSRTC is divided into fifteen divisions and each division is further divided into depots. At present GSRTC is divided into following fifteen divisions [1] Palanpur, [2] Mehsana [3] Himmatnagar [4] Ahmedabad [5] Nadiad [6] Baroda [7] Godhra [8] Bharuch [9] Surat [10] Bulsar [11] Rajkot [12] Bhavnagar [13] Amreli [14] Junagadh [15] Kachchh.

Though working of all these divisions are subject to same policy of GSRTC, the physical and financial performance of various divisions are also influenced by economic and geographical profile of various regions. The overall performance of GSRTC is the joint picture of performance of individual division. It is equally important to examine physical and financial performance of various divisions of GSRTC. The present chapter attempts to examine physical and financial performance of various divisions for the period of 1985-86 to 1994-95. The necessary divisionwise data are collected from GSRTC Central Office, Ahmedabad. The required information for various divisions could not be obtained prior to 1985-86. It is, therefore, the study covers the period of 1985-86 to 1994-95.

SIZE OF VARIOUS DIVISIONS OF GSRTC :

It is to be noted here that the size of various divisions differ significantly from each other. The size of the division is measured generally in terms of number of buses held, strength of the staff, number of passenger travelled, effective kms. operated etc. Before we examine relative physical performance of various divisions and changes their in over a period of time, it is necessary to throw light on above indicators of the size of the divisions.

The Tables - IV.I to IV.5 throw light on number of fleet, strength of staff, number of depots, number of passenger travelled and effective kms operated by various divisions for 1985-86 to 1994-95. Among various divisions, Kachchh division seems to be the smallest one in terms of number of buses held during the period under consideration. It held 260 buses in 1985-86 and it has increased progressively to 340 in 1994-95, where as the Nadiad division is biggest one in terms of number of buses held. It had 753 buses in 1985-86 and increased to 928 in 1994-95. The Bharuch division came into existence in 1989-90 and it had only 327 buses in 1994-95 as compared to 340 held by Kachchh division. The strength of staff in each division has increased over a period of time. It has fluctuated between 1766 for Amreli to 4766 for Nadiad division in 1985-86. The Nadiad division is followed by Rajkot division and Baroda division respectively. In the year 1994-95 Bharuch division had the

smallest number of staff of 2016 which was followed by Kachchh with staff of 2204. However the maximum number of staff is employed by Nadiad division in 1994-95. Looking at the number of depots under each division one finds that the Rajkot division has maximum number of depots i.e. 14, which is followed by Nadiad division where as Bharuch division appeared with minimum number of depots. It is important to note here that the relative size of the divisions in terms of passenger travelled corresponds to the relative size of division in terms of number of buses held and staff employed. Only 38.20 lakhs and 38.39 lakhs passenger travelled in Amreli division and Kachchh division respectively in 1985-86. During the same year almost 142.21 lakhs passenger travelled in Nadiad division. Comparing the number of passenger travelled in 1985-86 with the same in 1994-95 with respect to various division, it is surprising to note that it has declined for all the divisions of GSRTC except Palanpur, Mehsana, Himmatnagar, Junagadh and Kachchh. In case of Ahmedabad division, it has increased during 1985-86 to 1992-93 with some fluctuations but has declined in 1993-94. It is to be noted that the effective kms. operated by each division has increased significantly during the period under consideration. It was as high as 673.94 lakh kms. in case of Nadiad division in 1985-86 and 325.19 lakh kms. for Kachchh division where as in the year 1994-95 the Bharuch division operated only 334.50 lakh kms.

The size of the division differs with respect to number of fleet, strength of staff, passenger carried and effective kms. operated. The coefficient of variation is estimated to find out

the degree of dispersion among various divisions at a given point of time. As far as the number of fleet held by various divisions is concerned, it is observed from Table - IV.1 that the coefficient of variations has fluctuated between 26.20 in 1993-94 and 29.00 in 1989-90. It may be said that the degree of dispersion among various division has remained more or less constant during the period under consideration. Variations among different divisions in case of strength of staff employed are more or less nearer to fluctuations in number of fleet held. The coefficient of variation has fluctuated between 27.51 in 1987-88 to 29.99 in 1990-91. Looking at the coefficient of variations with reference to number of passenger travelled by each division, one observes that it has fluctuated between 31.47 in 1990-91 and 38.01 in 1988-89. This implies that the dispersion is more among various divisions in connection with number of passenger travelled. The coefficient of variation has fluctuated between 22.09 and 26.54 in case of effective kms. operated. It is important to examine whether the size of various divisions in terms of above mentioned indicators has converged with the passage of time or not, the coefficient of variation of each indicator is regressed on time using the following model.

$Y = a + bt + u$ [where Y is the coefficient of variation of the indicator of size of division and t is time] and following results are obtained.

$Y = 28.384 - 0.09133\ t \quad R^2 = 0.0768$ .. .. Number of fleet held
$\quad\quad\quad\quad (-0.81594)$

$Y = 26.344 - 0.01496\ t \quad (-0.18296) \quad R^2 = 0.004166$ .. Strength of Staff

$Y = 36.469 - 0.42793\ t \quad (-1.81602) \quad R^2 = 0.291905$ .. Passenger Carried

$Y = 22.71781 + 0.387151\ t \quad (2.182350) \quad R^2 = 0.373171$ .. Effective Kms operated

The following observations are made from the above results.

[1] The coefficient of variation has a declining trend with respect to number of fleet held by various divisions, strength of staff of divisions and number of passenger travelled by each division. But these negative trend coefficients are not statistically significant. This implies that the coefficient of variation has not declined significantly over a period of time, implying there by that the degree of dispersion among various divisions has remained more or less constant during the period under consideration with respect to above said parameters.

[2] The trend coefficient of the coefficient of variation of effective kms. operated turns out to be positive, which indicates that the diversion among various divisions has increased. However this positive trend coefficient is not statistically significant.

In brief one can conclude that the variations among different divisions with respect to parameters of size of divisions have not changed significantly.

TABLE - IV.1

NUMBER OF FLEET IN DIVISIONS

Year	PAL	MSN	MHT	ABD	NDD	BRD	GDA	BRH
1	2	3	4	5	6	7	8	9
1985-86	408	477	483	648	753	587	494	-
1986-87	430	511	528	649	794	616	516	-
1987-88	444	578	524	638	808	633	689	-
1988-89	456	567	536	663	827	615	537	-
1989-90	474	565	559	675	819	619	482	281
1990-91	464	567	567	646	783	573	443	276
1991-92	480	606	583	639	794	571	478	287
1992-93	508	659	623	663	840	614	514	287
1993-94	559	697	649	738	886	639	553	327
1994-95	550	698	644	742	928	642	530	327

Year	SRT	BLR	RJT	BVN	AML	JND	KCH	C.V.
1	10	11	12	13	14	15	16	17
1985-86	611	443	671	336	290	511	260	28.21
1986-87	661	437	698	339	308	539	261	28.72
1987-88	689	483	674	341	389	507	272	26.33
1988-89	697	476	686	348	292	504	272	28.84
1989-90	572	474	696	374	324	538	291	29.00
1990-91	561	475	683	364	309	541	281	28.75
1991-92	589	498	712	387	328	562	292	27.68
1992-93	610	517	752	399	343	575	321	28.04
1993-94	660	553	771	440	406	625	339	26.20
1994-95	662	540	805	425	402	624	340	27.96

* Bharuch division came into existence in 1989-90.

TABLE - IV.2

STRENGTH OF STAFF IN DIVISION

DIVISION	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95
PAL	2613	2595	2733	2816	3134	3039	3161	3354	3426	3394
MSH	3254	3211	3227	3496	3662	3780	3995	4278	4384	4337
HMT	2899	2906	2960	3298	3348	3501	3661	3809	3919	3804
ABD	3762	3782	3622	3993	3948	4163	4141	4449	4546	4514
NDD	4766	4667	4745	5166	5048	5243	5301	5514	5756	5699
BRD	4084	4054	4168	4387	4188	4295	4869	4410	4434	4311
GDA	2972	2968	3087	3201	2827	2796	3187	3182	3299	3297
BRH	-	-	-	-	1737	1781	1842	1836	2073	2016
SRT	4265	4143	4207	4420	3652	4032	4190	4270	4458	4169
BLR	2899	2859	2959	3010	3404	3432	3457	3449	3645	3640
RJT	4425	4395	4426	4368	4981	5046	4997	5242	5271	5316
BVN	2151	2127	2250	2442	2442	2583	2718	2812	2851	2786
AML	1766	1740	1728	1801	1994	2163	2208	2256	2546	2519
JND	3461	3440	3408	3453	3847	3891	3979	3995	4047	3957
KCH	1844	1889	1905	1967	2037	2035	2055	2205	2259	2204
C.V.	28.50	27.99	27.51	27.70	29.18	29.39	28.79	28.56	27.56	27.59

TABLE - IV.3

NUMBER OF DEPOTS IN DIVISIONS

DIVISIONS	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
1	2	3	4	5	6	7	8	9	10	11	12
Palanpur	6	6	6	6	6	6	6	6	6	7	7
Mahesana	7	8	8	8	7	8	9	10	11	11	11
Himatnagar	6	8	8	8	7	9	9	9	10	10	10
Ahmedabad	10	10	10	10	10	10	10	10	10	10	11
Nadiad	12	12	12	12	12	12	12	12	13	13	13
Baroda	11	11	11	11	10	11	11	11	10	10	10
Godhra	8	8	8	8	8	6	6	6	6	6	6
Bharuch	-	-	-	-	-	5	5	5	5	5	5
Surat	11	12	12	12	11	9	9	9	9	9	9
Bulsar	6	6	6	6	6	8	8	8	8	8	8
Rajkot	13	13	13	13	12	13	13	13	13	13	14
Bhavanagar	6	6	6	6	6	6	7	7	7	7	7
Amreli	5	5	5	5	5	5	5	6	6	7	7
Junagadh	9	9	9	9	8	10	10	10	10	10	10
Kachchh	8	8	8	8	3	8	8	8	8	8	8

TABLE - IV.4

NUMBER OF PASSENGER TRAVELLED

[in Lakhs]

DIVISION	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95
PAL	54.91	55.10	63.94	68.87	78.09	62.36	70.49	74.20	59.22	64.63
MSN	70.72	73.39	81.38	81.75	80.83	88.86	97.56	107.85	89.05	93.15
HMT	80.04	80.46	75.65	64.53	76.14	77.63	88.20	95.27	86.23	87.96
ABD	76.74	80.97	79.35	75.74	79.94	72.62	85.66	85.78	75.00	76.12
NDD	142.21	123.64	134.81	128.09	136.98	129.61	144.70	158.88	139.91	140.30
BRD	123.08	122.86	100.63	94.35	99.26	89.02	97.28	108.43	97.06	97.38
GDA	89.12	80.31	82.17	84.09	81.24	72.17	78.53	88.02	76.76	64.71
BRH	-	-	-	-	40.04	40.56	45.06	44.91	43.47	44.90
SRT	122.55	130.67	145.70	114.71	98.37	97.83	101.78	99.63	100.46	89.46
BLR	108.65	110.21	107.42	78.70	88.93	90.59	100.47	107.13	100.42	99.78
RJT	98.28	100.14	81.63	99.04	99.72	85.26	92.12	100.68	93.06	96.14
BVN	84.38	87.02	68.90	50.14	49.64	52.11	53.10	60.38	49.62	49.73
AML	38.20	40.21	31.08	40.31	43.13	40.71	43.28	48.67	46.50	33.88
JND	58.19	69.02	57.58	63.77	32.30	71.18	75.77	80.22	73.70	89.09
KCH	38.39	38.57	40.18	42.10	44.50	44.21	45.96	53.29	48.74	46.91
C.V.	36.22	33.48	37.54	38.01	36.82	31.47	32.48	32.54	32.58	34.29

TABLE - IV.5

EFFECTIVE KMS. OPERATED

[in Lakhs]

DIVISION	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95
PAL	428.02	448.94	489.45	506.49	524.76	510.85	558.48	597.66	649.24	662.17
MSN	437.18	468.40	509.00	526.08	569.21	591.94	637.07	701.77	745.92	778.22
HMT	441.28	454.66	497.61	516.96	556.96	567.03	612.71	660.53	684.82	723.64
ABD	547.11	573.57	617.89	656.75	670.58	654.56	688.84	692.89	749.93	763.21
NDD	673.94	688.48	744.86	761.40	775.24	740.25	773.12	809.61	859.32	859.25
BRD	518.16	521.22	544.15	551.39	515.21	490.20	498.45	519.41	577.91	577.13
GDA	469.78	488.27	523.69	551.54	501.64	445.42	510.20	540.79	576.70	545.79
BRH	-	-	-	-	208.22	273.82	287.07	277.62	329.70	334.50
SRT	481.58	516.37	578.80	602.14	518.64	464.64	473.47	481.20	541.08	488.77
BLR	387.37	404.25	429.04	425.99	429.97	421.01	449.35	474.63	516.29	490.74
KJT	657.59	698.32	709.15	710.34	764.97	752.40	779.29	815.40	854.36	844.53
BVN	343.27	378.80	408.35	409.74	433.05	426.37	447.97	461.70	506.40	500.79
AML	305.61	331.67	345.00	354.49	384.76	381.13	411.00	413.59	465.21	486.50
JND	517.97	530.31	555.83	562.00	610.48	619.58	665.64	692.55	752.71	747.54
KCH	325.19	330.67	342.68	345.61	385.08	383.25	399.76	406.40	450.69	447.21
C.V.	23.04	22.35	22.09	22.35	27.45	25.78	25.37	26.54	24.31	25.32

PHYSICAL PERFORMANCE OF VARIOUS DIVISIONS OF GSRTC :

In order to examine the physical performance of various divisions, indicators like bus staff ratio, percentage of fleet utilization, Km. per litre of oil, vehicle utilization per bus per day, number of breakdowns per 10,000 kms., number of accidents per one lakh km., passenger carried per bus per day, effective kms. per staff are taken into account as per previous chapters.

The Tables - IV.6 to IV.13 reveal information regarding above said indictors for all divisions of GSRTC for the period 1985-86 to 1994-95. It is very much obvious from the Table IV.6 that the bus-staff ratio is more or less identical for all divisions of GSRTC. During 1985-86, the ratio fluctuated between 0.17 in case of Himmatnagar, Ahmedabad and Godhra divisions and 0.14 in case of Kachchh, Surat and Baroda divisions. In the year 1994-95 it fluctuated between 0.15 and 0.17. It is also to be noted that for a given division, it has remained more or less constant over a period of time.

The percentage of fleet utilization another, indicator of physical performance has improved over a period of time in case of all divisions. However it is to be noted that for a given year it varies from division to division. In the year 1985-86, the Bhavnagar division utilized only 71.4% of its total fleet where as it was as high as 85% in case of Mehsana division.

TABLE - IV.6

BUS STAFF RATIO OF DIFFERENT DIVISIONS

DIVISION	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95
PAL	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.15	0.16	0.16
MSN	0.15	0.16	0.18	0.16	0.15	0.15	0.15	0.15	0.16	0.16
HMT	0.17	0.18	0.18	0.16	0.17	0.16	0.16	0.16	0.16	0.17
ABD	0.17	0.17	0.18	0.17	0.17	0.15	0.15	0.15	0.16	0.16
NDD	0.16	0.17	0.17	0.16	0.16	0.15	0.15	0.15	0.15	0.16
BRD	0.14	0.15	0.15	0.14	0.15	0.13	0.12	0.14	0.14	0.15
GDA	0.17	0.17	0.17	0.17	0.17	0.16	0.15	0.16	0.17	0.16
BRH	-	-	-	-	0.16	0.15	0.15	0.16	0.16	0.16
SRT	0.14	0.15	0.16	0.16	0.16	0.14	0.14	0.14	0.15	0.16
BLR	0.15	0.15	0.16	0.16	0.14	0.14	0.14	0.15	0.15	0.15
RJT	0.15	0.16	0.15	0.16	0.14	0.13	0.14	0.14	0.15	0.15
BVN	0.16	0.16	0.15	0.14	0.15	0.14	0.14	0.14	0.15	0.15
AML	0.16	0.18	0.22	0.16	0.16	0.14	0.15	0.15	0.16	0.16
JND	0.15	0.16	0.15	0.14	0.14	0.14	0.14	0.14	0.15	0.16
KCH	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.15	0.15
C.V.	6.14	6.84	11.79	6.09	6.98	6.02	6.53	4.62	4.40	3.67

TABLE - IV.7

PERCENTAGE OF FLEET UTILIZATION

DIVISION	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95
PAL	83.60	86.70	88.51	91.88	86.54	81.30	87.21	86.62	87.68	89.27
MSN	85.00	84.86	86.87	85.31	89.62	88.10	90.61	88.54	88.87	91.48
HMT	82.30	84.22	87.96	89.80	91.44	87.11	89.74	86.24	84.73	88.13
ABD	76.70	80.70	85.27	85.84	84.40	78.52	86.54	83.77	84.99	86.22
NDD	84.60	83.38	83.38	85.77	87.66	84.24	88.06	88.34	87.94	87.38
BRD	78.30	78.27	77.99	80.83	84.69	77.95	79.54	78.86	85.00	85.60
GDA	79.50	79.95	83.03	85.08	87.50	81.16	86.58	84.91	85.63	83.74
BRH	-	-	-	-	86.92	83.20	86.35	82.35	86.77	89.51
SRT	75.30	79.59	81.09	82.56	84.98	81.33	82.44	91.10	84.90	80.91
BLR	81.70	86.60	89.29	89.77	88.94	86.83	88.61	88.94	89.27	88.73
RJT	81.70	85.73	87.66	87.75	88.27	87.06	85.43	87.36	89.26	89.24
BVN	71.40	84.02	85.74	83.26	86.32	81.89	87.00	88.08	88.28	88.41
AML	78.60	81.68	83.99	82.62	87.76	81.88	82.62	81.36	83.81	86.25
JND	84.30	83.67	85.49	83.51	87.70	83.92	86.34	87.87	87.16	88.46
KCH	80.00	83.03	85.58	86.12	85.29	86.19	85.67	86.22	86.51	86.88
C.V.	4.71	3.07	3.48	3.56	2.15	3.68	3.21	3.65	2.00	2.87

TABLE - IV.8

KMS. PER LITER OF OIL

DIVISION	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95
PAL	4.93	4.90	5.02	5.03	5.01	5.05	5.08	5.09	5.15	5.20
MSN	4.72	4.73	4.79	4.73	4.69	4.76	4.85	4.90	4.92	4.76
HMT	4.80	4.93	5.01	5.01	5.01	5.03	5.07	5.02	5.09	4.94
ABD	4.84	4.89	4.97	4.91	4.92	4.94	4.95	4.86	4.88	4.71
NDD	4.80	4.88	4.89	4.82	4.81	4.82	4.85	4.86	4.85	4.63
BRD	4.60	4.60	4.79	4.67	4.61	4.77	4.77	4.69	4.73	4.58
GDA	4.91	4.93	4.99	4.98	4.93	4.92	5.05	5.01	5.00	4.80
BRH	-	-	-	-	4.81	4.85	4.89	4.93	4.90	4.74
SRT	4.57	4.66	4.85	4.83	4.85	4.82	4.84	4.81	4.79	4.54
BLR	4.65	4.70	4.85	4.85	4.85	4.81	4.93	4.91	4.96	4.86
RJT	5.03	5.13	5.22	5.23	5.27	5.26	5.32	5.29	5.29	5.20
BVN	5.03	5.06	5.10	5.09	5.08	5.12	5.11	5.08	5.03	4.82
AML	5.02	5.04	5.11	5.10	5.15	5.17	5.14	5.09	5.07	4.88
JND	5.16	5.14	5.20	5.12	5.17	5.19	5.24	5.21	5.20	5.06
KCH	5.03	5.07	5.14	5.15	5.16	5.17	5.19	5.19	5.19	4.99
C.V.	3.61	3.47	2.81	3.26	3.69	3.34	3.17	3.19	3.13	3.67

TABLE - IV.9

NUMBER OF BREAKDOWNS PER 10,000 KMS.

DIVISION	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95
PAL	0.17	0.16	0.15	0.15	0.23	0.29	0.27	0.50	0.38	0.43
MSN	0.17	0.17	0.10	0.20	0.24	0.20	0.18	0.33	0.17	0.30
HMT	0.11	0.07	0.06	0.07	0.12	0.14	0.15	0.43	0.37	0.40
ABD	0.18	0.15	0.15	0.18	0.12	0.15	0.13	0.30	0.31	0.55
NDD	0.20	0.21	0.19	0.19	0.23	0.35	0.32	0.35	0.43	0.63
BRD	0.28	0.52	0.46	0.57	0.75	0.69	0.57	0.89	0.84	0.93
GDA	0.30	0.50	0.48	0.42	0.46	0.41	0.28	0.56	0.67	1.27
BRH	-	-	-	-	1.04	0.81	0.50	1.15	0.86	1.30
SRT	0.40	0.41	0.38	0.31	0.33	0.37	0.44	0.72	0.58	1.00
BLR	0.08	0.07	0.11	0.15	0.16	0.47	0.36	0.57	0.43	0.78
RJT	0.19	0.19	0.14	0.17	0.17	0.13	0.13	0.33	0.35	0.45
BVN	0.11	0.11	0.10	0.10	0.08	0.09	0.07	0.38	0.42	0.57
AML	0.14	0.13	0.10	0.11	0.13	0.09	0.18	0.50	0.42	0.54
JND	0.12	0.07	0.07	0.06	0.05	0.05	0.05	0.19	0.18	0.21
KCH	0.12	0.08	0.09	0.11	0.10	0.13	0.10	0.31	0.47	0.01
C.V.	46.48	74.49	75.40	69.23	94.96	75.52	62.54	49.01	42.85	47.60

In the year 1994-95, the Godhra division utilized 83.74% of its available fleet. As against this the Mehsana division has utilized 91.48% of its total fleet. It seems that the relative performance has changed with the passage of time.

Looking at the kms. per litre of oil it can be said that it has not improved over a period of time for all divisions. The deterioration is observed with respect to Ahmedabad, Nadiad, Baroda, Godhra, Bhavnagar, Amreli, Junagadh and Kachchh division. It also varies from division to division in a given year. It was highest in case of Junagadh division where as lowest in case of Surat division in 1985-86. In the year 1994-95 also, the performance of Surat division was least in terms of kms. per litre of oil where as best performance was represented by Palanpur and Bulsar divisions.

The number of breakdowns per 10,000 kms fluctuated between 0.08 in case of Bulsar division and 0.40 for Surat division. The divisions like Bhavnagar, Himmatnagar, Junagadh and Kachchh performed relatively better in 1985-86 as the number of breakdowns per 10,000 kms. was low compared to other divisions. In the year 1994-95, it was lowest at 0.01 in case of Kachchh division, it was as high as 1.30 in case of Bharuch vision. It has increased over a period of time for almost all divisions.

TABLE - IV.10

NUMBER OF ACCIDENTS PER LAKH KM.

DIVISION	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95
PAL	0.25	0.25	0.27	0.29	0.30	0.27	0.27	0.29	0.28	0.25
MSN	0.28	0.26	0.29	0.32	0.36	0.34	0.29	0.29	0.24	0.23
HMT	0.23	0.22	0.22	0.22	0.25	0.24	0.22	0.22	0.20	0.21
ABD	0.33	0.31	0.34	0.35	0.35	0.36	0.33	0.30	0.31	0.32
NDD	0.34	0.30	0.31	0.27	0.31	0.35	0.35	0.34	0.27	0.26
BRD	0.48	0.54	0.44	0.49	0.55	0.49	0.50	0.44	0.47	0.46
GDA	0.30	0.32	0.36	0.35	0.33	0.41	0.35	0.32	0.33	0.36
BRH	-	-	-	-	0.57	0.46	0.49	0.39	0.37	0.41
SRT	0.43	0.40	0.35	0.41	0.47	0.52	0.43	0.35	0.39	0.40
BLR	0.38	0.46	0.40	0.45	0.43	0.49	0.52	0.35	0.31	0.35
RJT	0.25	0.22	0.18	0.23	0.25	0.22	0.21	0.23	0.21	0.26
BVN	0.18	0.16	0.18	0.22	0.24	0.20	0.19	0.21	0.21	0.25
AML	0.23	0.16	0.15	0.20	0.21	0.26	0.19	0.16	0.19	0.20
JND	0.16	0.14	0.13	0.17	0.23	0.22	0.23	0.19	0.19	0.20
KCH	0.16	0.11	0.15	0.12	0.17	0.20	0.15	0.15	0.19	0.24
C.V.	32.96	43.76	36.37	35.81	35.25	33.22	37.71	29.48	29.83	27.63

TABLE - IV.11

VEHICLE UTILIZATION PER BUS PER DAY

DIVISION	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95
PAL	322.10	333.93	329.55	329.00	341.03	337.95	448.87	357.92	375.67	365.91
MSN	286.20	297.33	300.06	304.43	305.09	306.18	312.49	319.04	330.14	331.96
HMT	296.90	293.50	290.40	288.96	299.30	303.01	318.84	329.98	337.34	344.95
ABD	307.60	312.58	315.84	322.85	320.63	335.96	333.33	329.00	339.07	333.65
NDD	287.70	291.80	294.60	299.36	300.40	287.61	289.11	291.03	301.56	297.76
BRD	202.50	280.20	281.61	280.83	271.65	268.40	276.77	286.75	293.66	290.81
GDA	318.30	328.81	328.14	322.76	324.29	321.77	332.97	337.99	344.79	334.86
BRH	-	-	-	-	308.40	302.11	308.75	308.86	319.74	316.85
SRT	257.60	264.26	276.37	278.38	269.26	263.28	262.98	265.59	273.19	254.82
BLR	277.50	270.50	279.90	273.90	272.92	269.68	278.04	279.17	292.01	278.92
RJT	325.70	322.34	319.45	320.61	332.78	329.21	334.50	335.54	338.98	335.95
BVN	352.80	364.99	369.93	370.55	372.28	367.47	371.46	362.46	377.13	375.68
AML	370.30	376.05	372.73	371.44	379.99	382.98	394.60	390.48	398.62	386.64
JND	327.20	326.72	329.21	325.21	351.80	357.31	365.33	365.33	380.92	378.04
KCH	401.30	398.79	397.86	401.14	417.30	411.06	407.67	408.47	419.66	413.11
C.V.	15.18	12.12	11.34	11.46	12.67	13.06	15.77	11.99	11.95	12.53

TABLE - IV.12

PASSENGER CARRIED PER BUS PER DAY

1	2	3	4	5	6	7	8	9	10	11	12	13	14
YEAR	PLN	MSN	HMT	ABD	NDD	BRD	GDA	BLR	RJT	BVN	AML	JND	KCH
1985-86	369	406	454	324	517	574	494	672	401	688	361	312	405
1986-87	351	393	417	342	427	546	426	691	393	703	358	351	405
1987-88	395	386	396	341	457	436	422	609	332	554	219	311	405
1988-89	414	395	330	106	424	420	429	453	396	395	378	347	424
1989-90	451	392	373	323	458	439	462	514	393	364	365	364	419
1990-91	368	429	375	325	454	426	446	523	342	392	361	360	431
1991-92	402	441	414	367	499	467	450	553	354	376	362	369	431
1992-93	400	448	419	354	518	484	469	568	367	415	389	382	455
1993-94	290	350	364	278	433	416	380	498	331	309	314	323	394
1994-95	322	366	374	281	414	416	335	506	327	321	231	391	378
C.V.	11.81	7.42	8.58	23.46	7.96	11.57	10.08	13.14	7.85	30.39	17.20	18.59	5.01

Table - IV.13

EFFECTIVE KMS. PER STAFF

[Lakh Kms.]

DIVISION	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95
PAL	0.16	0.17	0.18	0.18	0.17	0.17	0.17	0.18	0.19	0.20
MSN	0.13	0.15	0.16	0.15	0.16	0.16	0.16	0.16	0.17	0.18
HMT	0.15	0.16	0.17	0.16	0.17	0.16	0.17	0.17	0.17	0.19
ABD	0.14	0.15	0.17	0.16	0.17	0.16	0.17	0.16	0.16	0.17
NDD	0.14	0.15	0.16	0.15	0.15	0.14	0.14	0.15	0.15	0.15
BRD	0.13	0.13	0.13	0.13	0.12	0.11	0.10	0.12	0.13	0.13
GDA	0.15	0.16	0.17	0.17	0.18	0.16	0.16	0.17	0.17	0.17
BRH	-	-	-	-	0.12	0.15	0.15	0.15	0.16	0.17
SRT	0.11	0.12	0.14	0.14	0.14	0.12	0.11	0.11	0.12	0.12
BLR	0.13	0.14	0.14	0.14	0.13	0.12	0.13	0.14	0.14	0.13
RJT	0.15	0.16	0.16	0.16	0.15	0.15	0.15	0.16	0.16	0.16
BVN	0.16	0.18	0.18	0.17	0.18	0.17	0.16	0.16	0.18	0.18
AML	0.17	0.19	0.20	0.20	0.19	0.18	0.19	0.18	0.18	0.19
JND	0.15	0.15	0.16	0.16	0.16	0.16	0.17	0.17	0.19	0.19
KCH	0.18	0.18	0.18	0.18	0.19	0.19	0.19	0.18	0.20	0.20
C.V.	11.46	11.54	10.88	11.31	13.86	13.50	15.48	13.38	12.91	14.57

Examining the number of accidents per lakh km. it is found that it fluctuated widely among various divisions during all the years under consideration. In terms of number of accidents per lakh km., the best performance is observed for Junagadh and Kachchh divisions in 1985-86 where as for Amreli and Junagadh divisions in 1994-95. It was highest for Baroda division for both the years 1985-86 and 1994-95. The passenger carried per bus per day varies widely among divisions. The Bhavnagar division carried 688 passengers per bus per day and in the same year it was as low as 312 in case of Junagadh division. In 1986-87, the least performance is observed in case of Ahmedabad division. In the year 1994-95, the Amreli division carried only 231 passenger per bus per day where as it was highest for Bulsar division i.e. at 506.

The vehicle utilization per bus per day also shows variations among divisions of GSRTC.

The Graphs IV.1 to IV.8 show relative performance of various divisions at two different point of time i.e. for the years 1985-86 and 1994-95.

The Graph IV.1 shows that there is no clear cut improvement for all divisions in 1994-95 as compared to 1985-86 in case of bus-staff ratio. The same situation is observed in case of km. per liter of oil. The percentage of fleet utilization has improved for all divisions in 1994-95 as compared to 1985-86.

The similar result is observed in case of vehicle utilization per bus per day and effective kms. per staff. However the deterioration is observed in case of breakdowns per ten thousand kms., number of accidents per one lakh kms. and passenger carried per bus per day.

An attempt is made to examine the trend in the degree of dispersion among various division with reference to indicators of physical performance through regressing coefficient of variation on time using the following model.

$Y = a + bt + u$ where Y is the coefficient of variation of the indicator of physical performance and t is time.

$Y = 8.348 - 0.45333\ t$ (-2.22131)	$R^2 = 0.381486..$ ...	Bus staff ratio
$Y = 3.857 - 0.1377\ t$ (-1.76638)	$R^2 = 0.280583..$ ...	Percentage of fleet utilization
$Y = 3.349 - 0.00339\ t$ (-0.10401)	$R^2 = 0.0013151.$ ...	Kms. per liter of oil
$Y = 39.009 - 1.06824\ t$ (-2.67808)	$R^2 = 0.472717..$ ...	No. of accident per lakh km.
$Y = 74.24964 - 2.32036\ t$ (-1.28142)	$R^2 = 0.170299..$ ...	No. of breakdowns per 10,000 kms.
$Y = 13.038 - 0.05133\ t$ (0.29347)	$R^2 = 0.010651..$ ...	Vehicle utilization per bus per day

$$Y = 10.93853 + 0.40232\ t \quad R^2 = 0.472717.. \quad \underset{(0.719255)}{\ldots}$$ Passenger carried per bus per day

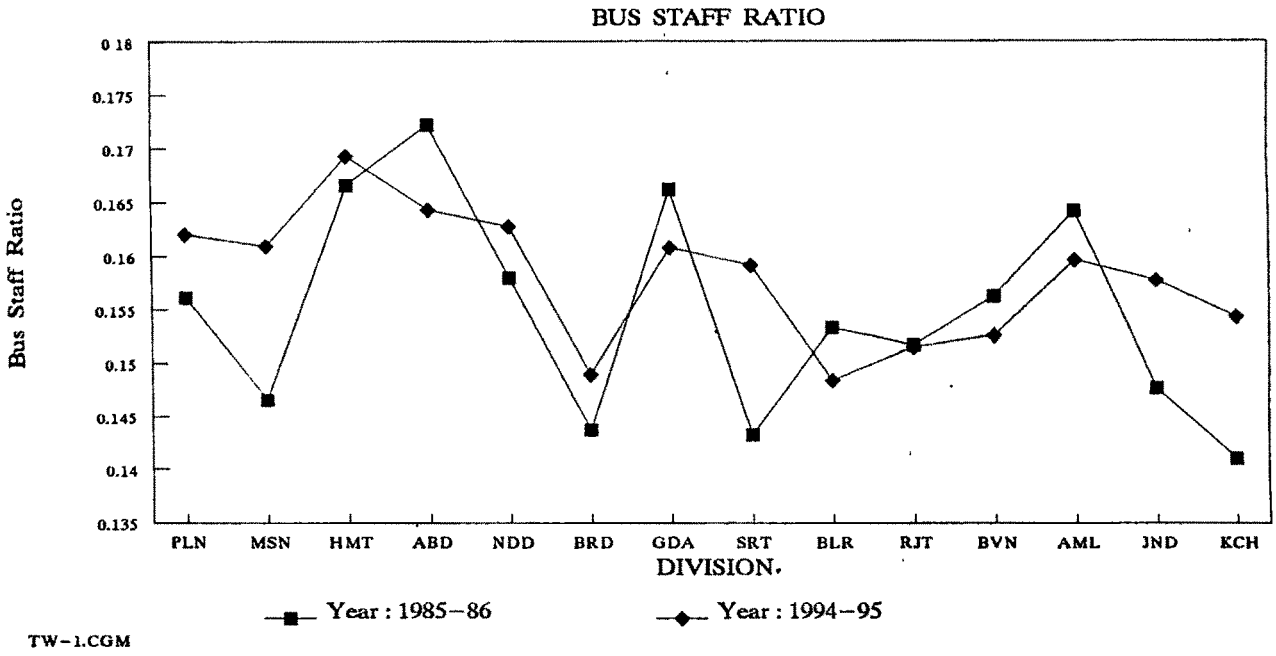
$$Y = 5.662884 - 0.07375\ t \quad R^2 = 0.03592... \quad \underset{(-0.63342)}{\ldots}$$ Effective Kms. per staff

The above equations reveal trend in coefficient of variation of indicators of physical performance. The negative trend is observed for all indicators except passenger carried per bus per day. This tends to suggest that with the passage of time inequality among various divisions converges with respect to various indicators of physical performance. However, this negative trend coefficient is statistically significant only in the case of accidents per lakh kms. The positive trend in case of passenger carried per bus per day is not statistically significant. On the basis of this, one can conclude that the dispersion in case of indicators of physical performance among various divisions did not experience any trend.

TRENDS IN THE INDICATORS OF PHYSICAL PERFORMANCE :

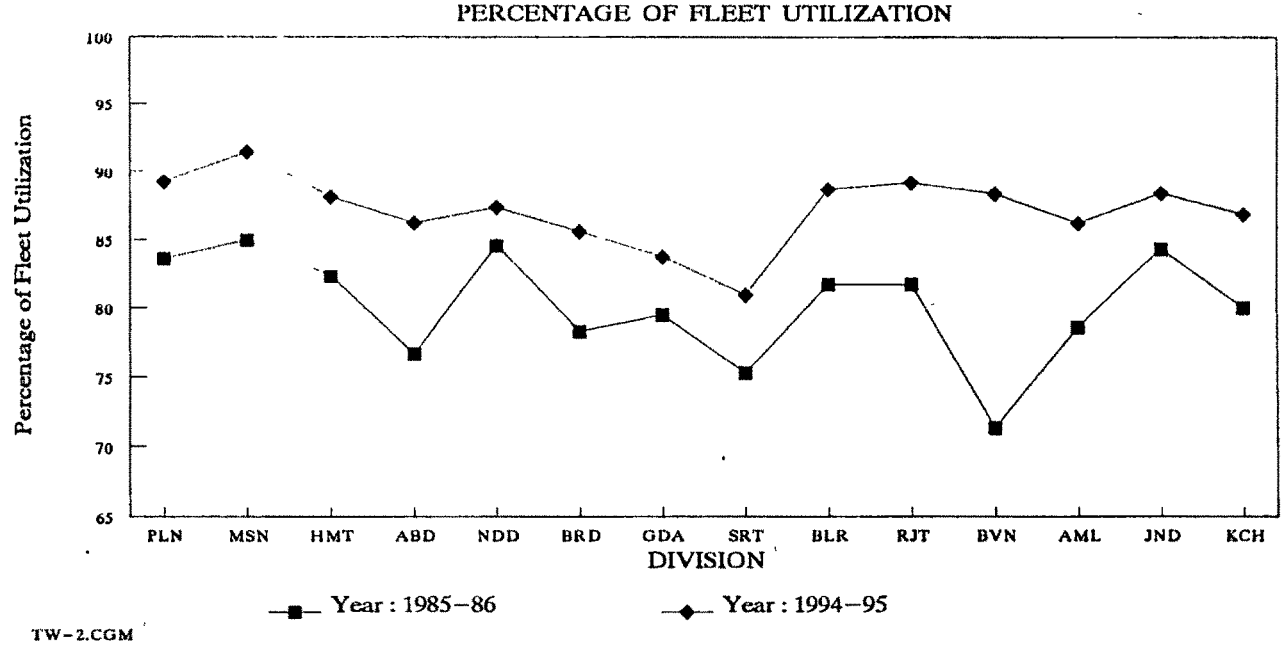
The growth rates of various indicators of physical performance of all divisions of GSRTC have been estimated for the period 1985-86 to 1994-95. The positive growth rate of each indicator suggests improvement in the physical performance of the

Graph – IV.1



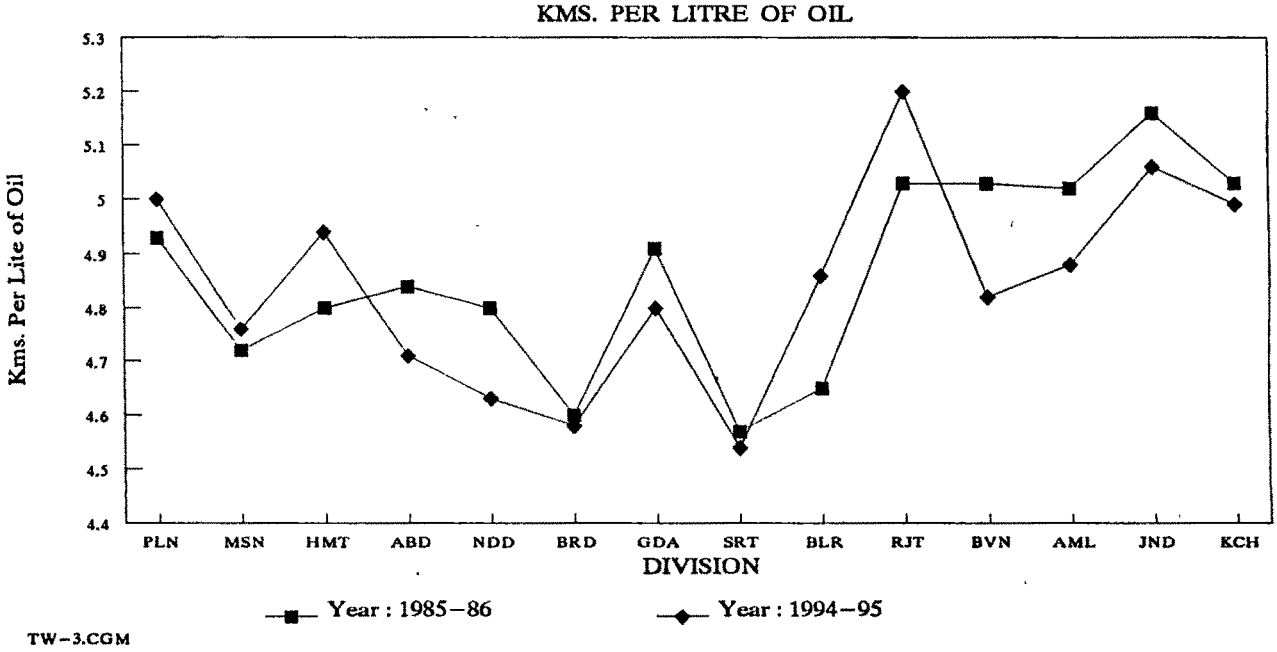
TW-1.CGM

Graph – IV.2



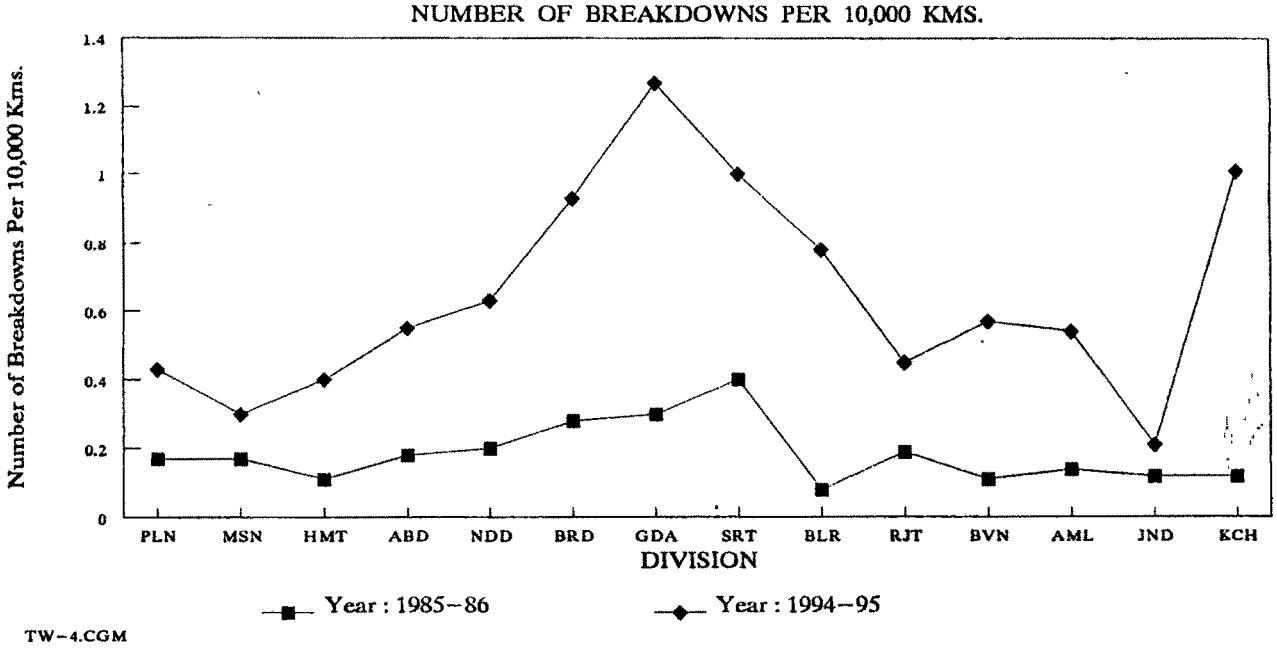
TW-2.CGM

Graph – IV.3



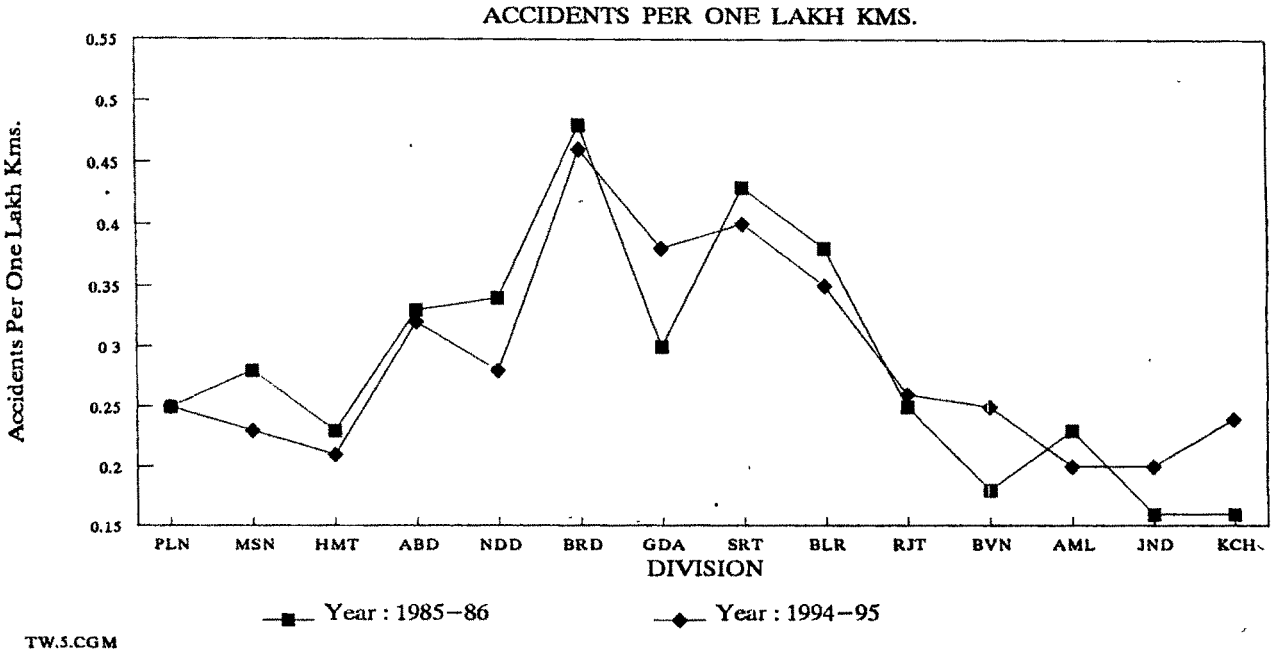
TW–3.CGM

Graph – IV.4



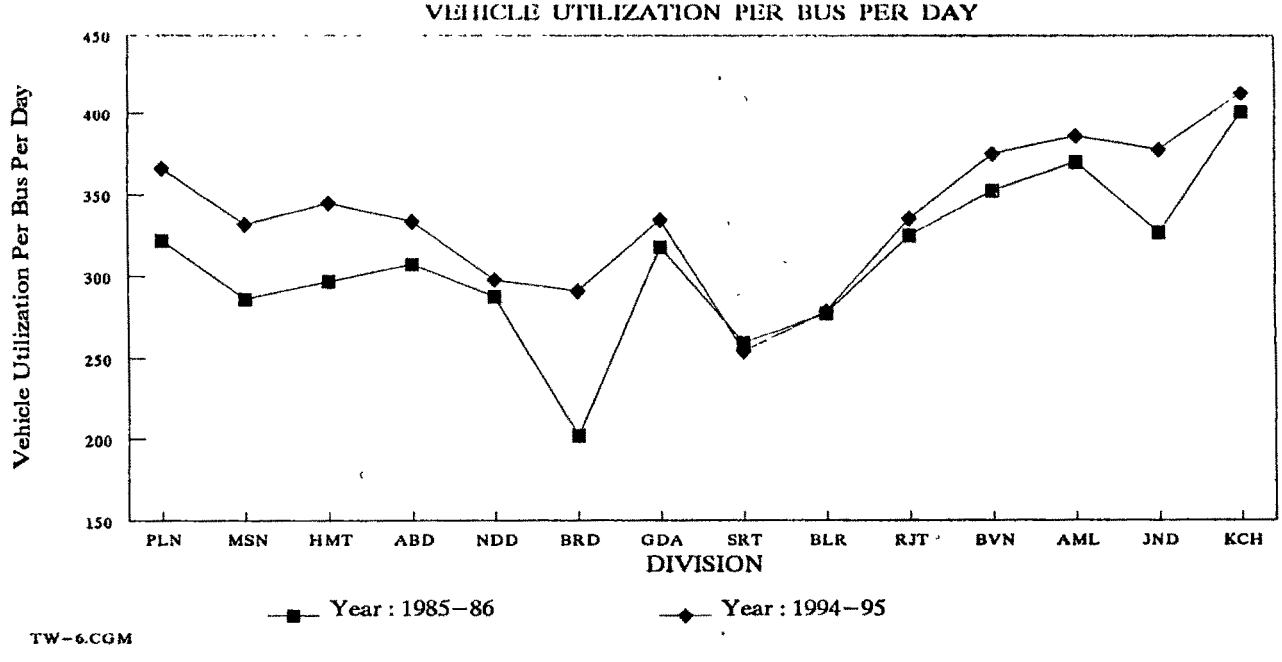
TW–4.CGM

Graph - IV.5



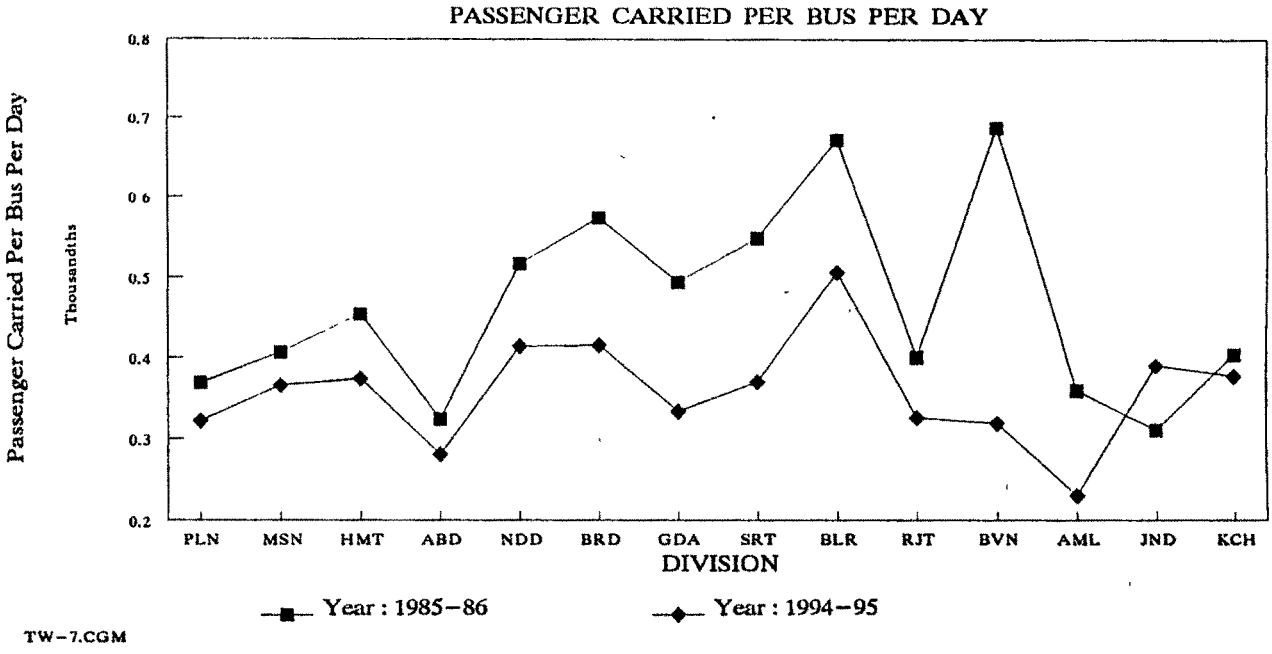
TW.5.CGM

Graph - IV.6



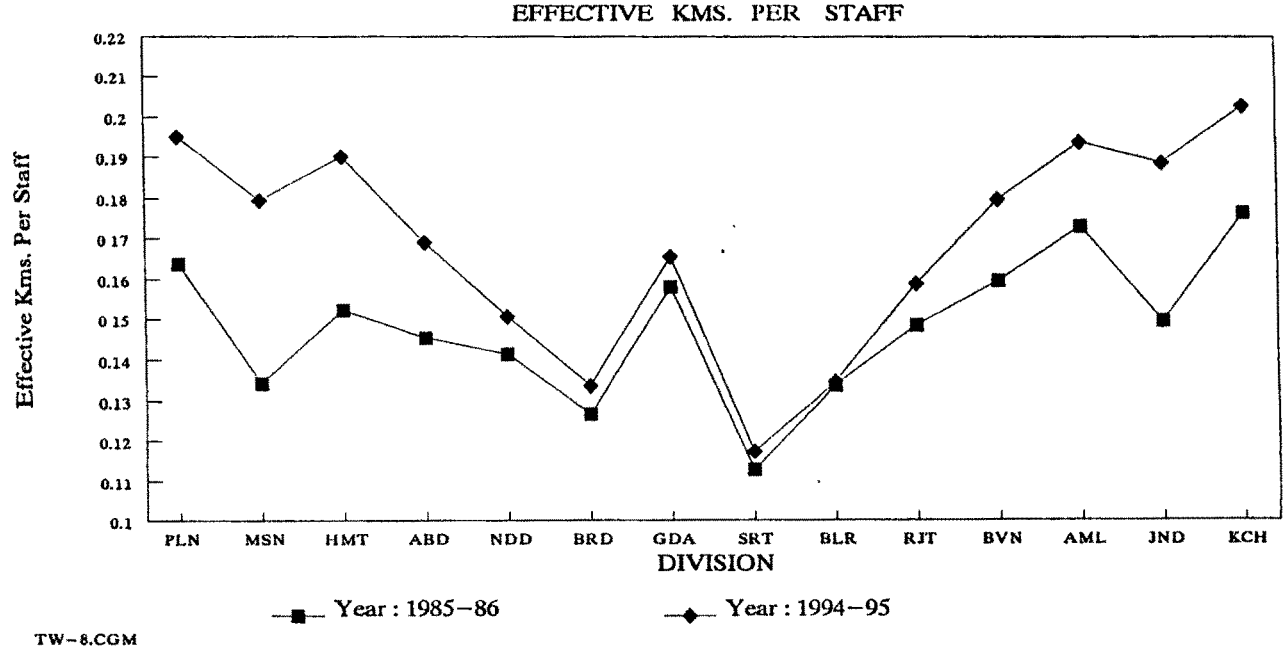
TW-6.CGM

Graph - IV.7



TW-7.CGM

Graph - IV.8



TW-8.CGM

division under consideration. Looking at the bus-staff ratio, one observes that the negative growth is observed for all divisions except Himmatnagar, Junagadh and Kachchh. However the negative growth rate turns out be significant in case of Ahmedabad division only. This shows fall in the number of buses per staff. However the positive growth rate is significant in case of Kachchh division. On the basis of this, one can say that the bus-staff ratio in majority of divisions has remained more or less constant during the period under consideration. The bus staff ratio for GSRTC as a whole has experienced a declining trend and it is also statistical significant.

The positive growth rate is observed for all divisions with respect to percentage of fleet utilization and vehicle utilization per bus per day. It implies improvement in physical performance in ferms of these two indicators of all divisions. The positive growth rate of percentage of fleet utilization turns out to be significant for divisions like Mehsana, Nadiad, Baroda, Rajkot, Bhavnagar, Junagadh and Kachchh. The significant positive growth rate of vehicle utilization per bus per day is observed for all divisions except Palanpur, Nadiad and Bulsar divisions. The trend coefficient of percentage of fleet utilization and vehicle utilization per bus per day are positive and statistically significant for GSRTC as whole.

TABLE - IV.14

GROWTH RATE OF INDICATORS OF PHYSICAL PERFORMANCE - 1985-86 TO 1994-95

DIVISION	Bus Staff Ratio	% of Fleet Utiliza-tion	Km. Per Liter of Oil	Inverse of Break downs	Inverse of Accidents	Vehicle Utilization Per Bus Per Day	Passenger Carried Per Bus Per Day	Effective Kms./ Staff
PAL	-0.00026	0.176909	0.014303*	-0.54832*	-0.01904	7.180909	-5.7E-06	0.002326*
	[-0.04]	[0.52]	[2.76]	[5.91]	[-0.68]	[2.00]	[-1.13]	[2.94]
MSN	-0.0002	0.661333*	0.016182*	-0.33501	0.062812	4.616242*	-1.1E-06	0.003851*
	[-0.19]	[4.57]	[2.23]	[-1.74]	[1.16]	[11.40]	[-0.29]	[7.18]
HMT	0.01977	0.260182	0.015939*	-1.43121*	0.042883	6.245939*	-4.4E-06	-284.994
	[1.18]	[0.82]	[2.01]	[-4.16]	[1.47]	[6.24]	[-1.14]	[-0.50]
ABD	-0.0002*	0.632909	-0.01	-0.42337	0.019716	3.178485*	9.1E-08	0.001362
	[-2.50]	[1.89]	[-1.26]	[-2.16]	[0.96]	[5.83]	[0.01]	[1.54]
NDD	-0.00123	0.516303*	-0.1085	-0.380002*	0.023531	0.59727	-2.2E-06	0.000174
	[-1.58]	[3.43]	[-1.41]	[-2.30]	[0.61]	[0.99]	[-0.9]	[0.30]
BRD	-0.00092	0.645758	0.004182	-0.1981*	0.01725	5.455636*	-1.2E-05*	-0.00039
	[-0.78]	[2.23]	[0.45]	[-3.91]	[1.02]	[2.31]	[-2.35]	[-0.36]
GDA	0.020285	0.518061	-0.00121	-0.14616	-0.03536	2.050061*	-8.9E-06	0.000522
	[1.16]	[1.95]	[0.15]	[-1.83]	[-1.26]	[3.27]	[-2.06]	[0.07]
BLR	0.00023	0.452242	0.025515*	-1.4573*	0.060581	1.023515	-1.7E-05*	-0.0004
	[-0.22]	[1.96]	[3.73]	[-6.78]	[1.39]	[1.57]	[-2.42]	[-0.47]
RJT	-0.00111	0.502424*	0.019758*	-0.34868	-0.02497	1.983515*	-6.7E-06	0.00042
	[-1.39]	[2.62]	[2.66]	[-1.75]	[-0.43]	[4.56]	[-2.57]	[0.77]
BVN	-0.00078	1.211515*	-0.01273	-0.83864	-0.15393*	1.5240461*	-4.1E-05*	0.000427
	[-1.04]	[2.95]	[-1.40]	[1.96]	[-2.60]	[2.43]	[-4.77]	[0.46]
AML	-0.00358	0.392303	-0.00612	-0.79992*	0.01968	2.825879*	-4.1E-06	0.000013
	[-1.51]	[1.46]	[-0.64]	[-2.89]	[-0.19]	[4.66]	[-0.59]	[0.01]
JND	0.000215	0.475636*	-0.0003	-0.77796	-0.24824*	6.929879*	6.9E-06	0.003888*
	[0.27]	[3.25]	[-0.05]	[-1.12]	[-2.41]	[8.78]	[0.96]	[6.22]
KCH	0.001349*	0.539576*	0.005212	-1.07697*	-0.34562*	1.932*	-2.2E-07	0.002953*
	[3.36]	[3.52]	[0.63]	[-4.11]	[-2.31]	[3.28]	[-0.09]	[5.46]
GSRTC	0.00122*	0.386667	0.005576	-0.12083*	0.005612	2.90606*	-5.0E-05	0.001398*
	[-3.64]	[2.09]	[0.77]	[-3.35]	[0.21]	[9.19]	[-2.18]	[2.52]

Note : [1] Figures mark with the * are significant at 5% level.
[2] Figures in brackets are estimated 't' values.
[3] Bharuch division was separated from Surat division in 1989-90.

Examining the trend in the kilometres per litre of oil, all the divisions did not experience improvement over a period of time. The significant positive growth rate is realised by Palanpur, Mehsana, Himmatnagar, Bulsar and Rajkot divisions. Though divisions like Ahmedabad, Godhra, Bhavnagar, Amreli and Junagadh exhibit negative trend, it is not statistically significant.

It is to be noted that the negative trend is experienced by all divisions with respect to passenger carried per bus per day except Ahmedabad and Junagadh. However the significant negative growth coefficient is observed in case of Baroda division. This tends to suggest that the passenger carried per bus per day has remained more or less constant for majority of divisions during the period under consideration.

The effective kilometres per staff registered an increase over a period of time in case of Palanpur, Mehsana, Junagadh and Kachchh divisions.

The number of breakdowns per 10,000 kms and number of accidents per one lakh kms did not decline significantly over a period of time. The inverse of breakdowns per 10,000 kms. has a negative trend for all the divisions, suggesting positive trend for the number of breakdowns per 10,000 kms,. It is to be noted that the negative trend of inverse of breakdown per 10,000 kms. is statistically significant for only 5 divisions.

Coming to the inverse of accidents per one lakh kms., its negative trend is significant in case of Bhavnagar, Junagadh and Kachchh divisions. On the basis of this, it can be concluded that indicators like percentage of fleet utilization, vehicle utilization per bus per day and effective kms. per staff have experienced positive trend for majority of divisions during the period under consideration. However majority of divisions experienced negative trend of bus-staff ratio, inverse of break down per 10,000 kms., inverse of accidents per one lakh kms. and passenger carried per bus per day.

SINGLE INDEX OF PHYSICAL PERFORMANCE :

It is obvious from the earlier pages that the relative performance of various divisions has fluctuated with respect to various indicators of physical performance. It is, therefore, difficult to conclude anything regarding overall physical performance of a division with respect to the same of other division of GSRTC. Not only that but for the same division, some of the indicators have shown improvement over a period of time as against deterioration in other indicators during the same time interval which makes it difficult to explain the trend in the overall physical performance of various divisions. In order to solve this type of the problem the single index of physical performance has been estimated considering above said indicators for two different years 1985-86 and 1994-95. The Tables - IV.15 and IV.16 reveal relative position of various divisions

considering all the indicators of physical performance. In order to arrive at the single index of physical performance three different methods, namely method of ranking, method of indexing and method of principal component have been applied. It is found that in the year 1985-86, Kachchh division performed best on the basis of principal component method where as the poorest performance on the basis of the same method is observed for the Surat division. When the method of ranking and the method of indexing are applied the Bhavnagar division performed best where as Surat division performed very poorly irrespective of the method applied. It is to be noted that in 1985-86, Bhavnagar, Amreli, Junagadh, Kachchh, Palanpur and Himmatnagar divisions performed well irrespective of method applied, where as in the bottom group we find divisions like Mehsana, Ahmedabad, Baroda, Surat etc.

The similar indices are estimated for the year 1994-95 and it is found that the Junagadh division performed best irrespective of the method applied. In the year 1994-95, the least performance is observed for Surat division. In order to find out the extent to which the relative position of various divisions differ in terms of their physical performance with respect to different methods applied for the year 1985-86, the rank correlation coefficients are estimated. It comes to 0.950549, 0.91978 and 0.876923 between method of ranking and indexing, method of ranking and method of principal components and method of ranking and principal component respectively. These coefficients are very high, positive and statistically

significant. Similarly in the year 1994-95 it comes to 0.941964, 0.917857 and 0.938393 respectively. It tends to suggest that the relative performance of various divisions does not disturb significantly with respect to the method of estimating the single index.

TABLE - IV.15

SINGLE INDEX OF PHYSICAL PERFORMANCE : 1985-86

Division	Method of Ranking Rank	Method of Indexing Rank	Method of Principal Component	
			Composite Index	Rank
1	2	3	4	5
PLN	6	7	1.76341	5
MSN	11	11	-1.94476	12
HMT	4	5	1.45590	6
ABD	12	12	-0.10475	9
NDD	9	10	-1.41354	10
BRD	13	13	-6.84758	13
GDA	7.5	9	0.25465	8
SRT	14	14	-7.06717	14
BLR	10	6	-1.87019	11
RJT	7.5	8	0.87640	7
BVN	1	1	2.38234	4
AML	5	4	3.92233	2
JND	3	3	3.78832	3
KCH	2	2	4.79712	1

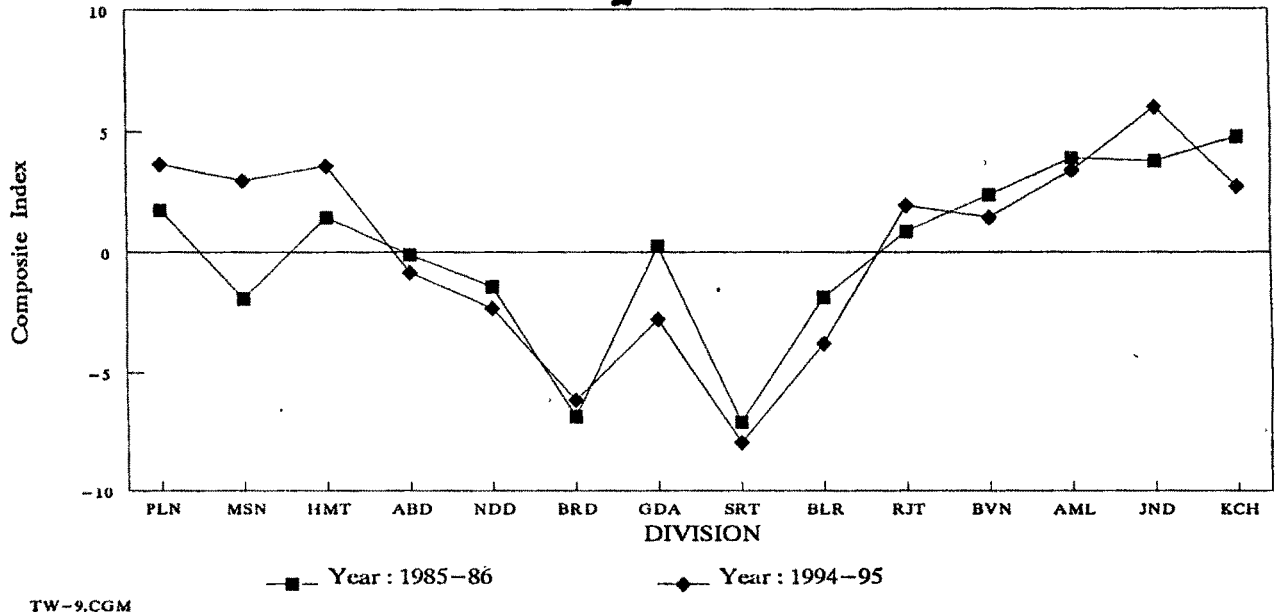
TABLE - IV.16

SINGLE INDEX OF PHYSICAL PERFORMANCE : 1994-95

Division	Method of Ranking Rank	Method of Indexing Rank	Method of Principal Component	
			Composite Index	Rank
1	2	3	4	5
PLN	3	4	3.68450	2
MSN	4	2	3.01699	5
HMT	2	3	3.63638	3
ABD	12	9	-0.83375	9
NDD	8.5	10	-2.33082	12
BRD	14	12	-6.15912	14
GDA	13	14	-2.80226	11
BRH	10	13	-1.99608	10
SRT	15	15	-7.94579	15
BLR	11	11	-3.77847	13
RJT	6	6	1.94837	7
BVN	8.5	8	1.43713	8
AML	5	5	3.41582	4
JND	1	1	6.00245	1
KCH	6	7	2.72659	6

Graph - IV.9

SINGLE INDEX OF PHYSICAL PERFORMANCE



TW-9.CGM

TABLE - IV.17

RELATIVE PHYSICAL PERFORMANCE OF DIVISIONS

Method of Ranking	Method of Indexing	Method of Principal Component
1	2	3
1985-86		
First Five Divisions		
Bhavnagar	Bhavnagar	Kachchh
Kachchh	Kachchh	Amreli
Junagadh	Junagadh	Junagadh
Himmatnagar	Amreli	Bhavnagar
Amreli	Himmatnagar	Palanpur
Bottom Five Divisions		
Surat	Surat	Surat
Baroda	Baroda	Baroda
Ahmedabad	Ahmedabad	Mehsana
Mehsana	Mehsana	Bulsar
Bulsar	Nadiad	Nadiad
1994-95		
First Five Divisions		
Junagadh	Junagadh	Junagadh
Himmatnagar	Mehsana	Palanpur
Palanpur	Himmatnagar	Himmatnagar
Mehsana	Palanpur	Amreli
Amreli	Amreli	Mehsana
Bottom Five Division		
Surat	Surat	Surat
Baroda	Godhra	Baroda
Godhra	Bharuch	Bulsar
Ahmedabad	Baroda	Nadiad
Bulsar	Nadiad	Godhra

The Table - IV.17 shows the first five and bottom five divisions for 1985-86 and 1994-95 as per three different methods of estimating single index under consideration. Irrespective of the method applied, Bhavnagar, Kachchh, Junagadh, Amreli and Himmatnagar/Palanpur divisions turned out to be the five first divisions in 1985-86, where as in 1994-95 Junagadh, Amreli, Himmatnagar, Palanpur and Mehsana were first five divisions. In the bottom group during both these years divisions like Surat, Baroda and Bulsar divisions fall. The important thing to be noted in this connection is that the performance of Mehsana division in 1994-95 have improved significantly. In the year 1985-86 it falls in the bottom five group where as in 1994-95 it fall in the first five group. The study makes it obvious that the relative performance of divisions belonging to Saurashtra region of Gujarat State is better as compared to other divisions. The poor railway services in Saurashtra region can be one of the factors for this type of situation.

The development of roadways is not identical for different parts of Gujarat. The roadways have developed at a faster rate in those parts of Gujarat where railway facilities are lacking. In districts like Kheda, Surat Bulsar, Panchamahal, Dang, Gandhinagar and Ahmedabad roadways have expanded significantly where as districts like Jamnagar, Surendranagar, Kachchh and North Gujarat do not have enough facilities. The development of roadways depends upon geographical and local economic factors etc.

In Gujarat, the railway is developed to a greater extent in Mehsana, Ahmedabad, Kheda, Baroda and Surat districts. The Kachchh district has not benefited much from railways. It is backward in terms of railways. The similar problem is with districts like Jamnagar, Rajkot, Bhavnagar, Amreli etc.. This implies that the districts like Bhavnagar, Amreli, Jamnagar, Rajkot, Kachchh etc. have to depend on road transport as satisfactory railway services are not available.[1] This might be one of the factors in explaining better physical performance of these divisions as compared to Baroda, Ahmedabad and Surat divisions. Moreover the distance between two places is more in districts of Saurashtra region as compared to other part of Gujarat.

FINANCIAL PERFORMANCE OF DIVISIONS :

EARNING AND COST PER KM. :

The earlier pages have examined the physical performance of various divisions with respect to various indictors and trend in them over a period of time and it is observed that the physical performance of various divisions have improved with respect to certain variables where as deterioration is also observed with respect to remaining variables. However the physical performance does not indicate everything regarding functioning of the division and it is equally important to examine the financial performance of various divisions.

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1. Manjula B. Dave : Gujarat Ni Arthik Ane Pradeshik Bhugol [in Gujarati] University Granth Nirman Board, Ahmedabad, 1992, Pp. 254-265.

The examination of financial performance of various divisions is limited to cost per km., earning per km., margin per km., margin excluding passenger tax per km. and total margin [Profit/Loss], elasticity of earning for the period 1985-86 to 1994-95. The analysis in terms of valued added social surplus etc. could not be examined as the required information could not be obtained at disaggregate level.

The Tables - IV.18 and IV.19 reveal cost per km. and earning per km. respectively at current prices for all the divisions for the period 1985-86 to 1994-95. Two things are observed from these tables.

[i] The cost per km. of various divisions has increased significantly over a period of time at current price. The cost per km. on an average has increased from 419.99 paise in 1985-86 to 800.21 paise in 1994-95. The cost per km. was minimum for Kachchh division in 1985-86 at 379.74 paise where as it was maximum at 477.93 paise for Surat division. It was minimum for Palanpur division and maximum for Surat division in 1994-95. The cost per km. incurred by a division reflects the efficiency of the division. Lower the cost per km., higher the efficiency of the division. Looking at the Table IV.18, it is found that the cost per km. was minimum in case of Kachchh division during 1985-86 to 1988-89 and 1992-93. During 1990-91 and 1991-92 the minimum cost per km. was incurred by Bharuch division where as in 1993-94 and 1994-95, the minimum cost per km. was incurred by

Bulsar division and Palanpur division respectively. In brief it can be stated that the divisions like Kachchh, Amreli, Palanpur, Bhavnagar and Himmatnagar incurred lower cost per km. during the period under study. During majority of the years under study, Surat division incurred highest cost per km.. Over and above this, divisions like Ahmedabad, Baroda, Godhra, Mehsana, Rajkot, and Nadiad incurred higher cost per km. as compared to other divisions. This tends to suggest that Kachchh, Amreli, Palanpur, Bhavnagar and Himmatnagar divisions are more efficient as compared to other divisions.

The cost per km. among various divisions has diverged over a period of time because the coefficient of variation has increased from 6.14 in 1985-86 to 9.32 in 1994-95.

[ii] The earnings per km. on an average has increased by significant amount. It has increased from 357.28 paise in 1985-86 to 680.19 paise in 1994-95. The earning per km. was very high in case of Palanpur, Bhavnagar and Kachchh divisions as compared to other divisions during 1985-86 to 1988-89. During the same period, the divisions like Surat, Ahmedabad and Himmatnagar earned very low as compared to other divisions. During 1989-90 to 1991-92 Rajkot division earned the maximum amount per km. where as the lowest earning per km. was realised by Bharuch and Himmatnagar divisions during the same period. It is important to note here that the performance of Surat division in terms of earnings per km. has improved significantly during 1993-94 and 1994-95 because during these two years it falls into first two

divisions as compared to its relative position in the bottom group during earlier years. The performance of Bhavnagar division has deteriorated in 1994-95 as it falls in the bottom group as compared to its position in the upper group during earlier years.

In brief divisions like Palanpur, Bhavnagar, Kachchh, Rajkot and Bulsar earn relatively higher amount per km. as compared to other divisions.

It is to be noted that the dispersion among various divisions with respect to earning per km. was low as compared to the same with respect to cost per km. Not only that but the coefficient of variations of earning per km. has remained more or less constant over a period of time.

Combining the Tables - IV.18 and IV.19, it can be said that the divisions like Palanpur and Kachchh incurred lower cost per km. and higher earning per km. where as divisions like Bharuch and Himmatnagar experienced lower cost per km. and lower earnings per km. Similarly divisions like Ahmedabad and Surat incurred higher cost per km. and earned lower amount per km.

It is, therefore, an attempt is made to examine margin per km. with respect to various divisions over a per period of time.

MARGIN PER KM. EARNED BY DIVISIONS :

The Table - IV.20 represents margin per km. earned by various divisions during 1985-86 to 1994-95. It is observed that the negative margin per km. was incurred during all years under consideration by all divisions except Palanpur, Rajkot, Bhavnagar, Amreli, Junagadh and Kachchh. These divisions enjoyed positive margin per km. during some years. During the years 1985-86 and 1986-87 none of the division realised positive margin. During the year 1987-88 only Palanpur division incurred profit of 33.08 paise per km. During 1990-91 Bhavnagar and Kachchh divisions incurred profit but it was marginal, where as Palanpur and Kachchh divisions earned significantly high profit per km. in 1991-92. In the year 1994-95 all the divisions incurred losses. In brief, one can say that the Surat, Baroda, Godhra, Bulsar and Ahmedabad divisions incurred higher loss per km. as compared to other divisions.

Examining the total margin of various divisions during the above said time interval one can see from Table - IV.21 that in 1985-86, the loss incurred by Surat division was highest at Rs.670.42 lakhs where as Nadiad division earned total profit of Rs.541.32 lakhs. In the year 1994-95, the maximum loss was incurred by Baroda division which stood at Rs.1207 lakhs which was followed by Nadiad division with loss of Rs. 1204 lakhs.

This figures however takes into account taxes paid by various divisions. The Table - IV.22 examines margin per km. excluding taxes paid by various divisions and it is found that the losses have converted into profit. It is observed that the divisions like Palanpur, Mehsana, Himmatnagar, Godhra, Nadiad, Rajkot, Amreli, Junagadh and Kachchh incurred profit during majority of the year. The Baroda and Surat divisions show losses even after allowance is made for taxes.

ELASTICITY OF EARNING :

The elasticity of earning is estimated for all the divisions for the years 1986-87 and 1994-95. It is observed from Table - IV.23 that the value of the elasticity of earning varies significantly among divisions. During 1986-87, the elasticity of earning was not only positive for majority of division but it exceeded one, implying that the increase in earning per km. is greater than increase in cost per km. It was as high as 4.53 for Ahmedabad division but it was negative at -0.16 for Godhra division. It is also observed that in the year 1994-95, not only the value of elasticity of earning has declined for almost all divisions, but it turned out to be negative, indicating very poor performance in 1994-95 as compared to the year 1986-87.

EARNING, COST AND MARGIN PER KM. AT CONSTANT PRICES :

The earning, cost and margin per km. over a period of time are influenced by fare rate and the prices of various

factors of production over and above other factors. In order to examine the trend in earning, cost and margin per km., it is necessary to represent them at constant price. The earning per km. in real term is derived through deflating it by fare index derived in Chapter III where as cost per km. in real term is derived through deflating it by combined price index derived in Chapter III. The difference between earning per km. and cost per km. in real term gives us margin per km. in real term. The Tables - IV.24 to IV.26 represent earning per km., cost per km. and margin per km. in real term. The relative position of the division in terms of earning, cost and margin per km. in real term remains the same as in the case of the same in money term and therefore the discussion is not repeated here. When we compare margin per km. at constant price, following observations are made.

[i] The Palanpur division at current prices incurred losses during 1985-86 and 1986-87 but the same has converted into profit in real term. In the year 1993-94 the profit at current prices has converted into losses at constant prices.

[ii] The Mehsana division incurred losses at current prices during all the years under consideration where as at constant prices it incurred losses during 1985-86, 1987-88, 1990-91, 1993-94 and 1994-95. The similar picture arises for Himmatnagar, Ahmedabad and Nadiad divisions.

[iii] The situation of Baroda division with respect to margin per km. at current prices as well as at constant prices has remained more or less same. The Baroda division incurred loss during all years at current prices where as at constant price except 1988-89, it incurred losses.

[iv] In case of Godhra division, instead of positive margin in current rupee only for the year 1988-89, the same is observed for almost six years in constant rupee. For Surat and Bulsar divisions, the negative margin per km. in real term is observed for majority of year.

[v] The Bhavnagar, Rajkot, Amreli, Junagadh and Kachchh divisions experienced positive margin per km. in real term during majority of the years.

TREND IN EARNING, COST AND MARGIN PER KM. IN REAL TERM :

In order to examine the trend in earning, cost and margin per km. in real term for each division the followed model is estimated

$$Y = a + bt + u$$

Where Y is earning/cost/margin per km. in real term and t is the time. The Table - IV.27 reveals trend coefficients of above variables for each division. It is observed from the table that the earning per km. in real term has a negative trend

statistically significant. However, it is to be noted that the rate at which the earning per km. has declined differs with respect to various divisions. In case of Palanpur division, it has declined at the rate of 24.53 paise per year where as the rate is minimum at 10.51 paise per year for Bulsar division.

Looking at the trend in cost per km. in real term, it is found that it has a declining trend for all divisions and the negative trend coefficients are also statistically significant except Baroda and Bulsar division. It has declined at a faster rate for Mehsana, Palanpur and Junagadh divisions where as lowest rate is observed for Baroda division.

The examination of trend in margin per km. in real term for each division shows that the trend coefficient is negative for each division but these negative trend coefficients are not statistically significant. On the basis of this, it may be argued that the margin per km. in real term did not experience any trend.

RELATIONSHIP BETWEEN FINANCIAL AND PHYSICAL PERFORMANCE :

It is obvious that the financial performance is influenced by the physical performance. In order to examine the impact of physical performance of various divisions on their financial performance, the following model is estimated for two different years 1985-86 and 1994-95.

$$Y = a + bx + u$$

Where Y is margin per km. in real term of various divisions and X is the composite index of physical performance of various divisions.

The following results are obtained :

$$Y = -4.85104 + 12.65999\ X \quad R^2 = 0.635934 \ldots\ldots 1985\text{-}86$$
$$[4.578325]$$

$$Y = -68.2561 + 9.455948\ X \quad R^2 = 0.807707 \ldots\ldots 1994\text{-}95$$
$$[7.099629]$$

The above equations make it clear that with the improvement in the physical performance, the improvement in financial performance is observed. When the composite index increases by one unit, the profit per km. increases by 12.66 paise and 9.46 paise during 1985-86 and 1994-95 respectively. It is to be noted that the slope coefficients in both the years are statistically significant. Not only that but the value of R^2 is very high and this tends to suggest that the variations in financial performance are explained by variations in physical performance by significant amount.

TABLE - IV.18

COST PER KM.

[at current price]
[In Paise]

Year	PAL	MSN	HMT	ABD	NDD	BDA	GDR	BRH
1	2	3	4	5	6	7	8	9
1985-86	390.73	434.65	410.87	441.49	430.68	441.48	413.44	-
1986-87	404.36	455.17	436.58	447.78	452.72	470.37	489.64	-
1987-88	448.13	488.07	461.83	469.33	476.86	500.34	468.82	-
1988-89	454.36	508.51	480.53	498.86	512.45	544.51	474.01	-
1989-90	487.18	526.34	503.45	527.55	535.48	604.93	513.03	514.36
1990-91	555.79	595.10	574.87	594.92	622.65	693.63	611.45	586.33
1991-92	666.71	624.69	602.95	632.67	652.87	738.43	610.76	621.10
1992-93	631.60	688.17	663.92	726.10	731.63	812.63	680.91	732.91
1993-94	663.96	740.46	728.84	772.02	789.77	851.00	750.63	752.04
1994-95	707.19	765.64	745.26	810.67	819.00	905.23	807.15	807.22

Year	SRT	BLR	RJT	BVN	AML	JND	KCH	Average	C.V.
1	10	11	12	13	14	15	16	17	18
1985-86	477.93	441.75	407.91	407.31	383.62	418.32	379.74	419.99	6.14
1986-87	489.64	457.41	421.29	420.61	406.12	429.71	399.77	441.51	6.47
1987-88	503.21	487.93	454.42	443.78	438.95	460.63	427.02	466.38	4.76
1988-89	518.07	530.70	495.66	463.89	458.49	490.72	451.06	490.84	5.56
1989-90	558.87	544.89	515.75	495.06	475.07	509.70	450.49	517.70	7.04
1990-91	678.85	667.77	610.83	572.83	559.79	576.81	521.08	602.58	7.93
1991-92	724.36	688.74	634.95	608.45	565.35	600.95	554.18	629.00	8.61
1992-93	818.41	748.22	699.38	678.02	641.79	656.69	630.53	700.57	8.34
1993-94	861.75	505.77	759.87	724.73	683.90	700.90	672.97	750.46	7.90
1994-95	971.40	896.13	801.52	779.01	718.24	744.18	732.37	800.21	9.32

TABLE - IV.22

MARGIN PER KM. EXCLUDING TAX

[Current Price]
[In paise]

Year	PAL	MSN	HMT	ABD	NDD	BDA	GDR	BRH
1	2	3	4	5	6	7	8	9
1985-86	78.95	12.18	11.94	-24.00	6.46	-20.44	44.72	-
1986-87	92.96	14.73	5.47	4.25	2.46	-42.85	11.38	-
1987-88	147.55	48.38	45.12	35.52	47.67	8.43	89.76	-
1988-89	177.92	79.48	75.23	53.59	61.72	11.48	133.80	-
1989-90	165.86	48.16	39.49	28.49	24.24	-56.21	94.29	-11.66
1990-91	100.90	114.99	21.19	13.02	-5.68	-68.15	40.18	-10.23
1991-92	157.48	61.99	68.31	16.11	32.72	-68.69	85.97	32.24
1992-93	-12.39	-6.35	8.18	-36.09	-24.42	-135.97	11.86	-78.84
1993-94	130.22	11.59	48.68	-8.33	19.82	-85.59	23.32	9.45
1994-95	91.69	-17.58	29.09	-51.06	-27.12	-114.93	10.84	-36.47

	SRT	BLR	RJT	BVN	AML	JND	KCH	Average	C.V.
Year	10	11	12	13	14	15	16	17	18
1985-86	-67.77	-18.76	31.96	57.06	55.18	34.35	64.38	19.02	208.89
1986-87	-53.26	-15.25	42.93	63.48	69.91	49.02	67.87	22.36	187.87
1987-88	22.00	32.87	72.99	97.10	96.62	65.53	122.22	66.55	57.75
1988-89	44.87	50.57	118.65	160.21	158.11	107.35	146.37	98.53	50.54
1989-90	-0.17	21.77	115.20	130.29	144.03	106.40	135.18	65.69	97.32
1990-91	-31.75	-34.84	66.06	103.51	105.30	91.65	115.18	41.42	145.83
1991-92	-6.30	21.62	96.51	117.73	142.78	109.00	155.95	68.23	91.32
1992-93	-122.45	-33.96	36.95	39.90	-30.74	41.10	118.77	-14.96	-420.87
1993-94	-43.81	51.85	40.33	59.23	81.81	66.21	145.59	36.69	156.89
1994-95	-143.97	-40.85	-14.67	-10.56	58.93	51.27	84.24	-8.74	-737.30

TABLE - IV.23

ELASTICITY OF EARNING

Division	1986-87	1994-95
Palanpur	1.64	0.04
Mehsana	0.91	-0.21
Himmatnagar	0.61	-0.28
Ahmedabad	4.53	-0.15
Nadiad	0.67	-0.61
Baroda	0.17	0.37
Godhara	-0.16	-0.22
Surat	1.88	0.07
Bulsar	1.01	-0.05
Rajkot	1.49	-0.32
Bhavnagar	1.20	-0.28
Amreli	1.33	0.22
Junagadh	2.52	0.50
Kachchh	0.94	-0.05

TABLE - IV.24

EARNING PER KM.

[Constant Price]
[In Paise]

Year	PAL	MSN	HMT	ABD	NDD	BDA	GDR	BRH
1	2	3	4	5	6	7	8	9
1985-86	682.47	649.51	615.82	619.98	636.10	631.94	668.75	-
1986-87	722.60	683.11	644.02	671.09	662.72	640.82	647.47	-
1987-88	656.20	591.50	559.99	569.67	578.80	581.90	618.30	-
1988-89	705.85	656.65	623.09	630.61	642.79	641.78	680.56	-
1989-90	685.57	633.89	600.87	627.35	619.02	629.99	671.75	564.63
1990-91	546.60	523.70	497.71	516.38	515.07	541.15	544.08	491.63
1991-92	621.84	590.39	577.70	590.59	590.38	591.60	599.76	530.21
1992-93	617.82	586.17	579.58	603.73	608.93	597.00	596.31	642.16
1993-94	482.78	457.81	473.17	472.01	493.25	478.53	471.50	457.58
1994-95	484.06	454.01	469.95	467.79	480.60	492.68	462.67	493.58

Year	SRT	BLR	RJT	BVN	AML	JND	KCH
	10	11	12	13	14	15	16
1985-86	608.01	618.83	644.47	675.07	637.25	644.32	646.01
1986-87	647.47	647.12	680.22	703.69	691.10	695.86	679.92
1987-88	594.37	578.25	584.95	596.29	589.84	580.36	605.54
1988-89	646.40	643.77	691.04	696.70	688.58	668.26	667.70
1989-90	637.25	630.50	701.33	689.78	681.93	679.46	645.79
1990-91	557.45	531.37	568.21	564.30	554.28	557.22	529.62
1991-92	634.43	613.94	633.00	623.97	608.66	610.31	610.17
1992-93	613.30	617.42	637.21	616.83	610.68	599.97	643.73
1993-94	509.34	524.18	489.76	476.59	465.41	466.85	497.22
1994-95	514.47	520.95	480.35	465.69	470.84	482.30	495.16

TABLE - IV.25

EXPENDITURE PER KM.

[Constant price]
[In Paise]

Year	PAL	MSN	HMT	ABD	NDD	BDA	GDR	BRH
1	2	3	4	5	6	7	8	9
1985-86	601.16	668.73	632.14	679.25	662.62	679.24	636.10	-
1986-87	565.47	636.53	610.53	626.19	633.10	657.78	684.73	-
1987-88	559.58	609.46	576.69	586.06	595.46	624.78	585.42	-
1988-89	520.95	583.04	550.96	571.97	587.56	624.31	543.48	-
1989-90	528.26	570.72	545.90	572.03	580.63	655.94	556.29	716.44
1990-91	555.79	595.10	574.87	594.92	622.65	693.63	611.45	652.15
1991-92	502.06	553.43	534.17	560.50	578.39	654.19	541.09	499.04
1992-93	510.05	555.73	536.15	586.36	590.83	656.24	549.87	454.21
1993-94	491.53	548.17	539.56	571.53	584.67	630.00	555.69	356.51
1994-95	484.68	524.74	510.77	555.60	561.31	620.40	553.18	275.79

	SRT	BLR	RJT	BVN	AML	JND	KCH
	10	11	12	13	14	15	16
1985-86	735.32	679.65	627.59	626.67	590.22	643.61	584.25
1986-87	684.73	639.66	589.15	588.20	567.93	600.92	559.05
1987-88	628.36	609.28	567.44	554.15	548.12	575.19	533.22
1988-89	594.00	597.02	568.31	531.88	525.69	562.64	517.17
1989-90	605.99	590.83	559.24	536.80	515.13	552.68	488.47
1990-91	678.85	667.77	610.83	572.83	559.79	576.81	521.08
1991-92	641.73	610.17	562.52	539.04	500.86	532.40	490.96
1992-93	660.91	604.23	564.79	547.54	518.28	530.31	509.19
1993-94	637.96	596.51	562.53	536.52	506.29	518.88	498.20
1994-95	665.75	614.17	549.33	533.90	492.25	510.03	501.93

TABLE - IV.26

MARGIN PER KM.

[REAL TERM]

Year	PAL	MSN	HMT	ABD	NDD	BDA	GDR	BRH
1	2	3	4	5	6	7	8	9
1985-86	81.31	-19.22	-16.33	-59.27	-26.52	-47.30	32.66	-
1986-87	157.13	46.59	33.49	44.89	29.62	-16.96	-37.27	-
1987-88	96.61	-17.95	-16.70	-16.38	-16.66	-42.87	32.88	-
1988-89	184.89	73.61	72.13	58.64	55.23	17.47	137.08	-
1989-90	157.31	63.17	54.97	55.32	38.39	-25.95	115.47	-151.81
1990-91	-9.19	-71.40	-77.16	-78.54	-107.58	-152.48	-67.37	-160.52
1991-92	119.78	36.96	43.53	30.09	11.99	-62.59	58.67	31.17
1992-93	107.77	30.44	43.43	17.37	18.10	-59.24	46.44	187.95
1993-94	-8.75	-90.36	-66.39	-99.51	-91.42	-151.46	-84.19	180.88
1994-95	-0.62	-70.72	-40.81	-87.81	-80.70	-127.73	-90.52	217.79

Year	SRT	BLR	RJT	BVN	AML	JND	KCH
	10	11	12	13	14	15	16
1985-86	-127.31	-60.82	16.88	48.41	47.03	0.72	61.76
1986-87	-37.27	7.46	91.08	115.49	123.17	94.94	120.87
1987-88	-33.99	-31.03	17.51	42.14	41.72	5.17	72.31
1988-89	52.40	46.76	122.73	164.82	162.89	105.62	150.54
1989-90	31.26	39.67	142.09	152.98	166.80	126.78	157.32
1990-91	-121.40	-136.40	-42.62	-8.53	-5.51	-19.59	8.54
1991-92	-7.30	3.77	70.48	84.93	107.80	77.91	119.21
1992-93	-47.61	13.19	72.42	69.29	92.40	69.66	134.54
1993-94	-128.62	-72.33	-72.77	-59.93	-40.88	-52.03	-0.98
1994-95	-151.28	-93.21	-68.97	-68.21	-21.41	-27.73	-6.78

TABLE - IV.27

GROWTH RATES OF EARNINGS, COST AND MARGIN

[In real term]

Division	Earning Per Km.	Cost Per Km.	Margin Per Km.
Palanpur	-24.5292*	-11.1679*	-13.3613
	[-4.40433]	[-5.94189]	[-1.90643]
Mehsana	-22.2562*	-13.6215*	-8.63472
	[-4.31505]	[-7.62515]	[1.3591]
Himmatnagar	-16.0612*	-10.9894*	-5.07186
	[3.41597]	[-5.49595]	[-0.85021]
Ahmedabad	-17.1153*	-9.12458*	-7.99077
	[-3.14716]	[-3.16044]	[-1.18149]
Nadiad	-16.3413*	-7.63318*	-8.70807
	[-3.32767]	[-3.28829]	[-1.433906]
Baroda	-15.4743*	-2.66276	-12.8115
	[-3.52215]	[-0.97759]	[-2.52725]
Godhra	-21.6152*	-10.7833*	-10.832
	[-4.05332]	[-2.62485]	[-1.25293]
Surat	-11.0999*	-3.48316*	-7.6067
	[-4.05332]	[-2.62485]	[1.25293]
Bulsar	-10.5108*	-4.85006	-5.66077
	[-2.329]	[-1.52193]	[-0.83214]
Rajkot	-17.31*	-5.27085*	-12.0392
	[-2.51743]	[-2.3329]	[-1.50746]
Bhavnagar	-22.5155*	-7.10427*	-15.443
	[-3.57338]	[-2.77517]	[-1.99334]
Amreli	-20.2471*	-9.0438*	-11.2033
	[-3.1307]	[-4.48259]	[-1.43882]
Junagadh	-19.7534*	-12.5304*	-7.22301
	[3.28834]	[6.99874]	[-1.03416]
Kachchh	-16.5721*	-8.07874*	-8.4934
	[2.93514]	[-3.66494]	[1.2445]

Note : [1] Figures in the brackets are estimated 't' Values
[2] Figures mark with the * are statistically significant at 5% level.

CONCLUSION :

This chapter thus examines physical and financial performance of various divisions during 1985-86 to 1994-95. It is observed from the study that the size of various divisions differ from each other significantly in terms number of fleet held, strength of staff, number of passenger travelled and effective kms. operated. The dispersion among various divisions in terms of above said indicators did not converge with the passage of time. The trend in the indicators of physical performance for various divisions is examined and it is found that the indictors like percentage of fleet utilization, vehicle utilization per bus per day and effective kms. per staff have experienced positive trend for majority of divisions. On the other hand the negative trend is observed for bus staff ratio, inverse of break downs per 10,000 kms., inverse of accidents per one lakh kms. and passenger carried per bus per day. The single index of physical performance indicates that the divisions like Bhavnagar, kachchh, Junagadh, Amreli, Palanpur performed very well as they fall in the upper group where as Surat, Baroda, Ahmedabad, Mehsana and Bulsar divisions fall in the bottom groups indicating very poor physical performance.

The financial performance of various divisions have been examined in terms of earning per km., cost per km., margin per km. and margin in current rupee as well as in constant rupee

and one observes that divisions like Kachchh, Amreli, Palanpur, Bhavanagar and Himmatnagar incurred lower cost per km. as compared to other divisions. At the same time the earning per km. was also high for Palanpur, Bhavanagar and Kachchh divisions. The margin per km. was negative for majority of years for majority of divisions.

The study shows declining trend in earning per km. and cost per km. in real term in case of each and every division where as margin per km. in real term did not experience any trend. Moreover the effect of physical performance of the division on financial performance of the division turns out to be positive and statistically significant. This tends to suggest that the improvement in physical performance of various divisions is essential to bring about improvement in financial performance.