CHAPTER: 3

EVALUATION OF DIVISIONAL PERFORMANCE

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3. EVALUATION OF DIVISIONAL PERFORMANCE

This chapter seeks to propose a set of key performance indicators (KPI) both quantitative and qualitative for power distribution companies. These indicators are not only measurable, but they help in gauging the quality of service, consumer satisfaction and financial performance. They, in fact, may help to accelerate overall socio-economic and industrial development in Gujarat. The chapter also presents Power Distribution Business Scorecard (PDS) by which divisional performance can be measured to improve overall performance of power distribution companies.

3.1 PRESENT SYSTEM OF PERFORMANCE EVALUATION

At present, Strategic Business Unit (SBU) of power distribution companies in Gujarat is segregated on the basis of their functions. Performance evaluation of such SBU is carried out on the basis of activities at different levels like circle or divisional or subdivisional levels. In the present system, various indicators and reports are prepared for performance evaluation of different activities in the company as shown below:

1. **For Technical Activities**
   - Work completion of Government schemes and project.
   - Capital investment for system improvement / new innovation.
   - Number of interruptions during the month / supply availability.
   - Target for reduction of T&D loss.
2. **For Revenue Activities**
   - Target for revenue collection.
   - Target for reduction of arrears.
   - Target for filing of civil suits.

However, it is pertinent to note that when performance evaluation of circle or divisional office is carried out it does not consider cost or expenditure incurred during the financial year. Further, performance of each division is not evaluated on the basis of different strategic areas to include financial and non-financial indicators. Under the present system, there is focus usually on Business Operation Parameters

(BOP) instead of Business Performance Parameters (BOP)[1] for evaluating performance of each SBU.

3.2 DIVISIONAL PERFORMANCE

The power sector is passed through a phase of reform. The overall objective of power sector reform is to provide reliable, quality and affordable power to all the electricity users including a profit center approach. Thus, it is essential to focus on improvements in internal efficiency and in performance of strategic business unit (SBU)[2] of power distribution utility.

In power distribution companies in Gujarat, a division is the endmost SBU escorting various sub-divisional offices. Divisions are working under a circle office and they are accountable for performance. In the context of total losses, transmission and distribution losses of divisions vary from 2% to 49%. Thus, it becomes a grave area of concern for further development. Generating standards for performance measurement and working out critical level of planning for new investment are key areas in distribution business. In addition to it, high level of monitoring & control plays a vital role to increase revenue and reduce losses for power distribution companies. This eventually leads to improved and stable financial health of power utility in the Gujarat state.

Divisions of power distribution companies can be categorized into three types (A) *Industrial division*: this division consists of subdivisions serving specially to HT/LT industrial consumers like the Ankleshwar industrial division (B) *Urban division*: This division consists of subdivisions operating only in urban areas. These areas are covered under the limit of Municipal Corporations. One such division is the Lalbaug division. (C) *Rural/Mix Division*: This division consists of subdivisions serving in rural area, under the jurisdiction of Gram Panchayats, and Municipalities. The divisions of the GUVNL and its subsidiary distribution companies are given in the TABLE 3.1.

The major objectives of measurement of divisional performance are (1) To determine divisional performance in respect to company's performance (2) To provide a basis for evaluating divisional performance (3) To motivate a divisional manager to operate his division in line with the basic goals of the organization.[3]

TABLE 3 - 1 : TOTAL DIVISIONS OF GUVNL & ITS DISTRIBUTION COMPANY.

Sr No.	DISTRIBUTION COMPANY	NAME OF CIRCLE	NAME OF DIVISION	TYPE OF DIVISION
1	DGVCL	BHARUCH CIRCLE	ANKLESHWAR IND DIVISION	INDUSTRIAL
2	DGVCL	BHARUCH CIRCLE	ANKLESHWAR RURAL DIVISION	RURAL
3	DGVCL	BHARUCH CIRCLE	BHARUCH CITY DIVISION	URBAN
4	DGVCL	BHARUCH CIRCLE	BHARUCH RURAL DIVISION	RURAL
5	DGVCL	BHARUCH CIRCLE	RAJPIPLA DIVISION	RURAL
6	DGVCL	SURAT CIRCLE	BARDOLI DIVISION	RURAL
7	DGVCL	SURAT CIRCLE	SURAT IND DIVISION	INDUSTRIAL
8	DGVCL	SURAT CIRCLE	SURAT RURAL DIVISION	RURAL
9	DGVCL	SURAT CIRCLE	SURAT URBAN DIVISION	URBAN
10	DGVCL	SURAT CIRCLE	VYARA DIVISION	RURAL
11	DGVCL	VALSAD CIRCLE	NAVSARI CITY DIVISION	URBAN
12	DGVCL	VALSAD CIRCLE	NAVSARI RURAL DIVISION	RURAL
13	DGVCL	VALSAD CIRCLE	VALSAD R DIVISION	RURAL
14	DGVCL	VALSAD CIRCLE	VAPI IND DIVISION	INDUSTRIAL
15	DGVCL	VALSAD CIRCLE	VAPI RURAL DIVISION	RURAL
16	MGVCL	ANAND CIRCLE	ANAND CITY DIVISION	URBAN
17	MGVCL	ANAND CIRCLE	ANAND R DIVISION	RURAL
18	MGVCL	ANAND CIRCLE	MAHEMDABAD DIVISION	MIX
19	MGVCL	ANAND CIRCLE	NADIAD CITY DIVISION	URBAN
20	MGVCL	ANAND CIRCLE	NADIAD DIVISION	RURAL
21	MGVCL	ANAND CIRCLE	PETLAD DIVISION	RURAL
22	MGVCL	BARODA CITY CIRCLE	LALBAUG DIVISION	URBAN
23	MGVCL	BARODA CITY CIRCLE	V EAST DIVISION	URBAN
24	MGVCL	BARODA CITY CIRCLE	V WEST DIVISION	URBAN
25	MGVCL	BARODA OM CIRCLE	BARODA OM DIVISION	RURAL
26	MGVCL	BARODA OM CIRCLE	DABHOI DIVISION	RURAL
27	MGVCL	BARODA OM CIRCLE	JAMBUVA DIVISION	RURAL
28	MGVCL	GODHRA CIRCLE	DAHOD DIVISION	RURAL
29	MGVCL	GODHRA CIRCLE	GODHRA DIVISION	MIX
30	MGVCL	GODHRA CIRCLE	HALOL DIVISION	RURAL
31	MGVCL	GODHRA CIRCLE	LUNAWADA	RURAL
32	PGVCL	AMRELI CIRCLE	AMRELI-1 DIVISION	RURAL
33	PGVCL	AMRELI CIRCLE	AMRELI-2 DIVISION	RURAL
34	PGVCL	AMRELI CIRCLE	SAVARKUNDLA DIVISION	RURAL
35	PGVCL	AMRELI CIRCLE	UNA DIVISION	RURAL
36	PGVCL	BHAVNAGAR CIRCLE	BHAVNAGAR CITY-1 DIVISION	URBAN
37	PGVCL	BHAVNAGAR CIRCLE	BHAVNAGAR CITY-2 DIVISION	URBAN
38	PGVCL	BHAVNAGAR CIRCLE	BOTAD DIVISION	RURAL
39	PGVCL	BHAVNAGAR CIRCLE	MAHUVA DIVISION	RURAL
40	PGVCL	BHAVNAGAR CIRCLE	PALITANA DIVISION	RURAL
41	PGVCL	BHUJ CIRCLE	ANJAR DIVISION	RURAL
42	PGVCL	BHUJ CIRCLE	BHUJ DIVISION	MIX
43	PGVCL	BHUJ CIRCLE	MANDVI DIVISION	RURAL
44	PGVCL	JAMNAGAR CIRCLE	JAMNAGAR CITY-1 DIVISION	URBAN
45	PGVCL	JAMNAGAR CIRCLE	JAMNAGAR CITY-2 DIVISION	URBAN
46	PGVCL	JAMNAGAR CIRCLE	JAMNAGAR RURAL DIVISION	RURAL
47	PGVCL	JAMNAGAR CIRCLE	KHAMBALIA DIVISION	RURAL
48	PGVCL	JUNAGADH CIRCLE	JUNAGADH -1 DIVISION	RURAL
49	PGVCL	JUNAGADH CIRCLE	JUNAGADH CITY DIVISION	URBAN
50	PGVCL	JUNAGADH CIRCLE	JUNAGADH-2 DIVISION	RURAL

Sr No.	DISTRIBUTION COMPANY	NAME OF CIRCLE	NAME OF DIVISION	TYPE OF DIVISION
51	PGVCL	JUNAGADH CIRCLE	VERAVAL DIVISION	RURAL
52	PGVCL	PORBANDAR CIRCLE	KESHOD-1 DIVISION	RURAL
53	PGVCL	PORBANDAR CIRCLE	KESHOD-2 DIVISION	RURAL
54	PGVCL	PORBANDAR CIRCLE	PORBANDAR CITY DIVISION	URBAN
55	PGVCL	PORBANDAR CIRCLE	PORBANDAR RURAL DIVISION	RURAL
56	PGVCL	RAJKOT CIRCLE	RAJKOT CITY-1	URBAN
57	PGVCL	RAJKOT CIRCLE	RAJKOT CITY-2	URBAN
58	PGVCL	RAJKOT CIRCLE	RAJKOT CITY-3	URBAN
59	PGVCL	RAJKOT RURAL CIRCLE	DHORAJI DIVISION	RURAL
60	PGVCL	RAJKOT RURAL CIRCLE	GONDAL DIVISION	RURAL
61	PGVCL	RAJKOT RURAL CIRCLE	MORBI DIVISION	MIX
62	PGVCL	RAJKOT RURAL CIRCLE	RAJKOT RURAL DIVISION	RURAL
63	PGVCL	SUREDRANAGAR CIRCLE	DHANGDHARA DIVISION	RURAL
64	PGVCL	SUREDRANAGAR CIRCLE	SURENDRANAGAR-1 DIVISION	MIX
65	PGVCL	SUREDRANAGAR CIRCLE	SURENDRANAGAR-2 DIVISION	RURAL
66	UGVCL	HIMMANTNAGAR CIRCLE	HIMMATNAGAR DIVISION	RURAL
67	UGVCL	HIMMANTNAGAR CIRCLE	IDAR DIVISION	RURAL
68	UGVCL	HIMMANTNAGAR CIRCLE	MODASA DIVISION	RURAL
69	UGVCL	HIMMANTNAGAR CIRCLE	TALOD DIVISION	RURAL
70	UGVCL	MEHSANA CIRCLE	KADI DIVISION	RURAL
71	UGVCL	MEHSANA CIRCLE	KALOL DIVISION	MIX
72	UGVCL	MEHSANA CIRCLE	MEHSANA DIVISION	RURAL
73	UGVCL	MEHSANA CIRCLE	PATAN DIVISION	MIX
74	UGVCL	MEHSANA CIRCLE	VIJAPUR DIVISION	RURAL
75	UGVCL	MEHSANA CIRCLE	VISNAGAR DIVISION	RURAL
76	UGVCL	PALANPUR CIRCLE	DEESA1 DIVISION	RURAL
77	UGVCL	PALANPUR CIRCLE	DEESA2 DIVISION	RURAL
78	UGVCL	PALANPUR CIRCLE	PALANPUR DIVISION	MIX
79	UGVCL	PALANPUR CIRCLE	RADHANPUR DIVISION	RURAL
80	UGVCL	PALANPUR CIRCLE	SIDDHPUR DIVISION	RURAL
81	UGVCL	SABARMATI CIRCLE	BAVLA DIVISION	MIX
82	UGVCL	SABARMATI CIRCLE	GANDHINAGAR DIVISION	MIX
83	UGVCL	SABARMATI CIRCLE	SABARMATI DIVISION	MIX

Source: GUVNL & its subsidiary distribution companies as on March 2008

3.3 KEY PERFORMANCE INDICATOR

Power distribution business has certain key areas which decide the fate of a company's business. The success and failure in this area exert direct impact on the results of a power distribution company. In each of these areas, there are some key elements which contribute significantly for successful operation and performance in key areas.[4] In order to judge the development and improvement in this key areas, the generally acceptable and measurable set of indicators called Key Performance Indicator (KPI) are developed to evaluate divisional performance. It would help in improving the performance of the power distribution companies in Gujarat. KPIs are not only useful for tracking the progress but also useful for setting targets for improvement in a specified period.

A number of KPIs can be established as Business Performance Parameters (BPP)[5], but KPIs are chosen for their practical relevance and measure controllable attributes at divisional level. However, it is necessary to focus on those areas which have the highest potential for improvement. Key areas useful for improving operational performance of distribution business in Gujarat are (i) profitability,(ii) internal business, (iii) growth and, (iv) consumer services.

3.3.1 ERC AND KPI

In view of the new regulatory regime, the organization has to adapt strategic and short/long term impact of the regulator's tariff order. Once these dimensions are factored in, the development of Key Performance Indicators (KPI) can ensure the adherence to them. ERC uses following KPI:

1. Energy Utilization / Energy drawal
2. Metered Sales / Unmetered sales
3. Revenue collections and efficiencies
4. Losses in terms of technical, commercial and revenue.

Power distribution companies in Gujarat have to calibrate the KPIs using the tariff order of Gujarat Electricity Regulatory Commission (GERC). The tariff order should be analyzed into its components that affect company's profitability, financial viability and liquidity. Accordingly, set targets for each division. Thereafter, these targets should be converted into monthly or quarterly targets for each divisional

office and further aggregated at company level. Thus, a power distribution company will have to ensure that KPIs are closely linked to the regulatory process. The KPIs and their key elements for evaluation of divisional performance of power distribution companies in Gujarat are listed in the TABLE 3.2.

TABLE 3. 2 : KPI and ELEMENTS

KPI	ELEMENT FOR MEASUREMENT
1) Power supply reliability	SAIDI
	CAIDI
	SAIFI
	RI
2) Field maintenance service	% DTR failure rate
	%DTR maintenance
	% HT line maintenance
	% LT line maintenance
	Consumers per feeder
	Consumers per Transformer
	HT line length per feeder
	DTRs per feeder
	LT line per DTRs
	HT to LT Ratio
3) Customer service	Customer satisfaction index
	Power supply complaints resolution
	Billing complaints resolution
	Meter complaints resolution
	Payment complaints resolution
4) Cost and Losses	T & D loss
	Collection efficiency
	AT & C loss
	DTR loss measurement
	Unit loss per consumer
	O & M expenses per unit of energy input
	Operating expenditure
	Total expenditure to unit sale

5) Revenue and Collection	Consumers in arrears
	Disconnection
	Live arrears
	PDC arrears
	Arrears in days
	End to End money flow efficiency
	Arrear per consumer
6) Finance and Profitability	Profit margin
	Net profit / loss margin
	Net profit / loss per consumer
	Net profit / loss per unit sent out
	R & M expenditure per consumer
	R & M expenditure to total exp
	Operating expenditure per consumer
	Operating expenditure to total exp
7) Metering and Billing	%Meter replacement
	%DTR meter
	Panel meter testing
	SPOT billing
	AMR billing
	Billing days
8) Safety and accidents	Fatal Human Accidents
	Non Fatal Human Accidents
	Fatal Animal Accidents
	Total Accidents
	Dept. accidents to total employees
9) Theft Prevention Business	%MMB installation
	%Sealing
	% Connection checking
10)Human Resources	Customers per employee
	Customers per non-tech employee
	Customers per line staff
	Customers per engineer
	Line staff per feeder
	DTRs per line staff
	Employee cost per employee
	Employee satisfaction index

11)Legal	Cases of employee
	Consumer legal cases
	Regulatory compliance
	MOP, Govt., consumer grievances
12)Project Development / Investment	Zupadpatti
	Petapara
	Kutir Jyoti & SCP
	KHUSHY
	RGGVY
	NIS
	ND Scheme
13)Training	Training to total employee
	Training to non-tech employee
	Training to line staff
	Training to engineers

3.3.2 BENCHMARKING

Benchmarking involves setting performance targets (i.e. standards) for strategic business unit which is based on the actual performance achieved by someone. It is useful for improving financial and non-financial performance.[6] To assess performance of product/services of different divisions (SBU) or distribution companies within Gujarat and to find ways of closing gaps, it is necessary to analyze KPIs on the basis of performance benchmarking. Benchmarks are created through the structured process for evaluating divisional performance based on KPI that involves five steps as indicated below:

i. Different key areas in power distribution business are identified for benchmarking. They are internal process, profitability, growth and consumer services.

ii. Various KPIs and elements in each key area are indentified for different type of divisions.

iii. Values are analyzed for each element and prepared a scale up to the target (e.g. standard or best in class) which is achieved by someone. The scale is prepared from *"leading division"* considering that it is the best performer.
Example: 2% DTR failure rate is considered as standard for an urban division because it is lesser than the benchmark level.

iv. Score is allocated to each division from the scale prepared for performance measurement.

Example: A division with 5% failure rate will get its score accordingly in respect of 2% as best performer.

v. After comparing score of each division, gap is identified. It is the gap between actually received and expected service. It is resultant of four gaps namely *(a)* a gap between customer expectation and company's understanding *(b)* a gap between company's understanding and the standards set by company *(c)* a gap between the standards set by company and actual delivery and, *(d)* a gap between actual delivery and external communication[7].

The expected service is considered as a benchmark which can be met keeping in mind the target score. Hence, benchmarks/targets are prepared in line with the specified goals of distribution companies.

Example: 2% is considered as benchmark for DTR failure rate in urban divisions.

3.4 POWER DISTRIBUTION BUSINESS SCORECARD

Balanced Scorecard technique[8] for evaluation of corporate performance[9] is propounded by Robert Kaplan and David Norton's and is used for analyzing the performance of divisions of power distribution companies in Gujarat because it focuses on customers, internal processes, stakeholders and future requirement of power distribution business in order to create a system of linked objectives, measures, targets and initiatives. These objectives, measures, targets and initiatives collectively describe the strategy of power distribution companies and also how that strategy can be achieved.[10]

Kaplan and Norton believed that traditional measures no longer worked effectively because those measures relied so strongly on financial indicators with a strict view of profitability and lacked the ability to enhance the future economic value of the firm. The traditional financial measurements did not sufficiently cover critical non-balance sheet factors like skills, competencies, and motivation of employees; customer and supplier relationships; innovative product development; databases and information technologies; efficient and responsive operating processes; innovation

in products and services; customer loyalty and relationships; and political, regulatory, and societal approval.

There were no suitable tools available for companies to use to measure the value of these assets[11]. Financial goals tell the managers what has happened; rather they are 'lagging indicators'. A manager needs to know if the business will succeed in future and the future success depends upon the non-financial goals – the 'leading indicators'. The firm needs to focus and align every area of the business with the strategy, including manufacturing excellence, new product innovation, customer satisfaction, information systems, and finances. Along with that, Balance Scorecard gives a clear line of sight to employees for how their jobs are linked to the overall objectives of the organization and enabling them to work in a coordinated, collaborative fashion toward the company's desired goals. Further, balanced scorecard provides a visual representation of a company's critical objectives and the crucial relationships that drives organizational performance.[12] The uniqueness of Balanced Scorecard is that it encompasses financial and non-financial indicators.[13]

Kaplan & Norton describe the innovation of the balanced scorecard as follows:

"The balanced scorecard retains traditional financial measures. But financial measures tell the story of past events, an adequate story for industrial age companies for which investments in long-term capabilities and customer relationship were not critical for success. However, these financial measures are inadequate for guiding and evaluating the journey that information age companies must make to create future value through investment in customers, suppliers, employees, processes, technology and innovations."[14]

To work out performance measurement of power distribution companies in Gujarat, a model has been developed by using Balance Scorecard. This developed Model is called Power Distribution Business Scorecard.

KPI is a very important tool[15] for preparation of Power Distribution Business Scorecard (PDS) Model[16] because it defines not only what to measure, how to measure but provides a very useful insight into the management control system about the current state of affairs so that overall strategy can be developed/realigned in with the vision, mission and objectives of the organization. Since the present

study relates to the power distribution business, it is desirable to design Power Distribution Business Scorecard (PDS) MODEL which is having different elements of performance on the various aspects of KPIs.

3.4.1 CUSTOMER SATISFACTION

Reliable power supply is the end product/service of power distribution company. The vision of power distribution companies in Gujarat is "*Customer satisfaction through service excellence*". It can be achieved by *(i)* improving power supply reliability, *(ii)* improving maintenance of electrical network equipments and *(iii)* improving customer services.

To improve power supply reliability KPI - power supply reliability has to be measured. To improve maintenance activity KPI - field maintenance service has to be considered and to improve customer services KPI - customer services are required to measure. These KPIs are discussed below:

3.4.1.1 POWER SUPPLY RELIABILITY

For any power distribution company, power supply reliability is one of the core factors that affect customer satisfaction. However, the most visible of these are the continuity of supply that manifests in terms of supply outages (interruptions). It is the most important KPI as it has direct relevance with the customer service and it is also largely controllable parameter for power distribution companies. The important features for measuring and regulating power supply reliability for a division are:

- **Reliability Index (RI):** It is a fraction of time that power is provided to customer during the year in a division.
- **Duration of Interruption:** The cumulative yearly duration of interruption per customer is generally referred to as the System Average Interruption Duration Index (SAIDI). It indicates how long, during the year, energy is not supplied (average per customer in a division).
- **Customer Average Interruption Duration Index:** CAIDI means Average frequency of interruption per customer during the year for a division.
- **Number of Interruptions:** It is termed as System Average Interruption Frequency Index (SAIFI). It indicates number of outages per customer in a year (average per customer in a division).

- **Other indices:** TT index i.e. Average Transient Tripping (TT) per 100 Km of HT line, SF index means average Sustain Fault (SF) per 100 Km HT line, Momentary Average Interruption Frequency Index (MAIFI) means customer hours demand for service / total number of customer interruptions, Average Frequency of Interruption for total Installed KVA (FMIK) means duration of interruption per KVA in hours and Total Time of Interruption for total Installed KVA (TTIK) means number of interruption per KVA. These indices are studied to measure performance of power supply reliability of a division.

Elements for measurement of KPI - Power supply reliability along with benchmark are shown in the TABLE 3.3. Further, the computed KPI and its elements for selected divisions are shown in the TABLE 3.4.

TABLE 3. 3 : KPI – POWER SUPPLY RELIABILITY

(Units specified individually)

KPI - Element	Description		UOM	Benchmark
SAIDI	System Average Interruption Duration Index = (Duration of outage) x (Number of Customers affected / Total Number of Customers connected)		Hours	2
CAIDI	Customer Average Interruption Index= (Customer Interruption Durations / Total Number of Customer Interruptions)		Minutes per Occasion	90
SAIFI	System Average Interruption Frequency Index = (Number of interruptions) x (Number of Customers affected) / (Total Number of Customers connected)		Number	1.3 Instances
RI	Reliability Index = Customer hours service availability / Customer hours service demand excluding load shedding (LS)	Urban Division	%	99.50%
		Rural/Mix Division	%	99.00%
		Industrial Division	%	99.25%

Source: 1.DRUM training manual published by USAID-India and PFC, New Delhi. November 2007.
2. Analysis of MIS report of the GUVNL and its subsidiary distribution companies for last 3 years.

TABLE 3. 4 : POWER SUPPLY RELIABILITY OF DIVISIONS

KPI	TT Index	SF Index	Reliability Index	System Average Interruption Duration Index (SAIDI)	Customer Average Interruption Duration Index (CAIDI)	System Average Interruption Frequency Index (SAIFI)	Momentary Average Interruption Frequency Index (MAIFI)	Average Frequency of Interruption for total Installed MVA (FMIK)	Total Time of Interruption for total Installed MVA (TTIK)
UOM	Nos	Nos	%	Hours	Hours	Numbers	Hours	Hours	Numbers
ANKLESHWAR	691	239	98.97%	3:40	4:19	0.85	10:13	17:36	9.63
SURATIND	620	376	99.81%	0:16	0:20	0.82	1:43	4:42	14.39
SURATURBAN	656	144	99.93%	0:08	0:07	1.02	2:05	1:33	12.41
VYARA	350	24	99.47%	1:01	2:02	0.50	5:09	4:28	14.00
NAVSARIRURAL	488	22	99.48%	0:50	1:37	0.52	3:23	5:37	18.31
VAPIIND	607	128	99.95%	0:05	0:10	0.52	3:10	5:47	35.88
MAHEMDABAD	441	38	99.39%	1:03	3:37	0.29	7:05	9:34	9.29
PETLAD	527	43	99.42%	1:16	2:59	0.43	7:39	13:57	12.72
LALBAUG	620	78	99.87%	0:27	1:33	0.29	5:48	10:03	6.47
DABHOI	456	43	99.26%	1:12	2:41	0.45	3:57	12:16	13.55
GODHRA	756	72	98.93%	3:24	2:03	1.66	4:09	15:06	30.88
AMRELI1	353	35	99.09%	1:32	2:15	0.68	2:51	11:03	36.94
BOTAD	404	34	99.36%	0:31	2:42	0.19	2:21	18:44	24.67
BHUJ	506	105	98.35%	1:23	3:16	0.42	1:08	16:19	26.98
KHAMBHALIYA	796	155	97.61%	3:27	1:46	1.96	0:44	2:10	96.31
JUNAGADHCITY	709	154	99.40%	2:39	2:42	0.98	13:40	11:49	13.22
RAJKOTCITY2	303	81	99.66%	1:16	1:09	1.10	8:41	8:23	7.34
MORBI	740	87	98.75%	0:58	3:01	0.32	1:17	18:26	29.99
TALOD	501	32	99.46%	0:42	3:14	0.22	5:23	5:47	9.20
PATAN	309	50	99.82%	1:25	0:30	0.28	1:26	16:03	31.99
DEESA1	358	46	98.78%	0:43	5:25	0.13	1:48	4:11	14.06
RADHANPUR	426	39	99.01%	0:33	4:58	0.11	1:56	12:26	12.18
BAVLA	298	18	99.16%	1:04	4:12	0.26	4:24	6:54	13.09

Source: Compiled from MIS report of GUVNL & its subsidiary distribution companies for financial year 09-10.

3.4.1.2 FIELD MAINTENANCE SERVICES

For an electricity distribution company, maintenance of line and distribution transformer is a key factor to ensure efficiency of distribution business by providing uninterrupted power supply to end customers. Line and distribution transformer are akin to distribution channel for product or services. Sale of company has direct bearing on its distribution channel. As far as customer services are concerned, it has direct relation with field maintenance activities and they include maintenance of line and distribution transformer (DTR). Further, failure rate of distribution transformer is a vital element of field maintenance service, because failure of transformer affects not only consumer service, but financial performance of the company too. The Regulators and the Ministry of Power have announced minimum service standards to keep down failure rate of distribution transformer. It is done with a view to improving financial performance of distribution utilities.

The important features for field maintenance service are: (1) Distribution transformer failure rate: This rate counts on a number of distribution transformers that fail during a year against the average number of distribution transformers operate at present in a division. (2) Maintenance of HT & LT line and DTR: Maintenance carried out on HT, LT line & DTR during a year in respect of total components in a division.

In order to maintain reliable power supply, the fundamental requirement is to have proportionate electrical infrastructure. It includes number of consumers per feeder, number of consumers per DTR, HT line length per feeder, DTR per feeder and LT line length per DTR etc. Besides it, to reduce technical loss, it would be beneficial to achieve HT to LT line ratio by 2:1.

Elements applied for measurement of KPI: Field Maintenance Services are described in the TABLE 3.5 whereas the TABLE 3.6 provides details of computed KPI and its elements for selected divisions.

TABLE 3. 5 : KPI - FIELD MAINTENANCE SERVICES

(Units specified individually)

KPI - Element	Description		UOM	Benchmark
% DTR failure rate	(Number of DTR failed) / (Average number of DTRs during the year) x 100	Urban Division	%	2%
		Rural/Mix Division	%	7%
		Industrial Division	%	5%
%DTR Maintenance	Maintenance carried out on number of DTRs during the year to total number of DTRs of a division	Urban Division	%	200%
		Rural/Mix Division	%	100%
		Industrial Division	%	150%
% HT Line Maintenance	Maintenance carried out on HT line network during the year to total HT line of a division	Urban Division	%	250%
		Rural/Mix Division	%	100%
		Industrial Division	%	200%
% LT Line Maintenance	Maintenance on LT line network during the year to total LT line of a division	Urban Division	%	150%
		Rural/Mix Division	%	75%
		Industrial Division	%	100%
Consumers per feeder	Average number of consumers per feeder in a division	Urban Division	Nos.	4000
		Rural/Mix Division	Nos.	1200
		Industrial Division	Nos.	750
Consumers per transformer	Average number of consumers per transformer in a division	Urban Division	Nos.	100
		Rural/Mix Division	Nos.	30
		Industrial Division	Nos.	20
HT line per feeder	Total HT line length / total number of feeders in a division	Urban Division	KM	7
		Rural/Mix Division	KM	20
		Industrial Division	KM	4
DTRs per feeder	Total DTRs / total feeders in a division	Urban Division	Nos.	50
		Rural/Mix Division	Nos.	30
		Industrial Division	Nos.	20
LT line per DTR	Total LT line length / total number of DTRs in a division	Urban Division	Meter	600
		Rural/Mix Division	Meter	400
		Industrial Division	Meter	200
HT to LT Ratio	Total HT line / total LT line in a division	Urban Division	Ratio	1:1
		Rural/Mix Division	Ratio	2:1
		Industrial Division	Ratio	2:1

Source: 1.DRUM training manual published by USAID-India and PFC, New Delhi. November 2007
2. Analysis of the MIS report from the GUVNL and its subsidiary distribution companies.

TABLE 3. 6 : FIELD MAINTENANCE SERVICE OF DIVISIONS

	Field Maintenance Activity				Ratio of Field Maintenance devices						
KPI	% Distribution Transformer (DTR) failure rate	DTR maintenance	HT line maintenance	LT line maintenance	Number of consumer per feeder	Number of consumer per DTR	HT line length per feeder	DTR per feeder	KVA per DTR	LT line length per DTR	HT to LT ratio
UOM	%	%	%	%	Numbers	Numbers	KM	Numbers	KVA	KM	Ratio
ANKLESHWAR	9.49%	65%	209%	137%	937	32	5.625	29	124	0.172	1.54
SURATIND	10.85%	127%	107%	48%	962	24	4.062	40	143	0.037	1.30
SURATURBAN	18.11%	107%	240%	98%	3648	66	12.895	55	122	0.448	0.51
VYARA	20.60%	20%	53%	23%	1866	41	46.012	46	59	0.424	0.55
NAVSARIRURAL	13.59%	92%	201%	106%	2512	62	36.522	41	64	1.473	0.64
VAPIIND	13.74%	69%	63%	28%	902	37	9.704	24	57	0.157	0.72
MAHEMDABAD	10.43%	54%	26%	25%	1330	29	35.022	46	57	0.257	0.75
PETLAD	6.31%	53%	50%	56%	1759	52	26.669	34	66	0.436	1.00
LALBAUG	2.20%	146%	308%	171%	3205	138	5.351	23	79	1.254	0.32
DABHOI	11.12%	54%	33%	45%	1871	36	49.209	52	57	0.522	0.81
GODHRA	13.40%	41%	40%	25%	2353	63	46.990	37	66	0.523	0.60
AMRELI1	24.13%	77%	115%	65%	1555	46	38.044	34	47	1.024	0.71
BOTAD	21.77%	10%	22%	3%	683	28	15.783	24	57	0.020	0.85
BHUJ	13.86%	29%	27%	37%	715	18	26.742	40	67	0.145	1.68
KHAMBHALIYA	40.57%	41%	98%	53%	1155	29	36.406	40	51	0.622	0.77
JUNAGADHCITY	3.53%	108%	96%	45%	2889	67	6.639	43	57	0.146	0.48
RAJKOTCITY2	3.33%	128%	83%	51%	3621	73	8.849	50	119	0.157	0.57
MORBI	16.34%	9%	7%	7%	789	25	16.807	32	63	0.037	0.95
TALOD	16.78%	11%	47%	43%	1084	28	26.268	39	67	0.491	0.59
PATAN	10.32%	48%	11%	42%	674	22	19.280	31	54	0.101	2.61
DEESA1	25.00%	40%	69%	33%	378	11	20.831	34	63	0.150	1.34
RADHANPUR	16.35%	15%	36%	46%	342	10	20.233	34	67	0.149	1.82
BAVLA	12.64%	36%	91%	53%	1127	36	27.870	31	70	0.314	1.51

Source: Analysis from MIS report of GUVNL & its subsidiary distribution companies for financial year 09-10.

3.4.1.3 CUSTOMER SERVICE

Demand of electricity & service is increasing day by day. Further, the regulatory authority imposes minimum service standards with penalty for poor customer services. A list of customer services are endless particularly in relation to a power distribution company. However, to start with, it is featured with a combination of factors like attention to complaint, complaint resolution time, customer satisfaction index etc. The important features related to measuring customer services is counted as below:

- **Customer Satisfaction**: Consumer satisfaction index provides valuable insight into the present capabilities of company in view of consumer expectations and direction for corrective action. Customer satisfaction is measured for selected division on the matters like reliability of power supply, issues of payment, problems of billing & any other issues of the kind in relation with distribution business. The customer satisfaction index is finally prepared by considering opinions of consumers as they emerge from their responses to the questionnaires. It is shown in the APPENDIX C. For some divisions, the GERC data on customer satisfaction is applied to evaluate customer satisfaction index.

- **Power Supply Complaint:** As specified in Standard Operating Procedure (SOP) of the GERC regulation, a distribution company has to restore power supply in urban areas within 6 hours for the HT fault & within 4 hours for all other normal faults. In case of a tree falling on HT overhead line, failure of DTR and snapping of HT wire the time allowed to restore power supply is 10 working hours from the receipt of a complaint. In rural areas, the power supply should be restored at least within 24 hours for any type of complaint. It is then measured how many complaints are resolved within regulatory time limit as against total number of complaints.

- **Other Complaints:** Customers get into interaction with a power distribution company on many other matters like payment, new connections, change of names and addresses etc. It may cause complaints through which customers raise their voice of concern.

There are elements to measure KPI: Customer Services as shown in the TABLE 3.7.

TABLE 3. 7 : KPI - CUSTOMER SERVICE

(In percentage)

KPI - Element	Description	UOM	Benchmark
Customer Satisfaction Index	Number of satisfied customers / total number of customers surveyed	%	> 90%
Power supply complaints resolution	Number of complaints resolved in regulatory time limit / Total number of complaints X 100	%	100%
Billing complaints resolution	Number of complaints resolved in regulatory time limit / Total number of complaints X 100	%	100%
Meter complaints resolution	Number of complaints resolved in regulatory time limit / Total number of complaints X 100	%	100%
Payment / other complaints resolution	Number of complaints resolved in regulatory time limit / Total number of complaints X 100	%	100%

Source: Chapter IV, "Handling Complaints", Standard of Performance of Distribution Licensee, Notification 10 of 2005, GERC, www.gercin.org/regulation.php, 31st March 2005.

3.4.2 FINANCIAL PERFORMANCE

Financial performance of a business enterprise affects the ability of a company to create better future for economic value and sustainable growth. It involves major activities like *(i)* reducing costs and losses, *(ii)* improving revenue and *(iii)* making distribution business profitable can satisfy expectations of stakeholders. In view of this, KPIs are discussed below for measurement of cost and losses, revenue and collection and finance and profitability.

3.4.2.1 COST AND LOSSES

The cost per unit of energy is a vital ingredient to determine the customer satisfaction in terms of an electricity bill. Even if consumer is ready to pay little higher charges, but definitely expects due return in terms of prompt services on every paisa spent. Further, Regulatory authority would not allow any improper costs and it would prescribe time line to reduce distribution losses. The important features related to measuring and regulating costs and losses are:

- **T & D loss:** It is the energy billed in respect to energy sent divided by energy sent, in percentage. It is essential to monitor constantly the T & D loss and take corrective actions. This can be done effectively by technology innovations and administrative control.

- **Collection efficiency**: Collection efficiency counts as the amount realised in regard to amount assessed. Collections of bill amount has to be maintained closer to hundred percent of the assessment for current month to ensure profitability of a company. Along with it, collection efficiency depends on better avenues & payment convenience. A power distribution company should provide better facilities and motivate customers for timely payment.
- **AT & C loss**: This loss is actual energy realized in respect to actual energy sent, in percentage. If T & D losses are within limit and AT & C losses go out of limit then they may reflect lower collection efficiency.
- **Unit loss:** This is loss in terms of units i.e. total energy sent minus total energy sold. T & D loss caused in the Godhra & Vapi Ind. Divisions show vast difference of about 35% & 7% respectively. In such cases, the management may intensify loss reduction program for the Godhra division, it may not do so for the Vapi industrial division. If we look at unit loss, it remains the same for both the divisions which is about 70 MUs per annum. Hence, T & D loss should not be counted as the only measuring parameter.
- **Loss per consumer:** This loss is measured as total distribution loss in unit divided by total consumers in a division. Loss per consumer provides another direction to measure performance in terms of T & D loss, collection loss and AT & C loss per consumer.
- **DTR loss measurement:** It is the loss measurement carried out on number of DTRs out of total DTRs, in percentage. Micro level energy accounting up to DTR level to reduce distribution loss is an objective of the Ministry of Power.
- **O & M expense per unit of energy input**: This cost is cost incurred by distribution company towards operation and maintenance of power supply. It is generally expressed in paisa per unit.

Elements for measurement of KPI: cost and losses are shown in the TABLE 3.8. Further, the computed KPI and its elements of selected divisions are shown in the TABLE 3.9.

TABLE 3. 8 : KPI - COST AND LOSSES

(Units specified individually)

KPI - Element	Description		UOM	Benchmark
T & D Loss	(Energy sent out – Energy sold out) / Energy sent out X 100	Urban Division	%	14%
		Rural/Mix Division	%	18%
		Industrial Division	%	5%
Collection Efficiency	(Amount realized / Amount assessed) X 100	Urban Division	%	99%
		Rural/Mix Division	%	98%
		Industrial Division	%	100%
AT & C loss	(Energy sent out – Energy realized) / Energy sent out X 100	Urban Division	%	15%
		Rural/Mix Division	%	20%
		Industrial Division	%	5%
AT & C loss in monetary terms	(Energy sent out – Energy realized) / Energy sent out X 100	Urban Division	In lacs	< 2000
		Rural/Mix Division	In lacs	< 4000
		Industrial Division	In lacs	< 1000
DTR loss measurement	Monitoring DTR loss / Total DTR of an individual division	Urban Division	%	100
		Rural/Mix Division	%	75
		Industrial Division	%	100
Unit loss per consumer	Unit loss / Total Consumer for an individual division	Urban Division	Units	< 200
		Rural/Mix Division	Units	< 500
		Industrial Division	Units	< 200
O & M Expenses per unit of energy input	Total O & M expenses per total energy imported	Urban Division	Paisa per Unit	4
		Rural/Mix Division	Paisa per Unit	7
		Industrial Division	Paisa per Unit	2
Operating Expenditure	Operating expenditure (exclusive of power purchase & interest cost)/unit (Total amount in respect of unit sent out)		%	7%
Total expenditure to unit sale (Cost of service)	Total expenditure of division / total unit sold out		₹	Less than 3

Source: 1. DRUM training manual published by USAID-India & PFC, New Delhi November 2007
2. Analysis of AT & C loss, Trial balance report from the GUVNL and its subsidiary distribution companies for last three years.

TABLE 3. 9 : COST AND LOSSES OF DIVISIONS

Division	Losses						Losses in monetary term			Loss per consumer				Expenditure			
KPI	Sent out	Sold out	Unit loss	T&D loss	Coll. Effcy.	AT & C loss	T & D loss	Coll. loss	AT & C loss	Unit loss per cons.	T&D loss per cons.	Coll. loss per cons.	AT & C loss per cons.	Operating exp. / Total Amount in respect of unit sent out	O&M exp. per unit of energy Input	Cost of power	Total exp. per unit sold
UOM	In Mus	In Mus	In Mus	%	%	%	In lacs	In lacs	In lacs	Units	Rs.	Rs.	Rs.	%	Paisa per unit	%	Rs.
ANKLESHWAR	706	699	7	0.98%	96.93%	4.02%	181	909	1090	180	471	2367	2838	2.89%	2.23	0.96	2.76
SURATIND	2124	2041	83	3.90%	99.96%	3.94%	2170	35	2205	844	2211	36	2246	1.50%	1.18	0.98	2.78
SURATURBAN	1484	1169	314	18.23%	104.21%	14.79%	7085	-1871	5214	893	2340	-618	1722	4.34%	4.72	0.95	3.36
VYARA	349	123	227	47.10%	96.03%	49.20%	4311	224	4535	1176	3080	160	3240	8.26%	2.57	0.92	5.39
NAVSARIRURAL	423	256	167	22.35%	97.47%	24.32%	2475	266	2742	413	1083	117	1200	12.68%	6.95	0.88	3.83
VAPIIND	902	823	78	7.82%	98.10%	9.57%	1847	680	2526	831	2177	801	2979	2.33%	1.29	0.96	2.95
MAHEMDABAD	387	125	262	26.38%	93.54%	31.14%	2674	474	3148	914	2394	425	2819	10.33%	5.51	0.90	3.96
PETLAD	279	156	123	23.51%	82.63%	36.80%	1720	1262	2982	557	1460	1071	2531	16.59%	9.03	0.85	4.03
LALBAUG	349	324	25	7.04%	98.00%	8.90%	644	328	972	187	490	249	740	11.34%	4.83	0.89	3.17
DABHOI	261	111	150	29.22%	85.15%	39.73%	2000	763	2763	448	1175	448	1623	20.37%	14.57	0.82	4.51
GODHRA	208	134	73	35.04%	94.80%	38.42%	1907	458	2365	672	1762	423	2185	15.25%	9.23	0.85	4.74
AMRELI1	371	127	244	34.94%	93.33%	39.28%	3393	370	3763	957	2508	274	2781	11.37%	10.55	0.89	4.51
BOTAD	479	122	357	45.27%	103.88%	43.14%	5676	-197	5479	1773	4645	-162	4483	6.94%	5.53	0.93	5.14
BHUJ	915	272	643	34.95%	91.89%	40.23%	8374	1078	9452	2553	6690	861	7551	4.70%	3.44	0.95	4.23
KHAMBHALIYA	363	117	246	39.31%	99.87%	39.38%	3739	6	3745	1223	3205	5	3211	12.45%	12.00	0.88	4.90
JUNAGADHCITY	194	147	47	23.33%	96.72%	25.84%	1186	193	1379	475	1244	203	1447	10.86%	2.66	0.90	3.82
RAJKOTCITY2	401	330	71	17.80%	99.05%	18.58%	1870	131	2000	505	1324	93	1417	8.51%	4.17	0.91	3.49
MORBI	1080	736	344	19.20%	92.18%	25.52%	5434	2670	8104	1397	3661	1799	5460	4.22%	3.83	0.95	3.42
TALOD	319	89	230	13.97%	89.74%	22.80%	1166	471	1638	367	961	388	1349	13.03%	12.31	0.88	3.48
PATAN	631	134	497	13.36%	80.45%	30.30%	2208	1612	3819	662	1734	1266	3000	7.13%	4.99	0.93	3.26
DEESA1	923	107	816	29.80%	86.31%	39.41%	7207	1184	8391	2821	7391	1214	8605	4.55%	5.48	0.92	4.04
RADHANPUR	859	72	788	31.27%	92.02%	36.75%	7040	438	7478	3036	7954	495	8448	4.98%	6.12	0.94	4.07
BAVLA	464	302	162	29.59%	98.21%	30.85%	3599	237	3836	1061	2780	183	2963	11.20%	13.61	0.88	4.21

Source: Analysis from MIS, AT&C and T&D of GUVNL & its subsidiary distribution companies for financial year 2008-09

3.4.2.2 REVENUE & COLLECTION PERFORMANCE

Profitability of power distribution company can be measured from the revenue per unit that it realizes. For profitable operations, it is to ensure that revenue realized per unit exceeds the cost per unit. The trend that needs to be captured can be explained as follows:

- **Consumer in arrear:** It is calculated on average number of consumers in arrears during a year. If large numbers of consumers are in arrears it takes considerable time for disconnection. But if arrear per consumer is substantially high, then it increases a chance of defaulters. However, in any case it should not go beyond 5% of the total consumers in any division.

- **Arrears:** Arrears are of two types: Running or Live and PDC arrears. Running/live arrears is the arrears accrued from current consumers, while PDC arrears means arrears compounded from permanently disconnected consumers (PDC). Both should be monitored in respect of the total assessment.

- **Arrears per consumer:** It is measured by dividing the total arrears by the number of consumers in to arrears for a particular division. It is a new indicator defined for monitoring arrears in different consumer category. This is helpful for focusing individual consumer category.

- **Days outstanding:** It is the actual period of credit enjoyed by consumers of a division in days.

- **End to End money flow efficiency:** It means that money collected and deposited in a bank with respect to energy supplied and it is counted in monetary terms that moves from transmission company to a division of distribution company.

- **Revenue realized per unit:** Revenue is actual money realized in respect of sale of energy in units. It is called revenue realization per unit.

Elements to measure KPI - revenue and collection are shown in the TABLE 3.10 whereas the computed KPI and its elements of selected divisions are shown in the TABLE 3.11. Additionally, revenue realization per unit is shown in the TABLE 3.12 where as arrears per consumer is shown in TABLE 3.13 of selected divisions.

TABLE 3. 10 : KPI - REVENUE & COLLECTION

(In Percentage)

KPI - Element	Description		UOM	Benchmark
Consumers in Arrears	Average consumers in arrears to total consumers of a division	Urban Division	%	< 4%
		Rural/Mix Division	%	< 5%
		Industrial Division	%	< 3%
Disconnection	Disconnection carried out for consumers in arrears - monthly.		Percentage	100%
Live Arrears	Average running arrears to total assessment for a financial year.	Urban Division	%	1%
		Rural/Mix Division	%	5%
		Industrial Division	%	1%
PDC Arrears	Average PDC arrears to total assessment for the financial year.		Percentage	< 5%
Arrears in days	Total arrears to total assessment during the year X 365 days		In days	30
End to End money flow efficiency	Collection deposited in Bank to Energy delivered to division in monetary term for the financial year.		Percentage	> 92%
Arrear per consumer	Arrear per consumer for different category of consumers	Residential	₹	< 200
		Commercial	₹	< 250
		Agriculture	₹	< 300
		HT industrial	Lacs	< 3.00
		LT industrial	Lacs	< 0.75
		Water works	Lacs	< 0.50

Source: Analysis of Revenue MIS & trial balance reports from the GUVNL & its subsidiary distribution companies for last three years.

TABLE 3. 11 : REVENUE & COLLECTION PERFORMANCE OF DIVISIONS

KPI	Consumers in arrears at the end of year	Consumers in arrears to total consumers	Average disconnection - monthly	Disconnection to consumers in arrears	Live arrears	Live arrears to assessment	PDC arrears	PDC arrears to total arrears	PDC arrears to assessment	Total arrears to assessment	Average days of arrears	End to end money flow efficiency
UOM	Numbers	%	Numbers	%	In lacs	%	In lacs	%	%	%	In days	%
ANKLESHWAR	1474	3.84%	1474	100.00%	909	3.07%	15569	94.48%	52.61%	55.68%	203	155.17%
SURATIND	3771	3.84%	1934	51.29%	3746	4.46%	6099	61.95%	7.27%	11.73%	43	150.68%
SURATURBAN	23599	7.79%	13148	55.71%	498	1.12%	3159	86.39%	7.10%	8.22%	30	119.18%
VYARA	10266	7.33%	3148	30.66%	127	2.26%	1280	90.95%	22.69%	24.95%	91	59.18%
NAVSARIRURAL	3975	1.74%	3809	95.82%	980	9.32%	887	47.49%	8.43%	17.75%	65	92.59%
VAPIIND	5900	6.96%	1969	33.37%	525	1.47%	1278	70.88%	3.58%	5.05%	18	148.19%
MAHEMDABAD	10965	9.82%	7939	72.40%	589	8.02%	265	31.00%	3.60%	11.62%	42	67.79%
PETLAD	11555	9.80%	5666	49.04%	1335	18.37%	498	27.17%	6.85%	25.22%	92	82.11%
LALBAUG	5676	4.32%	5676	100.00%	16	0.10%	258	94.17%	1.57%	1.67%	6	175.78%
DABHOI	13747	8.08%	8123	59.09%	805	15.67%	249	23.64%	4.85%	20.52%	75	63.87%
GODHRA	11726	10.83%	1399	11.93%	440	4.99%	548	55.47%	6.22%	11.21%	41	153.33%
AMRELI1	7121	5.26%	2709	38.04%	371	6.69%	406	52.22%	7.31%	13.99%	51	53.35%
BOTAD	14655	11.99%	925	6.31%	501	9.85%	561	52.85%	11.04%	20.89%	76	42.12%
BHUJ	8494	6.79%	1904	22.42%	2357	17.73%	938	28.47%	7.06%	24.79%	90	50.96%
KHAMBHALIYA	12208	10.47%	1593	13.05%	626	13.34%	1283	67.23%	27.37%	40.71%	149	49.23%
JUNAGADHCITY	7090	7.44%	1379	19.45%	193	3.28%	606	75.83%	10.28%	13.56%	49	112.16%
RAJKOTCITY2	7153	5.07%	3874	54.16%	271	1.98%	507	65.19%	3.70%	5.68%	21	129.23%
MORBI	25374	17.10%	2520	9.93%	435	1.28%	847	66.04%	2.48%	3.76%	14	111.19%
TALOD	3031	2.50%	3115	102.77%	146	3.17%	173	54.29%	3.77%	6.94%	25	49.33%
PATAN	2795	2.20%	2668	95.46%	488	5.92%	153	23.87%	1.86%	7.78%	28	40.14%
DEESA1	9014	9.24%	5988	66.43%	1270	14.69%	110	8.00%	1.28%	15.97%	58	30.84%
RADHANPUR	8534	9.64%	5317	61.53%	435	7.94%	411	48.59%	7.50%	15.44%	56	22.42%
BAVLA	5467	4.22%	4224	65.44%	1317	9.94%	1436	52.16%	10.84%	20.78%	76	106.96%

Source: Analysis from Revenue MIS, Trial balance of GUVNL & its subsidiary distribution companies for financial year 2008-09.

TABLE 3. 12 : REVENUE REALIZATION PER UNIT OF DIVISIONS

KPI	Resi.	Comm.	HT industrial	LT industrial	Water Works	Lighting	Agriculture	Total revenue realization per unit
UOM	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
ANKLESHWAR	3.34	4.86	4.64	4.59	2.87	3.50	0.00	4.58
SURATIND	3.21	4.77	4.19	4.12	3.55	3.55	0.00	4.09
SURATURBAN	3.29	4.81	4.95	4.06	3.28	3.51	0.48	3.75
VYARA	2.87	4.98	5.22	4.79	2.84	3.38	0.66	2.80
NAVSARIRURAL	2.79	4.90	4.55	4.74	2.86	3.46	0.90	3.24
VAPIIND	3.15	4.86	4.49	4.75	2.78	3.45	0.57	4.50
MAHEMDABAD	2.82	4.98	4.29	4.71	2.69	3.50	0.49	2.40
PETLAD	2.81	4.97	4.71	4.59	2.58	3.40	1.70	2.80
LALBAUG	3.45	5.11	4.87	5.14	3.59	3.59	0.00	4.92
DABHOI	2.77	5.09	4.88	4.46	2.56	3.45	0.67	2.30
GODHRA	2.90	4.82	4.07	4.67	2.59	3.34	0.62	4.48
AMRELI1	2.84	4.90	4.89	4.46	2.74	3.50	0.55	2.08
BOTAD	2.88	4.81	4.72	4.23	2.50	3.48	0.55	1.96
BHUJ	2.96	4.92	4.90	4.46	2.46	3.11	0.50	2.00
KHAMBHALIYA	2.93	4.93	3.93	4.39	2.79	3.46	0.51	2.05
JUNAGADHCITY	3.25	4.94	3.93	4.46	3.57	3.45	2.86	3.75
RAJKOTCITY2	3.26	4.79	4.12	4.79	3.19	3.44	0.70	4.00
MORBI	3.02	4.97	4.34	4.56	2.56	3.53	0.59	3.54
TALOD	2.68	5.02	4.73	4.76	2.82	3.38	0.53	1.45
PATAN	3.48	5.99	3.28	5.15	1.12	3.40	0.47	1.17
DEESA1	2.91	4.17	4.43	4.33	3.05	3.44	0.58	1.02
RADHANPUR	2.00	5.01	4.82	4.32	2.81	3.15	0.56	0.81
BAVLA	2.82	4.76	4.39	4.44	2.71	3.41	3.40	3.77

Source: Analysis from Revenue MIS, Trial balance of GUVNL & its subsidiary distribution companies for financial year 2008-0

TABLE 3. 13 : ARREARS PER CONSUMER OF DIVISIONS

KPI	Resi.	Comm.	Agriculture	HT industrial	LT industrial	Water Works	Arrears per consumer of division
UOM	Rs.	Rs.	Rs.	Lakhs	Lakhs	Lakhs	Rs.
ANKLESHWAR	39	244	250	4.28	2.15	1.09	2367
SURATIND	66	876	0	0.37	3.00	0.34	3817
SURATURBAN	163	233	544	0.07	2.40	0.64	164
VYARA	2176	339	270	0.71	0.40	0.27	91
NAVSARIRURAL	308	301	328	44.38	0.44	0.21	429
VAPIIND	95	280	325	0.71	1.55	0.10	619
MAHEMDABAD	16	178	44	0.25	0.69	0.46	527
PETLAD	34	122	120	32.97	0.50	0.91	1133
LALBAUG	42	219	1492	-1.45	0.89	0.88	12
DABHOI	0	116	178	0.60	1.10	0.28	473
GODHRA	75	227	202	0.67	0.58	0.19	406
AMRELI1	132	337	111	0.73	0.38	0.33	274
BOTAD	129	282	181	8.54	0.34	0.29	410
BHUJ	194	905	305	14.67	0.78	1.77	1883
KHAMBHALIYA	336	623	659	1.58	0.79	0.40	536
JUNAGADHCITY	96	188	289	0.00	0.92	0.26	203
RAJKOTCITY2	97	192	0	1.30	0.39	1.07	192
MORBI	166	378	658	0.08	1.26	0.74	293
TALOD	35	163	106	0.00	1.17	0.37	120
PATAN	25	137	350	0.61	0.68	0.87	384
DEESA1	0	0	0	0.00	0.66	2.26	1302
RADHANPUR	47	225	0	0.43	0.56	0.00	492
BAVLA	56	0	320	2.13	0.92	0.75	1017

Source: Analysis from Revenue MIS, Trial balance of GUVNL & its subsidiary distribution companies for financial year 2008-09.

3.4.2.3 FINANCE AND PROFITABILITY

Though power distribution business has socio-economic connotation, but no business can survive and grow without reasonable profit. Any company would keep an aim to reduce costs, to earn reasonable profit, and to manage finance effectively to meet the future requirements. Performance indicator sounds like an alarm in case any expense goes out of control. Following parameters are found important to measure finance and profitability:

- **Income**: Income includes revenue from sale of power and revenue from subsidies & grants and other income.
- **Expenditure:** Expenditure of a division includes cost of power, repair and maintenance expenditure, employees cost and administrative and general expenses. Power purchase cost of a division is a multiplication of total unit sent out with a unit rate of power, which is determined usually by GUVNL.
- **Profit margin:** Operating profit to net sales of power is the most significant indicator for investing into power distribution business because it indicates rate of profit on sales.
- **Operating expenses:** Operating expenditure includes R & M expenses, employee cost and administrative & general expenditure. It should be less than ₹ 600 per consumer in a division however; it should be below 10% to the total expenditure.
- **R & M expenses**: This includes expenditure on repairs and maintenance of plant & machinery, building, line & cable network, furniture & fixtures and other equipments. It should remain below 2% of the total expenditure. However, R & M expenses per consumer should be below ₹ 100 per consumer for a division.

Elements for measurement of KPI- finance and profitability are shown in the TABLE 3.14. Further, computed KPI and its elements of selected divisions are shown in the TABLE 3.15.

TABLE 3. 14 : KPI - FINANCE & PROFITABILITY

(In Percentage)

KPI - Element	Description		UOM	Benchmark
Profit Margin	Operating profit (Profit before interest, depreciation and tax) / net sales of division	Urban Division	%	20%
		Rural/Mix Division	%	6%
		Industrial Division	%	40%
Net profit / loss margin	Net profit (Profit before tax) / total income of a division	Urban Division	%	17%
		Rural/Mix Division	%	5%
		Industrial Division	%	25%
Net profit / loss per consumer	Net profit (Profit before tax) / total consumers of a division	Urban Division	₹	1500
		Rural/Mix Division	₹	500
		Industrial Division	₹	22000
Net profit / loss per unit sent out	Net profit (Profit before tax) / sent out of a division	Urban Division	₹	0.5
		Rural/Mix Division	₹	> 0
		Industrial Division	₹	1
R & M expenditure per consumer	Repair and maintenance expenditure per consumer in division		₹	250
R & M expenditure to total exp.	Repair and maintenance expenditure to total expenditure of a division.		%.	2%
Operating expenditure per consumer	Operating expenditure per consumer in division		₹	800
Operating expenditure to total exp	Operating expenditure to total expenditure of a division.	Urban Division	%	3
		Rural/Mix Division	%	4
		Industrial Division	%	2

Source: Analysis of trial balance & P&L account reports of GUVNL & its subsidiary

TABLE 3. 15 : FINANCE AND PROFITABILITY OF DIVISIONS

Division	Profit & Loss						Ratio								
KPI	Sales	Total Income	Total Expenditure	Operating Profit	Gross Profit	Profit Before Tax	Operating Profit Margin	NP (before Tax) Ratio	Net Profit/Loss per Consumer	Net Profit/Loss per unit sent out	Net Profit/Loss per unit sales	R & M Expenses per Customer	Operating Expenses per Consumer	R & M Exp to Total Exp	Operating Exp to Total Exp
UOM	In lacs	In lacs	In lacs	In lacs	In lacs	In lacs	%	%	Rs.	Rs.	Rs.	Rs.	Rs.	%	%
ANKLESHWAR	28965	29120	19033	10087	9812	9653	34.82%	33.15%	25135	1.37	1.38	410	1393	0.81%	2.75%
SURATIND	84404	85104	56565	28539	28177	27802	33.81%	32.67%	28328	1.31	1.36	255	850	0.44%	1.46%
SURATURBAN	48051	49399	40492	8907	8690	7994	18.54%	16.18%	2641	0.54	0.66	231	585	1.69%	4.06%
VYARA	5652	5824	9957	-4133	-4180	-4779	-73.12%	-82.05%	-3414	-1.37	-2.59	64	540	0.85%	7.15%
NAVSARIRURAL	10619	10856	12479	-1624	-1721	-2399	-15.29%	-22.10%	-1050	-0.57	-0.73	128	641	2.22%	10.59%
VAPIIND	35254	35479	24176	11303	10947	10675	32.06%	30.09%	12586	1.18	1.28	137	650	0.47%	2.22%
MAHEMDABAD	7266	7369	11176	-3807	-3898	-4285	-52.40%	-58.15%	-3836	-1.11	-1.50	191	938	1.83%	8.98%
PETLAD	6390	6636	8530	-1894	-1976	-2266	-29.64%	-34.15%	-1923	-0.81	-1.06	214	1030	2.83%	13.63%
LALBAUG	14394	14514	11166	3349	3258	3044	23.26%	20.98%	2317	0.87	0.94	128	790	1.61%	9.89%
DABHOI	4782	4987	8305	-3317	-3375	-4022	-69.37%	-80.64%	-2362	-1.54	-2.17	224	819	4.24%	15.51%
GODHRA	8643	8832	6349	2482	2441	2103	28.72%	23.81%	1943	1.01	1.56	177	767	2.85%	12.33%
AMRELI1	5518	5793	10804	-5011	-5065	-5463	-90.80%	-94.31%	-4038	-1.47	-2.27	289	816	3.47%	9.79%
BOTAD	5558	5855	13413	-7558	-7612	-8070	-135.98%	-137.83%	-6603	-1.69	-3.08	217	712	1.90%	6.25%
BHUJ	12532	13013	25095	-12082	-12169	-12792	-96.41%	-98.30%	-10219	-1.40	-2.15	251	899	1.22%	4.36%
KHAMBHALIYA	4910	5403	10716	-5313	-5391	-6077	-108.20%	-112.48%	-5210	-1.67	-2.76	373	1016	3.80%	10.32%
JUNAGADHCITY	5896	6000	5641	359	322	146	6.09%	2.43%	153	0.08	0.10	54	579	0.88%	9.43%
RAJKOTCITY2	14032	14219	11403	2816	2711	2421	20.07%	17.03%	1715	0.60	0.73	118	671	1.42%	7.58%
MORBI	31812	32178	29518	2660	2330	1631	8.36%	5.07%	1099	0.15	0.19	279	719	1.35%	4.20%
TALOD	4535	4590	9491	-4901	-4955	-5456	-108.07%	-118.87%	-4494	-1.71	-1.99	323	896	3.91%	10.84%
PATAN	7345	7734	17710	-9976	-10084	-10473	-135.82%	-135.41%	-8226	-1.66	-1.92	247	925	1.73%	6.47%
DEESA1	7812	8213	26041	-17827	-17897	-18628	-228.21%	-226.81%	-19104	-2.02	-2.87	519	1185	1.88%	4.09%
RADHANPUR	5362	5580	23956	-18376	-18422	-19019	-342.69%	-340.87%	-21487	-2.21	-3.22	594	1271	2.13%	4.55%
BAVLA	13474	14138	13587	551	411	36	4.09%	0.26%	28	0.01	0.01	488	1052	4.47%	9.63%

Source: Analysis from Trial Balance of GUVNL & its subsidiary distribution companies for financial year 2008-09.

3.4.3 INTERNAL BUSINESS

Continuous improvement in internal business processes lead to effective and efficient distribution business in the long run. Internal businesses include *(i)* metering & billing, *(ii)* safety & accidents, *(iii)* theft prevention business and *(iv)* legal. They should be managed efficiently to create successful business in the long run. In view of above, the KPI like Metering and Billing performance, Safety and Accidents, Theft Prevention Business and Legal and Regulatory are required to measure for improvements in efficiency and efficacy of internal business processes. It can be done as discussed below:

3.4.3.1 METERING & BILLING PERFORMANCE

An energy meter is as good as a cash register for any power distribution company. In this light, defective, slow and non-working meters would lead to a huge loss. Besides, tempering of meters leads to theft of power. Billing of energy is also an important parameter because billing error reduces not only collection of money but also customer satisfaction. The important features for measuring metering and billing performances are:

- **Unmetered consumers**: Overall health of a distribution company depends on quantum of unmetered consumers and also agriculture consumer. If unmetered consumers are bifurcated from rural feeders to special agriculture feeders then only it would be easy to calculate losses.
- **DTR metering**: It is measured in percentage for meter installed on DTR to total number of DTRs. As far as micro level energy accounting is concerned, it is significant to put up meter on each and every DTR. However, proper IT system should be made available to calculate losses up to DTR level on monthly basis.
- **Meter replacement**: Faulty, non working, slow and low quality of meters cause huge commercial losses. So replacing them immediately has to be prominent activity to reduce T & D losses. The GUVNL and its subsidiary distribution companies have installed static meters on every HT industrial consumers before a decade. In the second phase, LT industrial consumers having load above 50 HP are replaced with static meters, while in the third phase, all pending LT industrial consumers are supposed to static meters. It is measured in percentage of total pending meters.

- **Spot billing:** In case of the GUVNL and its power distribution companies, it is the practice for long years to provide the bill on the spot. The Torrent Power (SEC & AEC), however, distributes energy bills after three days from the day of actual meter reading. Today, with the help of information & communication technology (ICT), it is possible to serve the bill to consumer on the spot and update the database in real time with the help of GPRS based Spot Billing Machine (GSBM).
- **AMR billing:** Sometime in case of industrial consumers it may be desirable to monitor real time meter reading and other parameters to prevent theft. Automatic Meter Reading is one instrument that not only monitors the load pattern of the consumer but also interlink it with billing system for better accountability.
- **Panel meter testing:** It is also required to test feeder panel meter periodically for proper accounting of units. It is measured in terms of total panel meters tested during a year in respect to total feeders in a division.
- **Billing days:** If billing is performed for more than 365 days then losses of division may go down for a current financial year but correspondingly it affects the future profitability.

Elements for measurement of KPI: metering and billing are shown in the TABLE 3.16. Further, computed KPI and its elements of selected divisions are shown in the TABLE 3.17.

TABLE 3. 16 : KPI - METERING & BILLING

(Units specified individually)

KPI - Element	Description	UOM	Benchmark
%Meter Replacement	Meter replacement during the year to total pending meters.	Percentage	20-25%
%DTR Meter	Meter installed on total number of DTRs out of total DTRs	Percentage	100%
Panel Meter Testing	Total feeder panel meter tested during the year to total feeders of a division.	Percentage	100%
SPOT Billing	Billing on the spot for number of consumers	Percentage	100%
AMR Billing	Billing of industrial consumers with AMR	Percentage	100%
Billing days	Average billing days of all consumers for a year	Days	365

Source: Analysis of MIS report from the GUVNL & its subsidiary distribution companies of last 3 years.

TABLE 3. 17 : METERING AND BILLING PERFORMANCE OF DIVISIONS

KPI	Metered Sales	Unmetered Sales	Meter Replacement	DTR meter installed	Panel Meter Testing	Billing days
UOM	%	%	%	%	%	Days
ANKLESHWAR	100%	0%	9%	99%	20%	367
SURATIND	100%	0%	6%	98%	39%	371
SURATURBAN	97%	3%	24%	97%	5%	371
VYARA	74%	26%	15%	98%	41%	365
NAVSARIRURAL	82%	18%	17%	98%	25%	367
VAPIIND	99%	1%	6%	99%	9%	366
MAHEMDABAD	51%	49%	3%	100%	136%	365
PETLAD	91%	9%	5%	100%	73%	370
LALBAUG	100%	0%	3%	100%	132%	365
DABHOI	70%	30%	4%	100%	184%	371
GODHRA	88%	12%	5%	99%	57%	367
AMRELI1	59%	41%	16%	90%	108%	369
BOTAD	53%	47%	3%	96%	78%	366
BHUJ	48%	52%	5%	92%	89%	367
KHAMBHALIYA	57%	43%	6%	90%	78%	367
JUNAGADHCITY	100%	0%	10%	100%	99%	370
RAJKOTCITY2	100%	0%	2%	100%	102%	369
MORBI	87%	13%	6%	99%	95%	368
TALOD	41%	59%	8%	98%	50%	367
PATAN	33%	67%	11%	99%	98%	366
DEESA1	25%	75%	16%	96%	89%	367
RADHANPUR	24%	76%	8%	92%	87%	370
BAVLA	97%	3%	12%	99%	100%	366

Source: MIS of GUVNL & its subsidiary distribution companies for financial year 2009-10.

3.4.3.2 SAFETY AND ACCIDENTS

Hazardous working involved in power industry, safety is of paramount important point of consideration. Quality of material & erection of distribution components should satisfy safety standards to avoid accidents. However, it is essential to provide proper training to line staff for working in field. Further, awareness has to be generated among public to observe safety standards. Accidents are usually categorized as fatal human, non-fatal human, fatal animal, outsider and employee. The important features related to measure performance of safety and accidents are discussed below:

- **Fatal Accidents:** It is accidental death of a human being or an animal that occurs in a division during a year. One dies out of electricity shock or fire or any other reason during field work. The compensation against death counts towards failure of safety arrangement.
- **Non-Fatal Accidents:** It is a minor accident that does not cause death. It may cause temporary or permanent disability to a victim.
- **Human Accidents:** Human fatal accident is crucial, because saving one human life would mean to provide a lot, not only tangible benefits but also intangible benefits to a distribution company.
- **Fatal Animal Accidents:** It is a measure of fatal animal accidents that occur during a year.

Elements for measurement of KPI: safety and accident are shown in the TABLE 3.18. Further, computed KPI and its elements of selected divisions are shown in the TABLE 3.19.

TABLE 3. 18 : KPI - SAFETY AND ACCIDENTS

KPI - Element	Description	UOM	Benchmark
Fatal Human	Number of fatal human accidents annually in a division.	Numbers	0
Non Fatal Human	Number of non-fatal human accidents annually in a division	Numbers	Less than 1
Fatal Animal	Number of fatal animal accidents annually in a division	Numbers	Less than 2
Total Accidents	Total accidents annually in a division	Numbers	Less than 3
Departmental accidents to total employees	Total accidents to employee which includes fatal and non-fatal in a division during year.	Numbers	Less than 2%

Source: Analysis of MIS report from GUVNL & its subsidiary distribution companies for last three years.

TABLE 3. 19 : SAFETY AND ACCIDENTS OF DIVISIONS

Division	Accidents			Average duration of accidents				Departmental accidents Vs Employees		
KPI	Fatal human	Non fatal human	Fatal animal	Fatal	Non fatal	Human	Animal	Fatal Dept./Total employees	Non Fatal Dept./Total employees	Departmental accdents/Total employees
UOM	Numbers	Numbers	Numbers	Days	Days	Days	Days	%	%	%
ANKLESHWAR	4	6	2	61	61	37	183	1.06%	3.17%	4.23%
SURATIND	10	0	4	26	365	37	91	4.12%	0.00%	4.12%
SURATURBAN	11	4	14	15	91	24	26	3.75%	1.37%	5.12%
VYARA	8	9	5	28	41	21	73	2.77%	3.11%	5.88%
NAVSARIRURAL	3	10	4	52	37	28	91	0.62%	2.08%	2.70%
VAPIIND	3	3	0	122	122	61	365	1.58%	1.58%	3.16%
MAHEMDABAD	4	5	1	73	73	41	365	0.32%	0.96%	1.28%
PETLAD	4	3	8	30	122	52	46	0.00%	0.45%	0.45%
LALBAUG	2	2	2	91	183	91	183	0.00%	0.57%	0.57%
DABHOI	0	2	1	365	183	183	365	0.00%	0.44%	0.44%
GODHRA	0	1	1	365	365	365	365	0.00%	0.00%	0.00%
AMRELI1	7	4	13	18	91	33	28	1.88%	1.08%	2.96%
BOTAD	4	8	6	37	46	30	61	1.30%	2.61%	3.91%
BHUJ	6	11	2	46	33	21	183	1.56%	2.86%	4.43%
KHAMBHALIYA	14	18	5	19	20	11	73	3.85%	4.95%	8.79%
JUNAGADHCITY	1	4	5	61	91	73	73	0.47%	1.90%	2.37%
RAJKOTCITY2	6	0	4	37	365	61	91	2.07%	0.00%	2.07%
MORBI	8	20	4	30	18	13	91	1.93%	4.82%	6.75%
TALOD	1	7	16	21	52	46	23	0.36%	2.51%	2.87%
PATAN	5	4	10	24	91	41	37	1.24%	1.00%	2.24%
DEESA1	0	3	4	91	122	122	91	0.00%	1.04%	1.04%
RADHANPUR	3	3	5	46	122	61	73	0.86%	0.86%	1.73%
BAVLA	4	7	13	21	52	33	28	1.55%	2.71%	4.26%

Source: Analyis from MIS of GUVNL & its subsidiary distribution companies for financial year 2009-10.

3.4.3.3 THEFT PREVENTION BUSINESS

Power theft is a major problem for a power distribution company. People do it by tempering with meter installed by company or they manage direct connection from overhead conductors or cables. Such defaulting activities cause great loss to a power distribution company. In such condition, a power company enforces theft prevention measures. By doing it, power distribution company tries to obtain reduction in commercial and AT&C losses. The important features are as shown below:

- **MMB installation**: To prevent theft periodic and planned programme is required on the part of a company. Under that, Metal Meter Box (MMB) should be installed on consumers' premises. Any chance of pilferage or tempering with meter has to be curbed. Such preventive measures would result in reduction of commercial losses to a considerable extend. This loss measured in percentage of MMB installed to total pending consumers in a division.
- **Sealing:** Sealing put on a meter and MMB would prove effective to ensure temper proof meters. It is measured in percentage of sealing carried out to total pending consumers in a division.
- **Installation checking**: Checking of installation is of paramount significance to ensure that the operation goes properly and without any theft. Installation checking is measured in percentage of number of consumers checked to total consumers in a division. Besides routine checking, consumers having variation in energy consumption have to be checked and periodic surveillance has to be exercised on consumers with suspicious behaviour. However, extensive installation checking is mandatory in areas having high headed consumers.

Elements applied for measurement of KPI: Theft prevention are described in the TABLE 3.20 where as the TABLE 3.21 provides details of computed KPI and its elements for selected divisions.

TABLE 3. 20 : KPI - THEFT PREVENTION

(In Percentage)

KPI - Element	Description		UOM	Benchmark
%MMB Installation	Installation of metal meter box to total pending MMB on consumers premises in a division.		%	20%
%Sealing	Sealing provided to total pending sealing on consumers premises in a division.		%	20%
% Connection Checking	Installation checking performed for number of consumers in respect to total consumers in a division.	Urban Division	%	33%
		Rural/Mix Division	%	25%
		Industrial Division	%	33%

Source: Analysis of MIS report of GUVNL & its subsidiary distribution companies for last three years.

TABLE 3. 21 : THEFT PREVENTION BUSINESS OF DIVISIONS

KPI	MMB provided	Sealing provided	Connection checked
UOM	%	%	%
ANKLESHWAR	6.17%	16.53%	25.49%
SURATIND	7.38%	10.43%	8.91%
SURATURBAN	7.38%	10.43%	15.61%
VYARA	9.56%	11.32%	10.44%
NAVSARIRURAL	8.28%	4.45%	6.37%
VAPIIND	4.63%	4.83%	4.73%
MAHEMDABAD	5.83%	5.05%	5.44%
PETLAD	5.17%	9.37%	7.27%
LALBAUG	3.89%	14.25%	6.09%
DABHOI	6.61%	10.42%	7.25%
GODHRA	8.20%	7.94%	8.07%
AMRELI1	9.32%	12.04%	19.58%
BOTAD	5.55%	7.98%	6.77%
BHUJ	10.07%	11.78%	10.93%
KHAMBHALIYA	8.62%	14.60%	11.61%
JUNAGADHCITY	7.27%	9.51%	8.39%
RAJKOTCITY2	2.79%	4.66%	3.73%
MORBI	4.91%	9.74%	7.33%
TALOD	11.79%	11.55%	11.67%
PATAN	4.96%	16.38%	3.44%
DEESA1	10.74%	6.78%	8.76%
RADHANPUR	7.45%	8.32%	7.69%
BAVLA	13.28%	15.30%	14.29%

Source: Analysis from MIS of GUVNL & its subsidiary distribution companies for financial year 2009-10.

3.4.3.4 LEGAL & REGULATORY

Besides the regulatory norms determined by the GERC / CERC, the distribution companies have to comply with the requirements of the company law, labour laws, RTI and legislation that have bearing on business operations. Companies have to address issues of employees, unions, consumers & suppliers. The important features that relate to measuring legal performance are:

- **Regulatory compliance:** Power distribution company of Gujarat have to file tariff petition to the GERC along with regulatory compliance within time schedule. It is applicable at company level.
- **Consumer legal cases:** For theft of power, cases have to be filed against defaulters under section 126 &135 of Electricity Act 200. Cases for recovery of arrears in Lok Adalat and for time barred arrears have to be filed immediately without any delay.
- **Consumer grievances:** A division has to address consumer grievances within a prescribed time limit. They are referred to the Government, Minister or applied under RTI.
- **Court cases of employee:** A division has to address issues of employees on suspension cases, or other court matters within 30 days' time limit, while audit para has to be complied within stipulated time period.

Elements to measure KPI: Legal and Regulatory are shown in the TABLE 3.22

TABLE 3. 22 : KPI - LEGAL AND REGULATORY

KPI - Element	Schedule / Benchmark
Employee related court Cases	Action to be taken within 30 days or statutory time limits whichever is earlier.
Govt. or Minister Ref, Consumer grievance and RTI	7 days or within RTI norms of 30 days
Tariff petition, Regulatory compliance	within schedule as specified by regulator
Legal cases on consumers, time barred cases, Lok Adalat & cases under sec 126 and 135	Immediately or within a week

Source: Performance based incentive scheme, Letter no: GUNNL/HR/1571, Dt: 31/08/2009.

3.4.4 LEARNING AND GROWTH

The learning and growth perspective requires consideration of skills and information systems that drive improvements and successes with respect to the other perspectives. The measures here are commonly employee related and employee

turnover, environment, productivity, training hours, leadership development, organization culture, and job satisfaction. The measures like *(i)* human resources, *(ii)* training and *(iii)* project development are essential to create future prospects of business, enhance capabilities and sharpen competitive edge of a power distribution company. They in turn drive the future performance of a company.

3.4.4.1 HUMAN RESOURCE

The productivity of a power distribution company depends on skilled, efficient, committed, customer friendly and finally non-corrupted employee. It is responsibility of the management to appoint the skilled, efficient and customer friendly employees who strive sincerely to cater to diversified needs of all stakeholders. Important features of human resource are:

- **Customer to employee ratio:** The ratio looks at number of consumers to be served by one employee. Normally it is derived for consumers per non-tech staff, consumers per line staff and consumers per engineer. It determines a level of efficiency on the part of employees on job. This ratio is uncontrollable at divisional level, because decisions related to manpower fall within purview of the corporate office while increase in number of consumers in a division is unpredictable. It is affected by a variety of factors over which division has no or little control.
- **Infrastructure to employee ratio:** Electrical network is increasing and expanding as consumers increase. Hence, employees per feeder, line staffs per feeder, lines (in KM) per line staff and DTRs per line staff are measured to improve quality of work and customer services. This variable is also uncontrollable at divisional level because decisions in relation to both investment and manpower are mostly controlled with the corporate office.
- **Employee satisfaction index:** This index is summation of a number of discrete job elements that provide satisfaction to an employee on a job. It is determined with reference to interactions with co-workers and bosses, organizational rules and policies, meeting performance standards and living with working conditions etc. Job satisfaction is measured in four areas namely, mentally challenging work, equitable rewards, supportive working conditions and supportive colleagues for selected divisions. Responses are derived from the questionnaire, received from the employees of selected division as shown in the APPENDIX B. The job

satisfaction index is prepared on this basis.

- **Employee cost:** The expenses for employee include salary expenses including travel claim, medical claim, LTC claim etc. Deputing additional employees for a division shall depend on employee cost per employee of a division.

Elements for measurement of KPI: Human Resources are shown in the TABLE 3.23. Further, the TABLE 3.24 represents HR set up and KPI for selected divisions.

TABLE 3. 23 : KPI - HUMAN RESOURCES

(Units specified individually)

KPI - Element	Description		UOM	Benchmark
Customers per employee	Total consumers / total employees of a division	Urban Division	Numbers	600
		Rural/Mix Division	Numbers	300
		Industrial Division	Numbers	250
Customers per non-tech employee	Total consumers / total non-tech employees of a division	Urban Division	Numbers	1500
		Rural/Mix Division	Numbers	1100
		Industrial Division	Numbers	1000
Customers per line staff	Total consumers / total line staffs of a division	Urban Division	Numbers	1100
		Rural/Mix Division	Numbers	750
		Industrial Division	Numbers	700
Customers per engineer	Total consumers / total engineers of a division	Urban Division	Numbers	7000
		Rural/Mix Division	Numbers	4500
		Industrial Division	Numbers	4000
Line per line staff	Total line / total line staff of a division	Urban Division	Km	10 Km
		Rural/Mix Division	Km	40 Km
		Industrial Division	Km	11 Km
Line staff per feeder	Total line staffs / total feeders of a division		Numbers	2
DTR per line staff	Total distribution transformers / total line staff of a division		Numbers	20
Employee cost per employee	Employee cost / employee		In lacs	1.25*
Employee satisfaction index	Average job satisfaction of sample employees in a division		In percentage	> 70%

Source: Data analyzed from the MIS, CRM and trial balance reports of the GUVNL & its subsidiary distribution companies for last three years & ASCII & Madhvan committee report 2003.

* It represents value for a financial year 2008-09.

TABLE 3. 24 : HUMAN RESOURCES OF DIVISIONS

Division	Employees						Consumer to employee ratio				Employee to intra ratio				Sales to employee ratio		Employee cost		
KPI	Engineer staff	Lab staff	Line staff	Non-tech staff	Other staff	Total Employee	Customer per employee	Customer per non-tech employee	Customer per line staff	Customer per engineer	Employee per feeder	Line staff per feeder	Line per line staff	DTR per line staff	Sent out per employee	Sales per employee	Employee cost per employee	Revenue per employee	Employee cost per revenue
UOM	Nos	Nos	Nos	Nos	Nos	Nos	Nos	Nos	Nos	Nos	Nos	Nos	Km	Nos	Unit	Unit	In lacs	In lacs	%
ANKLESHWAR	15	6	107	54	7	189	203	711	359	2560	5	3	3.561	10	3.733	3.697	1.67	1.10%	1.10%
SURATIND	24	5	109	94	11	243	404	1044	900	4089	2	1	6.788	38	8.742	8.401	1.84	0.53%	0.53%
SURATURBAN	26	7	133	113	14	293	1033	2679	2276	11644	4	2	25.283	35	5.064	4.141	2.38	1.50%	1.50%
VYARA	26	8	129	103	23	289	484	1359	1085	5383	4	2	74.982	26	1.209	0.640	1.87	10.00%	10.00%
NAVSARIRURAL	31	5	238	177	30	481	475	1291	960	7373	5	3	36.533	15	0.879	0.682	1.94	9.11%	9.11%
VAPIIND	18	5	100	58	9	190	446	1462	848	4712	2	1	21.863	23	4.745	4.374	1.81	0.98%	0.98%
MAHEMDABAD	24	7	143	116	23	313	357	963	781	4654	4	2	48.280	27	1.236	0.910	2.22	10.09%	10.09%
PETLAD	25	6	249	134	28	442	267	879	473	4714	7	5	14.274	9	0.632	0.483	1.94	14.25%	14.25%
LALBAUG	26	9	207	94	17	353	372	1398	635	5054	9	5	4.444	5	0.989	0.920	2.08	4.57%	4.57%
DABHOI	31	9	248	140	31	459	371	1216	686	5492	5	3	40.761	19	0.569	0.403	1.89	19.83%	19.83%
GODHRA	23	5	137	76	17	258	420	1424	790	4706	6	3	42.356	13	0.805	0.523	1.67	5.17%	5.17%
AMRELI1	34	2	201	98	37	372	364	1381	673	3979	4	2	39.641	15	0.996	0.648	1.57	11.29%	11.29%
BOTAD	29	6	151	102	19	307	398	1198	809	4214	2	1	41.919	29	1.559	0.853	1.44	8.39%	8.39%
BHUJ	31	6	206	109	32	384	326	1148	608	4038	2	1	36.868	34	2.382	1.549	1.66	5.20%	5.20%
KHAMBHALIYA	19	7	236	82	20	364	320	1423	494	6139	4	2	36.059	17	0.997	0.605	1.54	11.99%	11.99%
JUNAGADHCITY	17	6	99	78	11	211	452	1222	963	5608	6	3	6.844	14	0.920	0.705	1.86	6.88%	6.88%
RAJKOTCITY2	22	5	140	99	24	290	487	1426	1009	6419	7	4	7.085	14	1.383	1.137	1.97	4.20%	4.20%
MORBI	32	5	247	104	27	415	358	1427	601	4638	2	1	26.231	24	2.603	2.103	1.48	1.95%	1.95%
TALOD	22	3	133	105	16	279	435	1156	913	5519	2	1	59.887	30	1.142	0.983	2.01	13.60%	13.60%
PATAN	27	8	199	142	26	402	317	897	640	4716	2	1	25.182	29	1.569	1.359	1.87	11.32%	11.32%
DEESA1	20	6	144	91	27	288	339	1072	677	4876	1	1	71.013	66	3.206	2.251	1.64	6.33%	6.33%
RADHANPUR	29	3	192	101	22	347	255	876	461	3052	1	1	44.822	46	2.477	1.702	1.34	9.23%	9.23%
BAVLA	26	6	142	113	20	307	502	1146	912	4980	2	1	38.042	25	1.799	1.267	2.29	4.54%	4.54%

Source: Analysis from MIS, CRM, T&D of GUVNL & its subsidiary distribution companies financial year 2008-09.

3.4.4.2 PROJECT DEVELOPMENT / INVESTMENT

The government initiates different projects and invests in different schemes in the interest of development in functional area or under-developed areas. The management of such schemes is held accountable in view of performance measurement. The purpose is to achieve specified targets within stipulated time period. The important features related to project development are as detailed below:

- **Government Scheme:** The government announces schemes to affect development of poor people. Some of the schemes are like as 'Zupadpatti' (for providing electricity into zupadpatti), 'Petapara' (for development of villages), 'Rajiv Gandhi Grameen Vidyutikaran Yojana' (RGGVY) and the like. In additional to it, Kisan Hit Urja SHakti Yojana (KHUSHY) has been implemented by the Government of Gujarat under which the existing pump sets are replaced with energy efficient pump sets for agriculture connection. Because of that, HT line is increased step by step and vis-à-vis LT line is reduced.
- **New Innovative Scheme:** Under such schemes, a division is required to plan innovative & improvement activities by which technical loss can be reduced like feeder bifurcation, feeder reconfiguration, underground cabling and replacement of conductors etc.
- **New Development Scheme (NDS):** In addition to existing facility, new development scheme is available for further development of infrastructure. Some of these are like new connection, load addition, load reduction, change of category and change of tariff. Under these scheme, various activities are conducted in which expenditure incurred is recovered from consumers.

Elements for measurement of KPI are shown in the TABLE 3.25.

TABLE 3. 25 : KPI - PROJECT DEVELOPMENT

(In Percentage)

KPI - Element	Description	UOM	Benchmark
Zupadpatti & Petapara	Actual w. r .t target	%	99%
Kutir Jyoti + SCP	Actual w. r .t target	%	99%
KHUSHY	Actual w. r .t target	%	99%
RGGVY	Actual w. r .t target	%	100%
NIS	Actual w. r .t target	%	99%
ND Scheme	90% of the connection to be released within the stipulated time period as per the GERC norms. In case of delay in more than 10% cases no marks to be given.	%	100%

Source: Circular Performance based incentive scheme, Letter no: GUNNL/HR/1571, Dt: 31/08/2009.

TABLE 3. 26 : PROJECT DEVELOPMENT OF DIVISIONS

Division	Regd. Pending applications			Paid Pending applications			Connection released during the year 2008-09						Growth				
KPI	HT Ind.	LT Ind.	Lighting	HT Ind.	LT Ind.	Lighting	HT Ind.	LT Ind.	Lighting	Agri.	Agri. Others	Total	HT Ind.	LT Ind.	Lighting	Agri.	Total
UOM	Nos	Nos	Nos	Nos	Nos	Nos	Nos	Nos	Nos	Nos	Nos	Nos	%	%	%	%	%
ANKLESHWAR	3	2	0	1	16	76	8	113	1481	0	0	1602	2.22%	5.00%	4.63%	0.00%	3.67%
SURATIND	1	2	107	1	77	45	20	753	2846	0	0	3619	3.66%	2.62%	3.54%	0.00%	3.35%
SURATURBAN	0	58	1261	0	314	2930	2	888	27264	6	2	28162	8.20%	8.86%	9.73%	0.05%	9.28%
VYARA	0	8	469	0	33	211	3	39	1222	739	44	2047	10.20%	2.70%	7.85%	4.74%	1.52%
NAVSARIRURAL	0	0	175	0	13	222	4	124	2591	302	35	3056	11.49%	5.21%	7.42%	1.99%	1.45%
VAPIIND	1	6	119	1	31	381	16	138	2637	16	0	2807	3.78%	3.46%	3.98%	0.79%	3.86%
MAHEMDABAD	0	5	1	0	12	16	0	56	2802	200	137	3195	0.00%	5.44%	3.22%	1.51%	3.18%
PETLAD	0	3	3	0	3	25	0	33	1625	7	8	1673	0.00%	2.52%	1.73%	0.68%	1.73%
LALBAUG	0	0	1	0	6	69	1	185	4019	0	0	4205	2.14%	4.99%	2.74%	0.00%	2.77%
DABHOI	0	8	0	0	19	73	0	95	5449	35	59	5638	0.00%	8.09%	3.05%	1.27%	3.03%
GODHRA	0	2	37	0	12	262	0	121	2424	56	24	2625	0.00%	9.10%	2.52%	1.41%	2.54%
AMRELI1	0	2	17	0	20	54	0	86	3225	537	321	4169	0.00%	3.46%	2.62%	1.82%	2.94%
BOTAD	1	2	118	16	16	188	7	170	3153	938	453	4721	48.33%	6.58%	4.15%	3.30%	4.94%
BHUJ	2	10	222	4	25	560	13	90	4364	272	284	5023	40.15%	9.30%	4.71%	2.02%	4.83%
KHAMBHALIYA	1	3	69	1	4	14	5	90	3638	1627	19	5379	12.12%	7.10%	3.70%	5.42%	3.83%
JUNAGADHCITY	1	7	69	0	8	6	3	75	3387	8	3	3476	12.77%	4.38%	3.08%	4.09%	3.07%
RAJKOTCITY2	3	16	3	1	10	34	12	272	3290	0	0	3574	17.86%	4.21%	3.40%	0.00%	3.37%
MORBI	7	11	261	7	15	136	33	222	5127	401	119	5902	9.34%	6.85%	4.27%	1.94%	4.02%
TALOD	0	0	27	1	4	45	2.5	61	2595	186	232	3077	8.06%	6.23%	2.59%	0.97%	2.53%
PATAN	0	0	0	0	5	111	0	74	3541	41	390	4046	0.00%	6.92%	3.01%	0.72%	3.23%
DEESA1	1	0	123	1	20	575	4	83	4704	21	480	5292	6.25%	7.08%	6.06%	0.16%	5.56%
RADHANPUR	0	0	0	0	2	76	0	52	4182	44	375	4653	0.00%	7.89%	5.47%	0.41%	5.26%
BAVLA	7	3	16	8	7	190	30	217	8155	41	43	8486	54.56%	10.10%	6.72%	10.08%	6.58%

Source: Analysis from MIS of GUVNL & its subsidiary distribution companies for financial year 2008-09.

3.4.4.3 TRAINING

Personnel management and their up-gradation acquire great significance in the present time when electricity supply is held as crucial component for industrial and agricultural development. In this context, service is the factor of high priority and to render effective service staff needs to be trained periodically through training programs. Training adds capabilities like performance improvement, skill up-gradation and assets creation in to the human resources. It is felt essential as to demand of power increases day by day and with it consumer's expectations on services are increasing day-by-day. There is a training institute setup in Gujarat call Gujarat Energy Training and Research Institute (GETRI). It prepares training plans, allocate resources and maintain a calendar for their implementation and monitoring. Elements for measurement of KPI: Training are shown in the TABLE 3.27.

TABLE 3. 27 : KPI - TRAINING

(In Percentage)

KPI - Element	Description	UOM	Benchmark
Training imparted as per plan	Training imparted w.r.t. planned	%	100
Training to non-tech employee	Training imparted in man days to non-tech employee to total non-tech employees of a division	%	28
Training to Line staff	Training imparted in man days to line staff to total line staff of a division	%	32
Training to engineers	Training imparted in man days to engineer to total engineers of a division	%	29

Source: Data analyzed from reports of GETRI and HR department of the GUVNL and its subsidiary distribution companies for a financial year 2008-09.

3.5 KPI MEASUREMENT & IMPLEMENTATION

The performance measurement of a division is designed to provide strategic control over customer services and internal processes[17]. It has to be carried out periodically. It is necessary that the KPI and its targets are derived typically from business plan of the company keeping in view "regulatory" compliance. As a part of profit center mechanism; KPI has to be monitored at divisional level for self sustainability and potential for improvement. Further, implementation of balanced score card has to be accomplished with a comprehensive plan that may guide the development of frame work as it grows and expands. In view of implementation of KPIs, matters like selection of divisions, performance measurement and performance ranking mechanism are discussed below:-

3.5.1 SELECTION OF DIVISIONS

For measurement of KPI, it is essential to select divisions, since all divisions are not of similar types and sizes; they are stratified[18] on the basis of rural, urban and industrial types. In each category, consumers are of different types. They include household consumers too. Further, to incorporate other critical parameters, sub-groups are created on the basis of (1) Distribution company, (2) AT & C losses and (3) Geographical area/condition. At least, one sample is selected in each subgroup and minimum 25% of samples are taken in each group that can represent characteristics of total population. In this way, twenty three divisions (as shown in the TABLE 3.28) are selected out of 85 divisions of the GUVNL and its subsidiary distribution companies. The TABLE 3.29 further shows consumer mix and the TABLE 3.30 shows infrastructure of these selected divisions.

TABLE 3. 28 : SELECTION OF DIVISIONS

Name of Division	Type of Division	DISCOM	AT & C loss	Geographical area	Type of consumers/consumption
ANKLESVER-IND	INDUSTRIAL	DGVCL	4.02%	Highly industrial area	HT industrial consumption
SURATIND	INDUSTRIAL		3.94%	Highly industrial area	Highest consumption per consumer
SURATURBAN	URBAN		14.79%	Urban area	Urban consumers
VYARA	RURAL		49.20%	Forest/agriculture area	High rural consumption
NAVSARIRURAL	RURAL		24.32%	Fertile agriculture land	Rural, ag., water works consumers
VAPI IND.	INDUSTRIAL		9.57%	Chemical industries	HT industrial consumers
MAHEMDABAD	MIX	MGVCL	31.14%	Industrial area	LT industrial & other mix of consumers
PETLAD	RURAL		36.80%	Fertile agriculture land and coastal area	Rural consumers
LALBAUG	URBAN		8.90%	GIDC area within Vadodara city	Urban & industrial Consumers
DABHOI	RURAL		39.73%	Fertile agriculture land	Lowest consumption per consumer
GODHRA	RURAL		38.42%	Poor class of people	Low industrial base
AMRELI-1	RURAL	PGVCL	39.28%	Coastal area	Rural & ag. consumers
BOTAD	RURAL		43.14%	Stony land	Agriculture consumer
BHUJ	MIX		40.23%	Coastal area	Developing industrial area
KHAMBHALIYA	RURAL		39.38%	Agriculture area	Rural & ag. consumers
JUNAGADHCITY	URBAN		25.84%	Urban area	Urban consumers
RAJKOTCITY-2	URBAN		18.58%	Urban area	Urban & industrial consumers
MORBI	RURAL		25.52%	Developing industrial area	More Industrial consumers
TALOD	RURAL	UGVCL	22.80%	Low water level	Agriculture consumers
PATAN	MIX		30.30%	Dark zone area	Rural consumers
DEESA-1	RURAL		39.41%	Low water level	Rural consumers
RADHANPUR	RURAL		36.75%	Low water level and low population	Lowest industrial zone
BAVLA	MIX		30.85%	Industrial area adjacent to Ahmedabad	industrial consumers

Source: MIS report of GUVNL and its subsidiary power distribution companies for March 2009.

TABLE 3. 29 : CONSUMERS OF DIVISIONS

Division	Resi.	Comm.	HT industrial	LT industrial	Water Works	Lighting	AG - Unmetered	AG - Metered	Total
UOM	Numbers	Numbers	Numbers	Numbers	Numbers	Numbers	Numbers	Numbers	Numbers
ANKLESHWAR	23674	8323	272	1854	69	111	35	0	34338
SURATIND	52770	27805	557	15716	156	349	554	236	98143
SURATURBAN	234585	36054	19	10185	545	1167	4599	1180	288334
VYARA	115221	7539	31	1614	700	634	7443	6780	139962
NAVSARIRURAL	186334	12723	28	2370	1578	1754	8292	6058	219137
VAPIIND	64034	13926	350	3906	82	295	1599	624	84816
MAHEMDABAD	91008	9105	28	946	791	159	5322	4343	111702
PETLAD	103002	9827	20	2026	370	220	1313	1071	117849
LALBAUG	109264	17044	70	3440	47	401	43	22	130331
DABHOI	146415	12619	14	1168	966	650	4628	3778	170238
GODHRA	89323	10083	42	1242	227	216	1351	1102	103586
AMRELI1	101236	14575	25	2616	675	788	9890	5494	135299
BOTAD	77403	11032	15	3122	332	141	9380	7657	109082
BHUJ	97303	17710	26	1156	505	182	7548	742	125172
KHAMBHALIYA	77884	14080	33	1126	322	104	9180	7494	110223
JUNAGADHCITY	73039	19343	24	1783	780	240	68	55	95332
RAJKOTCITY2	94423	32449	70	6099	33	133	12	0	133219
MORBI	101162	18891	381	3446	366	114	6806	5556	136722
TALOD	92707	7395	31	979	745	403	13744	5403	121407
PATAN	106377	13156	28	1087	443	417	4741	1073	127322
DEESA1	66679	10892	64	1172	390	257	8569	4844	92867
RADHANPUR	67866	8591	11	659	334	174	8364	2255	88254
BAVLA	120392	1027	56	2158	608	214	2970	2051	129476

Source: Utility Billing of GUVNL & its subsidiary distribution companies at the end of financial year 2008-09.

TABLE 3. 30 : ELECTRICAL INFRASTRUCTURE OF DIVISIONS

Network	11/22 KV Feeders										Line		Distribution Transformers						
Division	EHT	HT Express	GIDC	Industrial	Urban	Rural	JGY	Ag. Dom	SST	Total	HT line length	LT line length	25 KVA	50 KVA	63 KVA	100 KVA	150/200/250/300 KVA	500 KVA	Total
UOM	Numbers	Numbers	Numbers	Numbers	Numbers	Numbers	Numbers	Numbers	Numbers	Numbers	KM	KM	Numbers	Numbers	Numbers	Numbers	Numbers	Numbers	Numbers
ANKLESHWAR	0	6	22	6	7	0	0	0	0	41	231	150	1	59	246	559	297	29	1191
SURATIND	2	3	30	64	3	0	0	0	0	102	418	322	113	4	1085	1522	1102	293	4119
SURATURBAN	1	6	0	21	39	0	5	10	1	83	1083	2120	80	77	1384	1977	922	177	4617
VYARA	3	5	0	3	8	0	26	27	3	75	3419	6254	1242	4	1406	708	58	0	3418
NAVSARIRURAL	1	5	1	3	10	0	37	26	8	91	3258	5079	1063	41	1524	952	77	0	3657
VAPIIND	1	30	34	2	8	0	8	7	4	94	915	1271	1148	113	516	391	84	12	2264
MAHEMDABAD	2	4	3	6	10	17	15	25	2	84	2963	3941	1973	194	887	672	145	21	3892
PETLAD	0	5	2	0	9	0	24	27	0	67	1777	1778	682	190	607	720	66	0	2265
LALBAUG	3	4	10	0	23	0	0	1	0	41	222	698	11	69	465	394	14	1	954
DABHOI	0	0	0	0	9	0	37	36	9	91	4528	5581	2191	21	1348	1139	84	2	4785
GODHRA	1	2	2	3	6	9	8	14	1	46	2179	3623	594	15	561	472	71	3	1716
AMRELI1	0	2	0	1	17	0	23	44	0	87	3302	4666	874	1133	918	25	1	0	2951
BOTAD	0	1	0	4	9	71	25	69	0	179	2903	3427	2237	220	1006	762	165	24	4414
BHUJ	0	8	2	9	11	0	41	104	0	175	4766	2829	1770	45	2961	2258	94	1	7129
KHAMBHALIYA	0	7	0	2	10	54	28	0	0	101	3715	4795	2096	18	1219	727	22	0	4082
JUNAGADHCITY	0	0	0	6	23	0	0	2	2	33	218	459	717	71	322	244	53	8	1415
RAJKOTCITY2	0	0	0	0	39	0	0	0	0	39	341	595	83	0	313	997	527	4	1924
MORBI	0	3	0	28	26	64	40	27	0	188	3159	3320	2220	10	1996	1605	179	5	6015
TALOD	0	0	0	3	6	0	36	63	4	112	2971	4994	1175	14	1663	1518	41	0	4411
PATAN	1	0	1	0	12	0	26	133	16	189	3622	1390	414	2857	2479	70	3	0	5823
DEESA1	0	1	1	5	10	203	26	0	0	246	5575	4164	2596	0	3843	2647	14	0	9100
RADHANPUR	1	1	0	1	9	0	34	193	20	259	5535	3038	1995	72	4299	2921	14	0	9301
BAVLA	0	10	1	10	12	51	30	0	0	114	3250	2152	868	63	1372	1197	115	0	3615

Source: MIS of GUVNL & its subsidiary distribution companies at the end of financial year 2008-09.

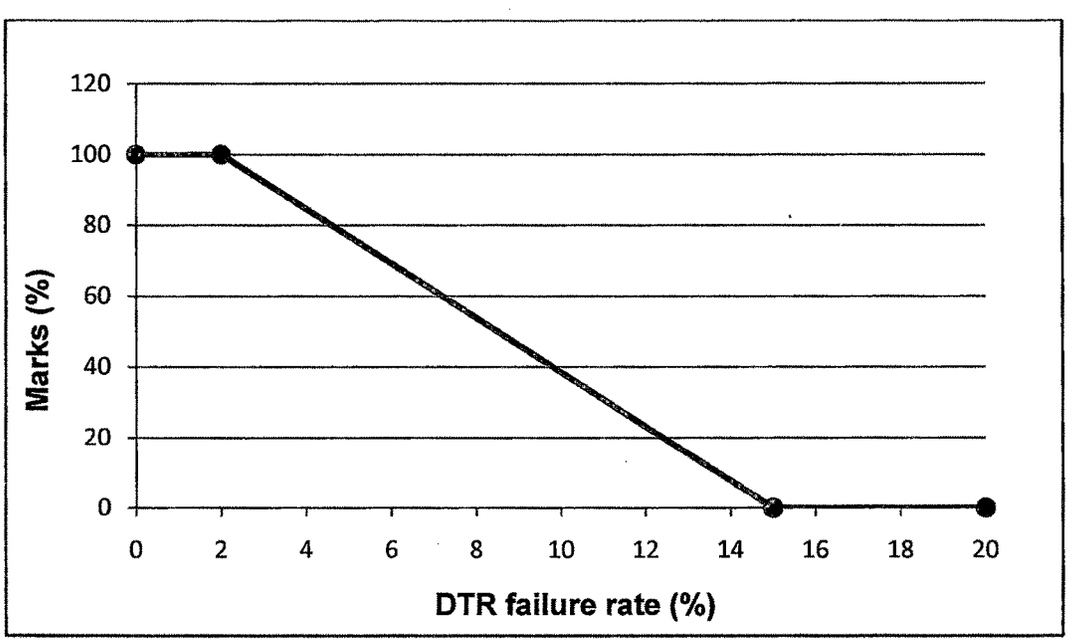
3.5.2 PERFORMANCE RANKING MECHANISM

Performance measurement involves its ranking in view of the KPI and its element. Each element of KPI shall be ranked to indicate its significance in the situation under consideration. To give rank to each element of KPI, a concept is worked out as 100% marks are assigned if an indicator is found satisfying fully the benchmark level else proportionate marking determined in line with the performance. Finally, zero mark may be assigned to the lowest performance of the kind. The FIGURE 3.1 gives a performance graph for key elements as against rate of transformer failure for an urban division.

Example:

Lalbaug division is an urban division and once had DTR failure rate at about 2.20%. To assign marks to Lalbaug division for the element - DTR failure rate of the KPI - Field Maintenance Service, the concept used here is 100% marks are assigned if an indicator satisfies the benchmark for a type of division, means 2% DTR failure rate for urban, else proportionate mark as per equation, $y_u = -7.69x + 1.15$ for an urban type division, and finally, zero if value exceeded maximum limit (15% for urban). According to it, for 2.20% DTR failure rate, 98.45% marks are assigned to Lalbaug division for DTR failure rate under field maintenance services KPI.

FIGURE 3 - 1 : PERFORMANCE GRAPH



3.5.3 IMPORTANCE TO EACH ELEMENT

The performance of a division can be evaluated by applying various type of methods that are available, but for the purpose the methods used are (1) Partial Indicator Method (2) Specific Core Indicators Method, and (3) Overall Performance Indicator Method[19]. The Partial Indicator Method consists of financial, operational and commercial performance where past performance provides information on improvement over time. The Specific Core Indicator Method, on the other hand, emphasizes on core value and creates responsibility and accountability of key performance indicators (KPI). The Overall Performance Indicator Method is used as a combination of the specific core indicator and the partial indicator methods. The combination is usually performed through weighted average of core indices and weighted average of partial indices. Core indices contemplate on the importance assigned to each aspect of the divisional performance, while partial indices reflect the variation of each aspect of the divisional performance in comparison to last year. In short, weights are assigned to each element of KPI and finally after summing up, weights are assigned to the specific core indicator and partial indicator for obtaining final marks of KPI. Weights are assigned from the responses of respondent on the questionnaire as shown in APPENDIX A.

Example: Performance measurement of the Lalbaug division is evaluated for field maintenance service as shown in table below:

Division	HT Mtce.	LT Mtce.	DTR Failure Rate	DTR Mtce.	Total Specific Core Ind.	Specific Core Ind.	Partial Ind.	Overall Performance
Weights	**20%**	**10%**	**50%**	**20%**	**100%**	**90%**	**10%**	**100%**
LALBAUG	20.00%	10.00%	**49.23%**	13.78%	93.01%	83.71%	0.59%	84.30%

Here, weights were assigned as 20%, 10%, 20% & 50% for maintenance respectively of HT, LT line network, DTR & DTR failure rate. According to it, DTR failure rate was weighted by 50% and hence, the Lalbaug division secured weighted marks as 49.23% that is 50% of 98.45% for element DTR failure rate. Further, specific core indicator was weighted with 90% & partial indicator was weighted at 10% for field maintenance services, and therefore, the Lalbaug division has secured total marks 84.30% field maintenance service-KPI.

3.5.4 KPIs FOR FIRST STAGE OF IMPLEMENTATION

The KPIs selected for first stage of implementation are simple, measurable and easy to implement. At the same time, it directs the qualitative aspects which outline customer needs, business needs and requirement of the Regulators & the Government. Consequently for first stage of implementation, the KPIs are further categorized into four subcategories viz. Power Supply Reliability, Field Maintenance Service, Metering and Billing Performance and Cost & profitability.

3.5.4.1 POWER SUPPLY RELIABILITY

Reliability index is a common and standard element to measure power supply reliability in compare to other indices. The ranking for power supply reliability is given for selected divisions in the TABLE 3.31.

TABLE 3. 31 : RANKING FOR POWER SUPPLY RELIABLITITY

Division	Overall Performance (In percentage)		
Weights	2008-09	2009-10	Variation
ANKLESVER-IND	99.13%	98.97%	-0.16%
SURATIND	99.12%	99.81%	0.70%
SURATURBAN	99.45%	99.93%	0.48%
VYARA	99.13%	99.47%	0.35%
NAVSARIRURAL	98.77%	99.48%	0.71%
VAPI IND.	99.67%	99.95%	0.27%
MAHEMDABAD	99.74%	99.39%	-0.34%
PETLAD	99.87%	99.42%	-0.46%
LALBAUG	98.79%	99.87%	1.09%
DABHOI	98.61%	99.26%	0.66%
GODHRA	99.07%	98.93%	-0.14%
AMRELI-1	99.23%	99.09%	-0.14%
BOTAD	98.79%	99.36%	0.57%
BHUJ	97.00%	98.35%	1.39%
KHAMBHALIYA	99.59%	97.61%	-1.98%
JUNAGADHCITY	99.39%	99.40%	0.01%
RAJKOTCITY-2	98.85%	99.66%	0.82%
MORBI	99.40%	98.75%	-0.66%
TALOD	99.81%	99.46%	-0.35%
PATAN	98.78%	99.82%	1.05%
DEESA-1	99.01%	98.78%	-0.23%
RADHANPUR	99.16%	99.01%	-0.15%
BAVLA	99.40%	99.16%	-0.24%

Note: 1. ***Reliability Index*** (% availability of power) = 100 - non-availability of power (%) during the financial year where non-availability of power is a weighted average of non-availability of power due to SF, ESD & PSD per feeder.

2. Availability of power is measured excluding load shedding (LS) which is un-controllable and applicable to agriculture & rural feeders only.

3. Variance analysis for measuring partial indicator is also performed in compare to last year.

Source: Data used form MIS report of GUVNL & its subsidiary distribution companies of year 09-10 for computing ranks.

3.5.4.2 FIELD MAINTENANACE SERVICE

Weight is assigned to field maintenance service. As it generates from the responses of the respondents on the given questionnaire, weight of 20%, 10% & 20% are determined for maintenance of HT, LT line network & DTR respectively. Failure of distribution transformer is in fact a pressing parameter for divisional performance. Hence, 50% weight is noted for distribution transformer failure rate. Other parameters like rational field devices are uncontrollable at divisional level. So the performance ranking is determined only on HT, LT line & DTR maintenance and the DTR failure rate. Variance analysis is also performed and 10% weight is assigned to the partial indicator, while 90% weight is assigned for specific core indicator. Performance ranking of selected 23 divisions is shown in the TABLE 3.32.

TABLE 3. 32 : RANKING FOR FIELD MAINTENANCE SERVICE

(In percentage)

Division	HT Mtce.	LT Mtce.	DTR Failure Rate	DTR Mtce.	Total Specific Core Ind.	Specific Core Ind.	Partial Ind.	Overall Performance
Weights	**20%**	**10%**	**50%**	**20%**	**100%**	**90%**	**10%**	**100%**
ANKLESVER-IND	20.00%	10.00%	5.12%	6.40%	41.52%	37.37%	0.00%	37.37%
SURATIND	9.42%	3.01%	0.00%	16.27%	28.70%	25.83%	3.62%	29.45%
SURATURBAN	19.14%	5.80%	0.00%	9.38%	34.32%	30.88%	3.40%	34.29%
VYARA	7.55%	0.00%	12.23%	0.00%	19.78%	17.80%	0.00%	17.80%
NAVSARIRURAL	20.00%	10.00%	31.69%	17.94%	79.63%	71.67%	2.80%	74.47%
VAPI IND.	4.38%	0.40%	0.00%	7.07%	11.86%	10.67%	2.23%	12.90%
MAHEMDABAD	0.14%	0.07%	40.47%	7.72%	48.40%	43.56%	5.42%	48.98%
PETLAD	6.65%	6.10%	50.00%	7.46%	70.21%	63.19%	1.32%	64.51%
LALBAUG	20.00%	10.00%	49.23%	13.78%	93.01%	83.71%	0.59%	84.30%
DABHOI	2.17%	3.96%	38.56%	7.82%	52.51%	47.26%	0.18%	47.44%

GODHRA	4.08%	0.00%	32.21%	4.21%	40.50%	36.45%	2.61%	39.06%
AMRELI-1	20.00%	7.95%	2.42%	13.92%	44.29%	39.86%	5.90%	45.77%
BOTAD	0.00%	0.00%	8.97%	0.00%	8.97%	8.07%	0.24%	8.31%
BHUJ	0.60%	2.33%	30.95%	1.04%	34.90%	31.41%	0.32%	31.74%
KHAMBHALIYA	19.41%	5.58%	0.00%	4.31%	29.31%	26.38%	5.34%	31.72%
JUNAGADHCITY	6.30%	1.60%	44.10%	9.49%	61.50%	55.35%	0.00%	55.35%
RAJKOTCITY-2	5.16%	2.06%	44.90%	11.78%	63.90%	57.51%	2.38%	59.89%
MORBI	0.00%	0.00%	24.05%	0.00%	24.05%	21.64%	3.04%	24.69%
TALOD	5.99%	3.67%	22.84%	0.00%	32.51%	29.26%	2.40%	31.65%
PATAN	0.00%	3.49%	40.77%	6.11%	50.38%	45.34%	3.62%	48.96%
DEESA-1	11.69%	1.58%	0.00%	4.07%	17.34%	15.60%	0.00%	15.60%
RADHANPUR	2.96%	4.11%	24.02%	0.00%	31.09%	27.98%	1.39%	29.38%
BAVLA	17.73%	5.56%	34.33%	3.01%	60.63%	54.57%	9.89%	64.45%

Note:

1. Percentage for specific core indicator is conceptualized as 100% marks are assigned if an indicator is found satisfying fully the benchmark for specified type of division else proportionate mark as per equation shown the table below. Finally zero mark may be assigned if value exceeds minimum limit 25% for ***HT line maintenance***, minimum limit 25% for ***LT line maintenance*** and minimum limit 25% for ***DTR maintenance***. For DTR failure rate; maximum limit 10% for industrial, 15% for urban and 25% for rural division are considered.

Type of division	Equation to assign proportionate marks			
	HT line maintenance	LT line maintenance	DTR failure rate	DTR maintenance
INDUSTRIAL	$y_i = 0.57x - 0.14$	$y_i = 1.33x - 0.33$	$y_i = -20x + 2$	$y_i = 0.8x - 0.2$
URBAN	$y_u = 0.44x - 0.11$	$y_u = 0.8x - 0.2$	$y_u = -7.69x + 1.15$	$y_u = 0.57x - 0.14$
RURAL	$y_r = 1.33x - 0.33$	$y_r = 2x - 0.5$	$y = -5.56x + 1.39$	$y_r = 1.33x - 0.33$

2. Variance analysis is also performed for improvement over last year (rise in maintenance activity, fall in DTR failure rate) and same importance is assigned to the partial indicator.

Source: Data used for computing ranks from MIS report of GUVNL & its subsidiary distribution companies for the year 09-10.

3.5.4.3 METERING AND BILLING PERFORMANCE

Performance acquires significance in functions like metering and billing of power supply. Accuracy is a major consideration in it, because income is generated from it. Weight is assigned for this function on the ground of the responses of the respondents on the given questionnaire. It goes like meter replacement activity - 25%, DTR metering – 30%, panel meter testing - 10% and billing days – 35%. As meter replacement & billing days are significant parameters for T & D loss,

considerable importance is attached to it as compared to other parameters. Those of SPOT billing & AMR metering are largely implemented. So they are not considered for performance ranking. Moreover, variance analysis is also performed and 10% concern is assigned to the partial indicator, while 90% importance is assigned to the specific core indicator.

TABLE 3. 33 : RANKING FOR METERING & BILLING

(In percentage)

Division	Meter Replmt	DTR Meter	Panel Meter Testing	Billing days	Total Specific Core Ind.	Specific Core Ind.	Partial Ind.	Overall Performance
Weights	**25%**	**30%**	**10%**	**35%**	**100%**	**90%**	**10%**	**100%**
ANKLESVER-IND	4.81%	29.82%	2.68%	28.00%	65.32%	58.79%	3.50%	62.29%
SURATIND	0.87%	29.37%	5.81%	14.00%	50.05%	45.05%	4.82%	49.87%
SURATURBAN	24.35%	29.10%	0.77%	14.00%	68.21%	61.39%	5.16%	66.55%
VYARA	12.32%	29.45%	5.40%	35.00%	82.17%	73.95%	5.79%	79.74%
NAVSARIRURAL	15.17%	29.26%	2.35%	28.00%	74.78%	67.31%	4.53%	71.83%
VAPI IND.	0.77%	29.60%	2.07%	31.50%	63.95%	57.56%	4.86%	62.41%
MAHEMDABAD	0.00%	29.89%	10.00%	35.00%	74.89%	67.40%	3.51%	70.91%
PETLAD	0.37%	29.87%	10.00%	17.50%	57.73%	51.96%	5.87%	57.83%
LALBAUG	0.00%	30.00%	10.00%	35.00%	75.00%	67.50%	5.68%	73.18%
DABHOI	0.00%	30.00%	10.00%	14.00%	54.00%	48.60%	7.88%	56.48%
GODHRA	0.00%	29.72%	5.50%	28.00%	63.22%	56.90%	3.61%	60.51%
AMRELI-1	14.13%	26.87%	9.94%	21.00%	71.94%	64.75%	5.71%	70.46%
BOTAD	0.00%	28.76%	6.20%	31.50%	66.46%	59.82%	4.20%	64.01%
BHUJ	0.19%	27.68%	8.30%	28.00%	64.18%	57.76%	3.85%	61.61%
KHAMBHALIYA	1.52%	27.03%	6.70%	28.00%	63.25%	56.92%	4.05%	60.97%
JUNAGADHCITY	5.90%	29.94%	9.35%	17.50%	62.69%	56.42%	4.01%	60.43%
RAJKOTCITY-2	0.00%	29.97%	9.60%	21.00%	60.57%	54.51%	3.63%	58.15%
MORBI	1.76%	29.82%	8.95%	24.50%	65.03%	58.52%	4.31%	62.83%
TALOD	3.48%	29.47%	5.30%	28.00%	66.25%	59.63%	3.52%	63.15%
PATAN	6.98%	29.76%	9.64%	31.50%	77.89%	70.10%	3.76%	73.86%
DEESA-1	13.64%	28.94%	8.35%	28.00%	78.93%	71.03%	3.68%	74.71%
RADHANPUR	3.97%	27.59%	8.10%	17.50%	57.16%	51.45%	3.66%	55.11%
BAVLA	8.87%	29.68%	10.00%	31.50%	80.04%	72.04%	3.62%	75.66%

Note:

1. To assign marks to the specific core indicator, the concept used is if an indicator satisfies the benchmark of 25% for ***meter replacement*** then 100% marks is assigned, else proportionate mark and

finally zero if value exceeds below 5% meter replacement. Similarly, if an indicator satisfies benchmark of 365 ***billing days*** then 100% marks are assigned else proportionate marks, and finally zero if value exceeds maximum 375 days. For ***panel meter testing*** & ***DTR meter***; marks are assigned in proportion to actual value out of 100.

2. Variance analysis is also performed for improvement over last year (rise in meter replacement) and the same importance is assigned to the partial indicator.

Source: Data used for computing ranks from MIS, Billing report of GUVNL & its subsidiary distribution companies for the year 2008-09.

3.5.4.4 COST AND LOSSES

Cost and losses are determining factors for quality of performance, since they have direct bearing on company's profitability. Importance has been assigned to it on the ground of the responses of the respondents on the given questionnaire. They measure performance of a division on cost and losses KPI as AT & C loss - 50%, Unit loss – 10%, O&M expenses per unit of energy input - 10% and DTR loss measurement – 30%. AT & C loss is a result of T & D loss and collection efficiency while O&M expenditure is covered in O&M exp. per unit of energy input. Hence, O&M expenditure is not considered in performance ranking. Variance analysis is also performed and 10% importance is assigned to the partial indicator, while 90% importance is assigned to the specific core indicator with the help of the questionnaire.

TABLE 3. 34 : RANKING FOR COST AND LOSSES

(In percentage)

Division	A T & C Loss	Unit loss per consumer	O&M exp. per unit of energy input	DTR loss msmt.	Total Specific Core Ind.	Specific Core Ind.	Partial Ind.	Overall Performance
Weights	**60%**	**10%**	**10%**	**20%**	**100%**	**90%**	**10%**	**100%**
ANKLESVER-IND	60.00%	10.00%	3.84%	20.00%	93.84%	84.45%	7.69%	92.14%
SURATIND	60.00%	1.95%	9.11%	19.61%	90.67%	81.61%	0.21%	81.82%
SURATURBAN	60.00%	1.33%	3.21%	12.16%	76.70%	69.03%	3.80%	72.83%
VYARA	0.00%	7.30%	10.00%	10.30%	27.60%	24.84%	0.37%	25.21%
NAVSARIRURAL	47.05%	10.00%	8.05%	16.35%	81.45%	73.31%	0.61%	73.92%
VAPI IND.	5.11%	2.11%	8.54%	17.13%	32.90%	29.61%	0.42%	30.03%
MAHEMDABAD	26.59%	8.34%	9.49%	16.32%	60.75%	54.67%	0.65%	55.32%
PETLAD	9.61%	9.77%	5.97%	16.32%	41.67%	37.50%	0.65%	38.15%
LALBAUG	60.00%	10.00%	2.92%	20.00%	92.92%	83.62%	1.22%	84.85%
DABHOI	0.81%	10.00%	0.43%	13.70%	24.94%	22.44%	0.14%	22.59%

GODHRA	4.73%	9.31%	5.77%	11.80%	31.61%	28.45%	1.80%	30.25%
AMRELI-1	2.15%	8.17%	4.45%	11.80%	26.57%	23.92%	2.72%	26.64%
BOTAD	0.00%	4.91%	9.47%	12.39%	26.77%	24.09%	2.10%	26.19%
BHUJ	0.00%	1.79%	10.00%	12.39%	24.18%	21.76%	0.03%	21.79%
KHAMBHALIYA	1.85%	7.11%	3.00%	10.30%	22.26%	20.04%	0.35%	20.39%
JUNAGADHCITY	16.65%	6.57%	8.35%	11.52%	43.08%	38.77%	1.26%	40.02%
RAJKOTCITY-2	45.67%	6.18%	4.58%	11.52%	67.95%	61.16%	2.22%	63.38%
MORBI	43.44%	6.41%	10.00%	12.45%	72.30%	65.07%	0.00%	65.07%
TALOD	51.61%	10.00%	2.69%	13.28%	77.57%	69.81%	0.00%	69.81%
PATAN	29.11%	9.35%	10.00%	20.00%	68.46%	61.62%	0.47%	62.09%
DEESA-1	1.77%	0.72%	9.52%	9.97%	21.98%	19.78%	0.12%	19.90%
RADHANPUR	9.74%	0.00%	8.88%	11.02%	29.63%	26.67%	0.10%	26.77%
BAVLA	27.44%	7.76%	1.39%	18.52%	55.11%	49.60%	0.97%	50.57%

Note: Percentage to the specific core indicator is conceptualized as:

1. If an indicator satisfies the benchmark for a type of division then 100% marks are assigned, else proportionate mark as per equation given in the table below and finally, zero mark are assigned if value exceeds maximum limit as given below:

Type of division	***AT&C losses*** *(In percentage)*		***Unit loss per consumer*** *(In Units)*		***O&M expenses per unit*** *(In paisa)*	
	Max	Equation	Max	Equation	Max	Equation
INDUSTRIAL	10%	$y_i = -20x + 2$	1000	$y_i = -0.13x + 125$	3	$y_i = -0.5x + 1.5$
URBAN	30%	$y_u = -6.67x + 2$	1000	$y_u = -0.13x + 125$	6	$y_u = -0.25x + 1.5$
RURAL	40%	$y_r = -5x + 2$	3000	$y_r = -0.04x + 120$	15	$y_r = -0.1x + 1.5$

2. If an indicator satisfies the benchmark for ***DTR loss measurement*** for a type of division then 100% marks are assigned, else proportionate for urban and industrial type divisions while for rural divisions percentage are evaluated from equation as $y_r = 1.33x$.

3. Variance analysis is also performed for improvement over last year (reduction in AT & C losses) and same importance is assigned to the partial indicator.

Source: Data used for computing ranks from MIS, AT&C, T&D & Trial balance reports of GUVNL & its subsidiary distribution companies for a financial year 08-09.

3.5.5 KPIs FOR SECOND STAGE IMPLEMENTATION

The KPIs which are selected for second stage of implementation are little complex. But they are essential to maintain long term relationship with customers, employees, investor, regulator and stockholders. Besides it, they create foundation for growth of business and financial viability of a company. The KPIs are selected into four

categories viz. Customer service, Safety, Revenue & Collection and Theft Prevention business.

3.5.5.1 CUSTOMER SERVICE

For a power supply company, customer service is of paramount significance. As a result from the responses of the respondents, importance is assigned to it to measure a company's performance on customer service. It can be laid down as customer satisfaction index - 30%, timely resolution of power failure complaints – 25%, timely resolution of billing complaints - 15%, timely resolution of meter complaints – 15% and other consumer complaints – 15%. Performance ranking for the customer services for the selected 23 divisions is shown the TABLE 3.35.

TABLE 3. 35 : RANKING FOR CUSTOMER SERVICE

(In percentage)

Division	Customer Satisfaction Index	Complaints				Total Specific Core Ind.
		Power supply	Billing	Meter	Payment & other	
Weights	30%	25%	15%	15%	15%	100%
ANKLESVER-IND	27.90%	22.50%	14.10%	13.05%	11.55%	89.10%
SURATIND	28.20%	24.50%	13.05%	12.90%	13.50%	92.15%
SURATURBAN	28.20%	18.75%	14.40%	10.80%	13.80%	85.95%
VYARA	26.10%	21.50%	8.10%	7.20%	12.75%	75.65%
NAVSARIRURAL	17.10%	14.50%	10.95%	12.00%	8.25%	62.80%
VAPI IND.	24.90%	22.00%	13.65%	13.05%	14.55%	88.15%
MAHEMDABAD	20.10%	23.25%	11.40%	11.55%	11.25%	77.55%
PETLAD	23.70%	21.50%	12.90%	12.30%	11.85%	82.25%
LALBAUG	24.00%	24.25%	13.65%	10.05%	13.80%	85.75%
DABHOI	15.60%	16.00%	9.90%	9.90%	9.60%	61.00%
GODHRA	23.10%	11.50%	8.70%	8.55%	7.65%	59.50%
AMRELI-1	25.50%	11.75%	12.00%	10.35%	6.90%	66.50%
BOTAD	29.10%	23.75%	13.20%	12.45%	9.90%	88.40%
BHUJ	16.80%	18.75%	11.10%	8.25%	13.80%	68.70%
KHAMBHALIYA	23.70%	17.75%	12.45%	9.75%	12.45%	76.10%
JUNAGADHCITY	24.90%	21.25%	10.50%	12.00%	13.20%	81.85%
RAJKOTCITY-2	27.30%	20.00%	11.55%	10.35%	11.85%	81.05%
MORBI	22.80%	22.75%	9.90%	10.50%	14.55%	80.50%
TALOD	19.50%	19.00%	11.10%	9.60%	9.45%	68.65%
PATAN	17.10%	21.00%	10.35%	10.95%	9.60%	69.00%

DEESA-1	15.30%	19.75%	8.55%	10.35%	9.60%	63.55%
RADHANPUR	18.60%	11.75%	9.00%	10.80%	11.55%	61.70%
BAVLA	26.70%	23.50%	14.10%	13.20%	12.60%	90.10%

Note: Marks in percentage to the specific core indicator are conceptualized as proportionate marks are assigned for different type of ***complaints*** resolved in statutory time limit. ***Customer satisfaction*** is evaluated from equation y = 1.11x where x = max 90% (irrespective of type of division). Customer satisfaction index is derived from GERC report and consumer survey of selected divisions.

Source: Data used from GERC report and other survey of GUVNL & its subsidiary distribution companies for computing ranks

3.5.5.2 SAFETY AND ACCIDENT

Power industry is prone to accidents of various kinds. Some accidents may prove fatal to cause death or permanent disabilities. Hence, safety acquires the priority consideration for an organization. In the responses of the respondents too importance has been attached to safety in the light of measuring performance of safety and accidents (TABLE 3.36). The weight can be assigned as fatal human accident - 50%, non fatal human accidents – 30% and fatal animal accidents - 20%. In additional to it, variance analysis is also performed and 10% concern is assigned to the partial indicator while 90% importance is assigned to the specific core indicator. However, accidents within the department caused to employees are not considered separately for performance ranking because accidents occurring to both the employee and outsiders are accounted at same level of importance.

TABLE 3. 36 : RANKING FOR ACCIDENTS

(In percentage)

Division	Accidents FH	Accidents NFH	Accidents FA	Total Specific Core Ind.	Specific Core Ind.	Partial Ind.	Overall Performance
Weights	50%	30%	20%	100%	90%	10%	100%
ANKLESVER-IND	0.00%	5.00%	20.00%	25.00%	22.50%	0.00%	22.50%
SURATIND	0.00%	30.00%	10.00%	40.00%	36.00%	1.27%	37.27%
SURATURBAN	0.00%	15.00%	0.00%	15.00%	13.50%	2.44%	15.94%
VYARA	0.00%	0.00%	5.00%	5.00%	4.50%	0.00%	4.50%
NAVSARIRURAL	12.50%	0.00%	10.00%	22.50%	20.25%	0.00%	20.25%
VAPI IND.	12.50%	20.00%	20.00%	52.50%	47.25%	3.71%	50.96%
MAHEMDABAD	0.00%	10.00%	20.00%	30.00%	27.00%	2.64%	29.64%
PETLAD	0.00%	20.00%	0.00%	20.00%	18.00%	0.75%	18.75%
LALBAUG	25.00%	25.00%	20.00%	70.00%	63.00%	0.00%	63.00%
DABHOI	50.00%	25.00%	20.00%	95.00%	85.50%	9.38%	94.88%

GODHRA	50.00%	30.00%	20.00%	100.00%	90.00%	8.83%	98.83%
AMRELI-1	0.00%	15.00%	0.00%	15.00%	13.50%	0.60%	14.10%
BOTAD	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BHUJ	0.00%	0.00%	20.00%	20.00%	18.00%	2.96%	20.96%
KHAMBHALIYA	0.00%	0.00%	5.00%	5.00%	4.50%	1.67%	6.17%
JUNAGADHCITY	37.50%	15.00%	5.00%	57.50%	51.75%	4.36%	56.11%
RAJKOTCITY-2	0.00%	30.00%	10.00%	40.00%	36.00%	3.00%	39.00%
MORBI	0.00%	0.00%	10.00%	10.00%	9.00%	0.40%	9.40%
TALOD	37.50%	0.00%	0.00%	37.50%	33.75%	0.00%	33.75%
PATAN	0.00%	15.00%	0.00%	15.00%	13.50%	2.36%	15.86%
DEESA-1	50.00%	20.00%	10.00%	80.00%	72.00%	0.00%	72.00%
RADHANPUR	12.50%	20.00%	5.00%	37.50%	33.75%	0.00%	33.75%
BAVLA	0.00%	5.00%	20.00%	25.00%	22.50%	0.00%	22.50%

Note: Percentage mark to the specific core indicator is conceptualized as:

1. 100% marks are assigned if an indicator satisfies the benchmark else proportionate mark and finally, zero if value exceeded maximum 4 numbers of fatal ***accidents***, 7 numbers of ***non-fatal human accidents*** and 6 numbers of ***fatal animal accidents*** in a year. Equation for proportionate mark are $y_{FH} = -0.25x + 1$, $y_{NFH} = -0.17x + 1.17$ and $y_{FA} = -0.25x + 1.5$ respectively for fatal human, non-fatal human and fatal animal accidents.

2. It is assumed that there is no such relationship between accident and a type of division.

3. Variance analysis is also carried out for improvement over last year (reduction in number of accidents) and same importance is assigned to the partial indicator.

Source: Data used for computing ranks from MIS & GERC reports of GUVNL & its subsidiary distribution companies for the financial year 09-10.

3.5.5.3 REVENUE AND COLLECTION

Revenue and collection is another area that reflects the economic performance of a division since it acquires significance for economic health and stability of a division. Hence, due weight has been assigned to it even in the responses that are given out by the respondents on the questionnaire. According to it, they found like consumers in arrear (defaulting payment) - 25%, disconnection (DC) - 20%, live/running arrears – 25%, PDC arrears – 20% and end to end money flow efficiency– 10%. Moreover, variance analysis is also performed and 10% concern is assigned to the partial indicator while 90% importance is assigned to the specific core indicator. The performance ranking is shown in the TABLE 3.37.

TABLE 3. 37 : RANKING FOR REVENUE & COLLECTION

(In percentage)

Division	Cons. in Arrears	DC	Live Arrears to Assmt	PDC Arrears to Assmt	End to End Money Flow Efficiency	Total Specific Core Ind.	Specific Core Ind.	Partial Ind.	Overall Performance
Weights	25%	20%	25%	20%	10%	100%	90%	10%	100%
ANKLESVER-IND	20.81%	20.00%	12.05%	0.00%	10.00%	62.86%	56.58%	1.40%	57.98%
SURATIND	20.79%	7.01%	3.35%	10.92%	10.00%	52.06%	46.86%	1.18%	48.04%
SURATURBAN	6.03%	8.19%	24.26%	11.58%	10.00%	60.05%	54.05%	2.77%	56.82%
VYARA	13.33%	1.51%	25.00%	0.00%	5.10%	44.94%	40.44%	2.34%	42.78%
NAVSARIRURAL	25.00%	18.89%	3.40%	6.29%	10.00%	63.57%	57.21%	1.39%	58.60%
VAPI IND.	5.22%	2.23%	22.05%	20.00%	10.00%	59.50%	53.55%	0.24%	53.80%
MAHEMDABAD	0.92%	12.64%	9.92%	20.00%	6.39%	49.86%	44.88%	0.39%	45.27%
PETLAD	0.98%	6.41%	0.00%	12.59%	8.52%	28.50%	25.65%	0.25%	25.90%
LALBAUG	23.40%	20.00%	25.00%	20.00%	10.00%	98.40%	88.56%	1.88%	90.45%
DABHOI	9.62%	9.09%	0.00%	20.00%	5.80%	44.52%	40.06%	0.47%	40.53%
GODHRA	0.00%	0.00%	25.00%	15.12%	10.00%	50.12%	45.10%	1.49%	46.60%
AMRELI-1	23.68%	3.48%	16.57%	10.77%	4.23%	58.73%	52.86%	0.57%	53.43%
BOTAD	0.00%	0.00%	0.76%	0.00%	2.56%	3.31%	2.98%	0.03%	3.01%
BHUJ	16.07%	0.00%	0.00%	11.77%	3.88%	31.71%	28.54%	0.62%	29.16%
KHAMBHALIYA	0.00%	0.00%	0.00%	0.00%	3.62%	3.62%	3.25%	0.34%	3.59%
JUNAGADHCITY	7.81%	0.00%	10.77%	0.00%	10.00%	28.58%	25.72%	0.19%	25.91%
RAJKOTCITY-2	19.67%	7.78%	18.89%	20.00%	10.00%	76.34%	68.71%	1.87%	70.58%
MORBI	0.00%	0.00%	25.00%	20.00%	10.00%	55.00%	49.50%	1.68%	51.18%
TALOD	25.00%	20.00%	25.00%	20.00%	3.63%	93.63%	84.27%	1.22%	85.48%
PATAN	25.00%	18.79%	20.38%	20.00%	2.26%	86.43%	77.78%	0.98%	78.76%
DEESA-1	3.78%	11.05%	0.00%	20.00%	0.87%	35.70%	32.13%	0.70%	32.83%
RADHANPUR	1.79%	9.74%	10.31%	9.99%	0.00%	31.83%	28.65%	0.60%	29.25%
BAVLA	25.00%	10.78%	0.30%	0.00%	10.00%	46.08%	41.47%	0.42%	41.89%

Note: Percentage to the specific core indicator is conceptualized as:

1. If an indicator satisfies the benchmark for ***consumers in arrears*** for a type of division then 100% marks are assigned else proportionate mark as per equation given below and finally, zero if value exceeded the maximum allowable limit as per below table.

Type of Division	Benchmark	Maximum	Equation for marks
INDUSTRIAL	3.00%	8.00%	$y_i = -20x + 1.6$
URBAN	4.00%	9.00%	$y_u = -20x + 1.8$
RURAL	5.00%	10.00%	$y_r = -20x + 2$

2. If an indicator satisfies the benchmark for ***disconnection*** then 100% marks are assigned else proportionate mark and finally, zero is assigned if value exceeded minimum limit as per below table.

Type of Division	Benchmark	Minimum	Equation for marks
ANY	100.00%	25.00%	$y_{DC} = 1.33x - 0.33$

3. If an indicator satisfies the benchmark for ***live arrears*** for a type of division then 100% marks else proportionate mark as per equation and zero, if it exceeded maximum limit.

Type of Division	Benchmark	Maximum	Equation for marks
INDUSTRIAL	1.00%	5.00%	$y_i = -25x + 1.25$
URBAN	1.00%	5.00%	$y_u = -25x + 1.25$
RURAL	5.00%	10.00%	$y_r = -20x + 2$

4. If an indicator satisfies the benchmark for ***PDC arrears*** then 100% marks else proportionate mark and finally, zero mark if it exceeded maximum limit as per below table.

Type of Division	Benchmark	Maximum	Equation for marks
ANY	5%	10%	$y = -20x + 2$

5. If indicator satisfies the benchmark for ***end to end efficiency*** then 100% else proportionate mark and finally, zero if value exceeded minimum value as per below table.

Type of Division	Benchmark	Minimum	Equation
ANY	92%	25%	$y = 1.49x - 0.37$

6. Variance analysis is also performed for improvement over last year (reduction in arrears) and same importance is assigned to the partial indicator.

Source: Data used for computing ranks from revenue MIS & Trial balance report of GUVNL & its subsidiary distribution companies for the financial year 08-09.

3.5.5.4 THEFT PREVENTION BUSINESS

Theft prevention acquires high priority in all times and in all areas. Theft has direct bearing on possible losses that a power distribution company may have to suffer. Hence, its prevention calls for utmost attention. In this light, the respondents have expressed concern in their responses to the questionnaire. The weight attached by them accordingly would be as MMB installation - 30% Sealing - 25%; and Connection checking – 45%. Because Installation checking is a significant parameter for loss reduction, it is assigned 45% weightage. Moreover, the variance analysis is performed and importance of 10% is assigned to increase in MMB installation, increase in sealing and increase in connection checking. The ranking of theft prevention business is given in TABLE 3.38.

TABLE 3. 38 : RANKING FOR THEFT PREVENTION BUSINESS

(In percentage)

Division	MMB Installation	Sealing	Conn. Checking	Total Specific Core Ind.	Specific Core Ind.	Partial Ind.	Overall Performance
Weights	30%	25%	45%	100%	90%	10%	100%
ANKLESVER-IND	2.15%	13.94%	37.43%	53.53%	48.18%	1.11%	49.29%
SURATIND	7.89%	17.91%	11.80%	37.60%	33.84%	8.60%	42.44%
SURATURBAN	30.00%	14.13%	22.07%	66.21%	59.59%	5.26%	64.84%
VYARA	20.71%	23.79%	27.71%	72.21%	64.99%	10.00%	74.99%
NAVSARIRURAL	17.00%	0.00%	9.53%	26.53%	23.88%	8.16%	32.04%
VAPI IND.	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MAHEMDABAD	1.19%	2.05%	2.06%	5.30%	4.77%	2.37%	7.14%
PETLAD	4.19%	5.18%	5.85%	15.22%	13.70%	3.43%	17.13%
LALBAUG	0.00%	14.70%	0.00%	14.70%	13.23%	0.44%	13.67%
DABHOI	0.04%	7.16%	4.86%	12.06%	10.85%	0.00%	10.85%
GODHRA	8.20%	9.28%	10.88%	28.36%	25.53%	5.73%	31.26%
AMRELI-1	7.43%	12.56%	45.00%	64.99%	58.49%	4.27%	62.76%
BOTAD	0.00%	1.41%	0.00%	1.41%	1.27%	0.00%	1.27%
BHUJ	5.64%	7.62%	8.31%	21.57%	19.41%	0.00%	19.41%
KHAMBHALIYA	4.84%	18.99%	15.54%	39.37%	35.43%	0.94%	36.38%
JUNAGADHCITY	4.85%	0.00%	0.86%	5.71%	5.14%	0.13%	5.27%
RAJKOTCITY-2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MORBI	2.27%	8.49%	7.01%	17.77%	15.99%	3.25%	19.24%
TALOD	13.57%	10.91%	15.00%	39.48%	35.53%	0.00%	35.53%
PATAN	0.00%	18.53%	0.00%	18.53%	16.68%	0.35%	17.03%
DEESA-1	11.49%	2.97%	8.46%	22.92%	20.62%	0.00%	20.62%
RADHANPUR	4.91%	5.53%	6.06%	16.49%	14.84%	0.00%	14.84%
BAVLA	16.45%	17.06%	20.77%	54.29%	48.86%	0.00%	48.86%

Note:

Percentage mark to the specific core indicator is conceptualized as:

1. If an indicator satisfies the benchmark for ***MMB installation & sealing*** then 100% marks, else proportionate mark as per equation and finally, zero mark is assigned if value exceeded minimum limit.

Type of Division	Benchmark	Minimum	Equation
ANY	20%	5%	y = 6.67x - 0.33

2. If an indicator satisfies the benchmark for ***consumer checking*** for a type of division then 100% else proportionate mark as per equation and zero mark if value exceeded minimum allowable value.

Type of Division	Benchmark	Minimum	Equation
IND/URBAN	33%	5%	y = 3.57x - 0.18
RURAL	25%	5%	y = 5x + -0.25

3. Variance analysis is also carried out for improvement over last year (increase in installation checking) and same importance is specified for the partial indicator.

Source: Data called for computing ranks from MIS report of GUVNL & its subsidiary distribution companies for the financial year 09-10 for computing ranks.

3.5.6 KPI FOR THIRD STAGE IMPLEMENTATION

KPIs which are selected for the third stage of implementation are complex in nature. They can be measured quarterly or at the end of the financial year. However, it becomes a prerequisite for financial profitability and smooth operation of power distribution business over longer period. Hence, for third stage of implementation, the KPIs are selected into four categories viz. Finance & Profitability, Human Resources, Project Development/Investment, Training and Legal. They are discussed as below:

3.5.6.1 FINANCE AND PROFITABILITY

Since finance and profitability comprise high priority concerns for any business. Importance is assigned to it from the responses of the respondents to the questionnaire. The weight is assigned to profit margin - 75% and operating exp – 25%. Additionally, variance analysis is also carried out and importance of 90% is recorded to the specific core indicators while 10% is assigned to the partial indicators. Net profit margin and net profit per consumer are related fully with profit margin. Besides it, O & M expense includes R&M expense. Hence, only profit margin and O & M expenditure are considered in performance ranking criteria. The ranking of the selected divisions is shown in the TABLE 3.39.

TABLE 3. 39 : RANKING FOR PROFIT AND LOSS ACCOUNT

(In percentage)

Division	Profit Margin	Operating Exp. to Total exp.	Total Specific Core Ind.	Specific Core Ind.	Partial Ind.	Overall Performance
Weights	**75%**	**25%**	**100%**	**90%**	**10%**	**100%**
ANKLESVER-IND	55.59%	20.31%	75.91%	68.32%	0.93%	69.24%
SURATIND	51.80%	25.00%	76.80%	69.12%	0.29%	69.41%
SURATURBAN	67.16%	12.10%	79.26%	71.33%	1.31%	72.64%

VYARA	0.00%	15.14%	15.14%	13.63%	0.79%	14.42%
NAVSARIRURAL	13.58%	4.40%	17.98%	16.18%	0.00%	16.18%
VAPI IND.	45.24%	23.61%	68.84%	61.96%	0.17%	62.13%
MAHEMDABAD	0.00%	9.43%	9.43%	8.49%	0.43%	8.92%
PETLAD	0.00%	0.00%	0.00%	0.00%	0.09%	0.09%
LALBAUG	75.00%	0.00%	75.00%	67.50%	0.21%	67.71%
DABHOI	0.00%	0.00%	0.00%	0.00%	0.31%	0.31%
GODHRA	75.00%	0.00%	75.00%	67.50%	0.00%	67.50%
AMRELI-1	0.00%	6.89%	6.89%	6.20%	0.00%	6.20%
BOTAD	0.00%	17.97%	17.97%	16.17%	0.00%	16.17%
BHUJ	0.00%	23.87%	23.87%	21.48%	0.24%	21.72%
KHAMBHALIYA	0.00%	5.24%	5.24%	4.71%	0.24%	4.95%
JUNAGADHCITY	0.50%	0.00%	0.50%	0.45%	0.06%	0.51%
RAJKOTCITY-2	75.00%	0.00%	75.00%	67.50%	4.46%	71.96%
MORBI	75.00%	24.38%	99.38%	89.44%	0.00%	89.44%
TALOD	0.00%	3.62%	3.62%	3.25%	0.02%	3.28%
PATAN	0.00%	17.27%	17.27%	15.54%	0.43%	15.97%
DEESA-1	0.00%	24.72%	24.72%	22.25%	0.39%	22.64%
RADHANPUR	0.00%	23.29%	23.29%	20.96%	0.00%	20.96%
BAVLA	69.49%	7.39%	76.88%	69.20%	7.50%	76.70%

Note: Percentage to the specific core indicator is conceptualized as:

1. If an indicator satisfies the benchmark for ***profit margin*** for a type of division then 100% marks are assigned else proportionate mark as per equation and finally, zero if value found below minimum value.

Type of Division	Benchmark	Minimum	Equation
IND	40.00%	20.00%	$y_i = 5x - 1$
URBAN	20.00%	6.00%	$y_u = 7.14x - 0.43$
RURAL	6.00%	-20.00%	$y_r = 3.85x + 0.77$

2. If an indicator satisfies the benchmark for ***operating expenditure*** for a type of division then 100% marks are assigned else proportionate mark as per equation and finally, zero mark if it exceeded maximum limit.

Type of Division	Benchmark	Maximum	Equation
IND/URBAN	2.00%	6.00%	$y = -25x + 1.5$
RURAL	4.00%	12.00%	$y_r = -12.5x + 1.5$

Source: Data used for computing ranks from Trial balance of GUVNL & its subsidiary distribution companies for the financial year 08-09.

3.5.6.2 HUMAN RESOURCES

Out of all key elements as stated earlier employee drives growth of a company. The ratio of actually posted employees to those planned and sanctioned, employee's satisfaction and employee cost per employee are considered for performance ranking. These matters are controllable at divisional level. The TABLE 3.40 shows ranking of human resources for the 23 divisions, selected for the purpose of performance evaluation.

TABLE 3. 40 : RANKING FOR HUMAN RESOURCES

(In percentage)

Division	Total Employee Actual / Sanctioned	Employee cost per employee	Employee Satisfaction Index	Overall Performance
Weights	**35%**	**25%**	**40%**	**100%**
ANKLESVER-IND	26.60%	25.00%	37.20%	88.80%
SURATIND	23.15%	25.00%	37.60%	85.75%
SURATURBAN	12.50%	25.00%	37.60%	75.10%
VYARA	22.51%	24.11%	34.80%	81.42%
NAVSARIRURAL	21.15%	24.56%	22.80%	68.50%
VAPI IND.	23.79%	24.72%	33.20%	81.71%
MAHEMDABAD	15.69%	24.47%	26.80%	66.96%
PETLAD	21.26%	24.64%	31.60%	77.50%
LALBAUG	18.31%	24.75%	32.00%	75.06%
DABHOI	22.22%	24.42%	20.80%	67.44%
GODHRA	26.54%	24.65%	30.80%	81.99%
AMRELI-1	28.55%	23.64%	34.00%	86.19%
BOTAD	31.13%	24.45%	38.80%	94.38%
BHUJ	26.90%	24.25%	22.40%	73.55%
KHAMBHALIYA	29.15%	23.74%	31.60%	84.49%
JUNAGADHCITY	22.80%	24.53%	33.20%	80.53%
RAJKOTCITY-2	20.63%	24.92%	36.40%	81.95%
MORBI	30.41%	24.50%	30.40%	85.31%
TALOD	19.84%	24.39%	26.00%	70.22%
PATAN	22.64%	24.37%	22.80%	69.81%
DEESA-1	27.19%	23.91%	20.40%	71.49%
RADHANPUR	33.16%	23.25%	24.80%	81.21%
BAVLA	14.20%	24.81%	35.60%	74.60%

Note:

1. Percentage to the specific core indicator is conceptualized as if an indicator satisfies the benchmark for ***employee cost per employee*** then 100% marks are assigned else proportionate mark as per equation, and finally, zero mark at maximum value as per below table. It is assumed that employee cost is not having correlation with a type of division.

Type of Division	Benchmark	Maximum	Equation
ANY	1.25	3	y = -0.57x + 1.71

Source: Data used for computing ranks from trial Balance, ERP-HR module reports of GUVNL & its subsidiary distribution companies for the financial year 08-09.

3.5.6.3 PROJECT DEVELOPMENT

Project development is another crucial area to consider in the light of performance evaluation because growth of company's overall business relies solely on it. It acquires high priority for a company's management, the government and public too. Weights assigned in the responses on the questionnaire too reflect priority for the project development and investments. It remains as 10% to zupadpatti, petapara, kutir jyoti and KHUSHY scheme while 20% for RGGVY, NIS and ND scheme. The ranking of the selected divisions in the matter is shown in the TABLE 3.41.

TABLE 3. 41 : RANKING FOR PROJECT DEVELOPMENT

(In percentage)

Division	Specific Core Indicator	Partial Indicator	Overall Performance
Weights	**90%**	**10%**	**100%**
ANKLESVER-IND	84.37%	0.30%	84.67%
SURATIND	86.19%	0.00%	86.19%
SURATURBAN	86.50%	0.10%	86.60%
VYARA	71.23%	0.80%	72.03%
NAVSARIRURAL	76.11%	1.00%	77.11%
VAPI IND.	82.31%	0.00%	82.31%
MAHEMDABAD	77.34%	0.40%	77.74%
PETLAD	80.94%	0.40%	81.34%
LALBAUG	84.73%	0.20%	84.93%
DABHOI	75.64%	0.00%	75.64%
GODHRA	80.43%	0.80%	81.23%
AMRELI-1	78.74%	0.00%	78.74%
BOTAD	77.87%	1.00%	78.87%

BHUJ	72.19%	0.60%	72.79%
KHAMBHALIYA	80.98%	0.30%	81.28%
JUNAGADHCITY	83.20%	0.50%	83.70%
RAJKOTCITY-2	80.80%	0.00%	80.80%
MORBI	82.34%	0.50%	82.84%
TALOD	84.31%	0.30%	84.61%
PATAN	74.07%	0.00%	74.07%
DEESA-1	78.97%	0.20%	79.17%
RADHANPUR	76.11%	0.90%	77.01%
BAVLA	77.33%	0.80%	78.13%

Note: Percentage marks to the specific core indicator is conceptualized as: if target is achieved in a financial year then 100% marks are assigned else proportionate marks to different ***schemes***.

Source: Data used for computing ranks from the MIS report of GUVNL & its subsidiary distribution companies for the financial year 09-10.

3.5.6.4 TRAINING

As pointed out earlier, training has to be considered essential in the interest of enhancing efficiency among the employees, updating their knowledge and skill bases and by it ensuring consistent performance of a company to expected quality level. The responses collected from the respondents on the questionnaire too agree on its significance. The percentage accorded for measuring training go as training imparted as per plan-40%, training to non-tech employee – 20%, training to line staff- 20 and training to engineers – 20% out of total 100% of the KPI training. The performance ranking of the selected divisions is specified in the TABLE 3.42.

TABLE 3. 42 : RANKING FOR TRAINING

(In percentage)

Division	Training planned v/s actual	Training to non-tech employee	Training to line staff	Training to engineers	Overall Performance
Weights	**40%**	**20%**	**20%**	**20%**	**100%**
ANKLESVER-IND	40%	20%	20%	0%	80%
SURATIND	40%	20%	20%	20%	60%
SURATURBAN	40%	20%	20%	20%	100%
VYARA	40%	20%	20%	0%	80%
NAVSARIRURAL	40%	0%	20%	20%	80%
VAPI IND.	40%	0%	20%	0%	60%
MAHEMDABAD	40%	20%	20%	0%	80%

PETLAD	40%	20%	20%	20%	100%
LALBAUG	40%	20%	20%	20%	60%
DABHOI	40%	0%	20%	20%	80%
GODHRA	0%	20%	20%	0%	40%
AMRELI-1	40%	20%	20%	20%	100%
BOTAD	40%	0%	20%	20%	80%
BHUJ	40%	0%	20%	20%	80%
KHAMBHALIYA	0%	0%	20%	20%	40%
JUNAGADHCITY	40%	20%	20%	0%	80%
RAJKOTCITY-2	40%	20%	20%	20%	100%
MORBI	40%	0%	20%	20%	80%
TALOD	40%	0%	20%	20%	80%
PATAN	40%	20%	20%	20%	100%
DEESA-1	40%	20%	20%	0%	80%
RADHANPUR	40%	20%	20%	0%	80%
BAVLA	40%	20%	20%	0%	80%

Source: Data computed to assign percentage from GETRI and the GUVNL and its subsidiary distribution companies for the financial year 2008-09.

3.5.6.5 LEGAL

In the present business scenario, when complexities prevail in terms of legal implications of what one does, his performance has to be considered in terms of legal awareness and legal validity. In this light, significance is assigned to measure legal performance. It may be considered as court cases of employees – 30%, consumer complaints – 20%, consumer legal cases – 30 and regulatory compliance – 20% as it reveals from responses of the respondents on the questionnaire.

TABLE 3. 43 : RANKING FOR LEGAL & REGULATORY

(In percentage)

Division	Cases of employee	Consumer legal cases	Regulatory compliance	MOP, Govt., Consumer grievances.	Overall Performance
Weights	**30%**	**30%**	**20%**	**20%**	**100%**
ANKLESVER-IND	30%	30%	20%	0%	80%
SURATIND	30%	30%	20%	20%	100%
SURATURBAN	30%	0%	20%	20%	70%
VYARA	30%	0%	20%	20%	70%
NAVSARIRURAL	30%	30%	20%	20%	100%
VAPI IND.	30%	30%	20%	20%	100%

MAHEMDABAD	30%	0%	20%	20%	70%
PETLAD	0%	30%	20%	20%	70%
LALBAUG	30%	30%	20%	20%	100%
DABHOI	30%	0%	20%	20%	70%
GODHRA	0%	0%	20%	20%	40%
AMRELI-1	0%	30%	20%	20%	70%
BOTAD	0%	30%	20%	20%	70%
BHUJ	30%	0%	20%	0%	50%
KHAMBHALIYA	30%	0%	20%	0%	50%
JUNAGADHCITY	30%	0%	20%	20%	70%
RAJKOTCITY-2	30%	30%	20%	20%	100%
MORBI	0%	30%	20%	20%	70%
TALOD	0%	30%	20%	20%	70%
PATAN	30%	30%	20%	20%	100%
DEESA-1	30%	0%	20%	0%	50%
RADHANPUR	0%	30%	20%	20%	70%
BAVLA	30%	30%	20%	0%	80%

Source: Data computed from reports of Legal, HR and Revenue department of the GUVNL and its subsidiary distribution companies for the financial year 2008-09.

3.6 PREPRATION OF POWER DISTRIBUTION BUSINESS SCORECARD

To work out performance measurement of power distribution companies in Gujarat, a model has been developed. The model is worked out after collecting & analyzing the required information from various reports and opinions obtained from different executives & authorities. This developed Model is called Power Distribution Business Scorecard. It can be applied to evaluate divisional performance of a power distribution company. This model is shown in the TABLE 3.44.

In view of it, Power Distribution business Scorecard (PDS) is created through the structured process to evaluate divisional performance that involves seven steps as indicated below:

i. Different key areas in power distribution business are identified in line with the Balance Scorecard. They are customer satisfaction, financial performance, internal business and learning and growth perspectives.

ii. Various KPIs and elements in each perspective area are indentified for different type of divisions.

iii. Value of each element is analyzed and developed benchmark (Best in the class) for each element. Further, values of each element are analyzed in respect to benchmark and allocated proportionate score in percentage to each element.

iv. The responses are collected from the respondents on the questionnaire to know importance of each element. In line with it, weight is assigned to each element of the KPI and weighted average of each element is calculated to know the specific core index of each KPI.

v. Partial indicator reflects the variation of performance in comparison to last year. In view of it, a partial index is calculated for each KPI by comparing divisional performance in respect to last year.

vi. The overall performance indicator method is used to prepare overall score of each KPI. It is calculated through weighted average of core indices and weighted average of partial indices.

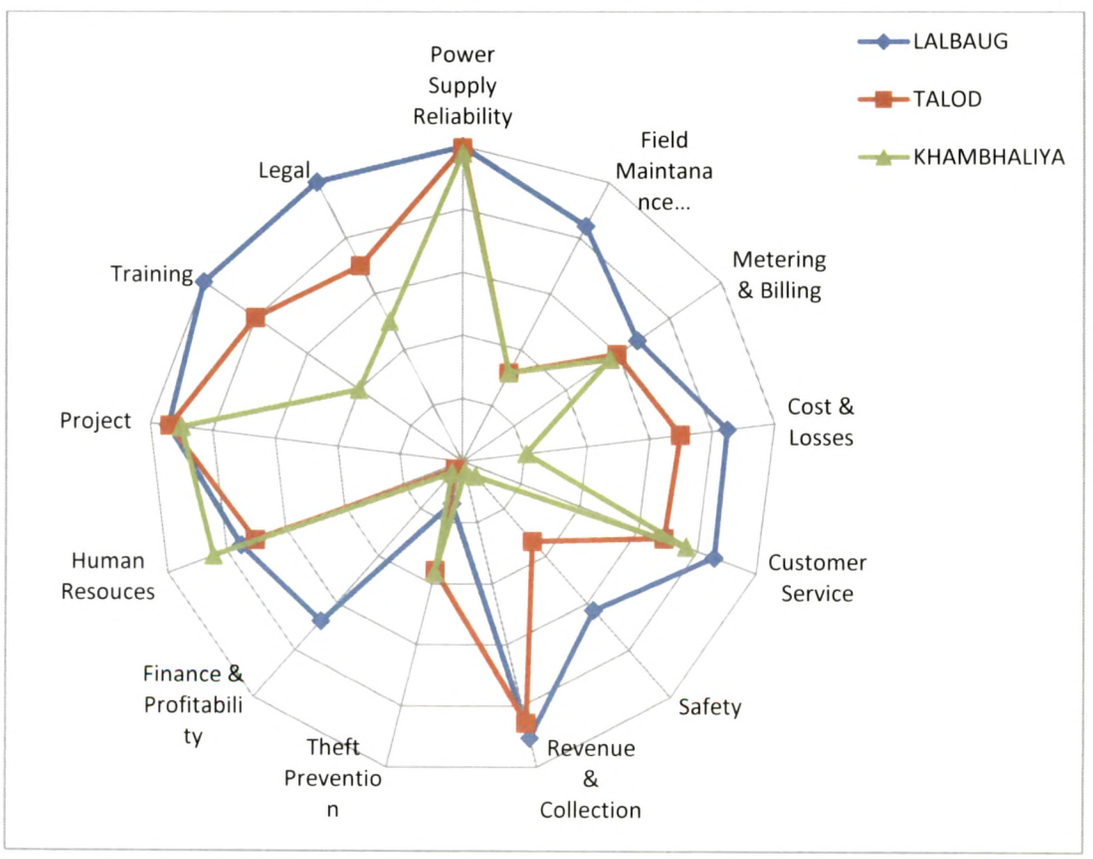
vii. Significance of each KPI is revealed from responses of the respondents on the questionnaire. It is presented in the TABLE 3.44. Weight is assigned to each KPI in line with the significance to know the overall score of a division. Finally, scorecard is prepared through which the performance of a division can be understood.

The Power Distribution business Scorecard model is applied to evaluate performance of the selected 23 divisions. The prepared scorecard is displayed in the TABLE 3.45. The radar chart of critical divisions is shown in the FIGURE 3.2. It evaluates performance of the Lalbaug division as best performer, the Talod division as an average performer and the Khambhaliya division as worst performer.

TABLE 3. 44 : POWER DISTRIBUTION BUSINESS SCORECARD (PDS – MODEL)

Key Areas	KPI	Importance to KPI	Importance to Key area
		%	%
Customer Satisfaction	Power supply reliability	10	28
	Field maintenance service	9	
	Customer service	9	
Financial Performance	Cost and Losses	20	36
	Revenue and Collection	8	
	Finance and Profitability	8	
Internal business	Metering and Billing	8	21
	Safety and accidents	5	
	Theft Prevention Business	5	
	Legal	3	
Learning and Growth	Human Resources	4	15
	Project Development / Investment	8	
	Training	3	
Total		100	100

FIGURE 3 - 2 : RADAR CHART OF CRITICAL DIVISIONS



BI.E 3. 45 : SCORECARD OF SELECT DIVISION - RANKWISE

Division		Customer Satisfaction			Financial Performance			Internal business				Learning and Growth			Overall
KPI	Type of Division	Power Supply Reliability	Fault Maintenance Service	Consumer Satisfaction	Cost & Losses	Revenue & Collection	Finance & Profitability	Metering & Billing Performance	Safety & Accidents	Profit / Transformation Business	Statutory Regulatory	Human Resources	Power Development & Investment	Income	Overall performance of Division
Weights		10	[illegible]	[illegible]	30	8	[illegible]	8	5	3	3	[illegible]	3	[illegible]	100
UOM		%	%	%	%	%	%	%	%	%	%	%	%	%	%
B.UG	URBAN	9.99%	7.59%	7.72%	16.97%	7.24%	3.42%	5.40%	3.15%	3.68%	3.00%	3.00%	7.[illegible]%	[illegible].00%	[illegible].58%
KLESHWAR	IND	9.90%	3.36%	8.02%	18.43%	4.64%	5.54%	4.70%	1.13%	2.46%	2.40%	3.55%	7.50%	2.40%	74.03%
RATIND	IND	9.98%	2.65%	8.29%	16.36%	3.84%	5.55%	3.60%	1.86%	2.12%	3.00%	3.43%	7.66%	3.00%	71.37%
RATURBAN	URBAN	9.99%	3.09%	7.74%	14.57%	4.55%	5.81%	4.81%	0.80%	3.24%	2.10%	3.00%	7.69%	3.00%	70.38%
KOTCITY2	URBAN	9.97%	5.39%	7.29%	12.68%	5.65%	5.76%	4.36%	1.95%	0.00%	3.00%	3.28%	7.18%	3.00%	59.50%
VLA	MIX	9.92%	5.80%	8.11%	10.11%	3.35%	6.14%	5.76%	0.00%	2.44%	2.40%	2.98%	6.87%	2.40%	66.29%
VSARIRURAL	RURAL	9.95%	6.70%	5.65%	14.78%	4.69%	1.29%	5.32%	1.01%	1.60%	3.00%	2.74%	6.77%	2.40%	65.91%
RBI	RURAL	9.87%	2.22%	7.25%	13.01%	4.0[illegible]%	7.16%	4.68%	0.47%	0.9[illegible]%	2.10%	3.41%	7.32%	2.40%	64.95%
TAN	MIX	9.98%	4.41%	6.21%	12.42%	6.30%	1.28%	5.61%	0.79%	0.8[illegible]%	3.00%	2.79%	6.58%	3.00%	63.22%
LOD	RURAL	9.95%	2.85%	6.18%	13.96%	6.84%	0.26%	4.77%	1.69%	1.78%	2.10%	2.81%	7.49%	2.40%	63.07%
HEMDABAD	RURAL	9.94%	4.41%	6.98%	11.06%	3.62%	0.71%	5.39%	1.48%	0.36%	2.10%	2.68%	6.87%	2.40%	58.0[illegible]%
DHRA	MIX	9.89%	3.52%	5.36%	6.05%	3.73%	5.40%	4.55%	4.94%	1.56%	1.20%	3.28%	7.15%	1.20%	57.83%
PIIND	IND	9.59%	1.16%	7.93%	6.01%	4.30%	4.37%	4.60%	2.55%	0.00%	3.00%	3.27%	7.32%	1.80%	56.91%
NAGADHCITY	URBAN	9.94%	4.98%	7.37%	8.00%	2.07%	0.04%	4.51%	2.81%	0.26%	2.10%	3.22%	7.40%	2.40%	55.11%
RELI1	RURAL	9.91%	4.12%	5.99%	5.33%	4.27%	0.50%	5.18%	0.71%	3.14%	2.10%	3.45%	7.00%	3.00%	54.68%
TLAD	MIX	9.94%	5.81%	7.40%	7.63%	2.07%	0.01%	4.16%	0.94%	0.86%	2.10%	3.10%	7.19%	3.00%	54.21%
ARA	RURAL	9.95%	1.60%	6.81%	5.04%	3.42%	1.15%	5.92%	0.23%	3.75%	2.10%	3.26%	6.33%	2.40%	51.95%
BHOI	RURAL	9.93%	4.27%	5.49%	4.52%	3.24%	0.02%	3.89%	4.74%	0.54%	2.10%	2.70%	6.72%	2.40%	50.57%
ESA1	RURAL	9.88%	1.40%	5.72%	3.98%	2.63%	1.81%	5.61%	3.60%	1.03%	1.50%	2.86%	7.02%	2.40%	49.14%
DHANPUR	RURAL	9.90%	2.64%	5.55%	5.35%	2.34%	1.68%	4.11%	1.69%	0.74%	2.10%	3.25%	6.77%	2.40%	48.52%
UJ	RURAL	9.83%	2.86%	6.18%	4.36%	2.33%	1.74%	4.62%	1.05%	0.97%	1.50%	2.94%	6.42%	2.40%	47.20%
TAD	RURAL	9.94%	0.75%	7.96%	5.24%	0.24%	1.29%	4.79%	0.00%	0.06%	2.10%	3.78%	6.92%	2.40%	45.46%
AMBHALIYA	RURAL	9.76%	2.85%	6.85%	4.08%	0.29%	0.40%	4.55%	0.31%	1.82%	1.50%	3.38%	7.20%	1.20%	44.18%

3.7 CONCLUSION

The proposed KPIs can be an important tool to measure and monitor overall performance of a division. The reason is that it allows a company to track its progress of improvement and also serves as signal for areas in which services are deteriorating and that area is in need of extra attention. Besides, it is helpful to a distribution company to set its target for improvement within a given year or over the course of improvement program.

The Power Distribution Business Scorecard (PDS) is a proposed model that can be used for evaluation of divisional performance. It enables power distribution companies to clarify their vision, mission and strategy and also to translate them into proper action. It demands to manage more effectively and efficiently key aspects like customer satisfaction, financial performance, internal business and learning and growth. It is an overall indicator that points more towards monitoring the lead indicators rather than the lag indicators. If this model is implemented and scorecard is prepared for each division of all DISCOMs in the Gujarat, it shall help in measuring strategy and performance of distribution companies which communicate and educate a large number of stake holders about strategy and future goals.

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