

BENCHMARKING AS A TOOL FOR PROCESS IMPROVEMENT

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ABSTRACT

One of the main problems encountered by managers of power transportation and distribution companies is to reconcile the requirements of regulatory entities and those of the shareholders. On the one hand, regulatory entities put pressure on companies to achieve quality standards, and on the other hand, shareholders demand stable or increased profits.

Over the past years, company management has noted that a way to achieve the equilibrium between the requirements of both parties is to improve internal company processes, focusing on the gaps between the best performance companies in the industry and each company.

One of the main difficulties posed by this improvement is to hold ordered and processed information to convey current company operation in comparison to other firms. To select similar companies that operate in like regions is quite difficult, and even if this is achieved, the comparison of companies is difficult due to a disparity of criteria for definition of parameters and calculation modes. This gives room to incorrect conclusions.

Benchmarking is a very effective tool currently available to obtain this information. Benchmarking is a process that consists in gathering information from the Customer Service and the Subtransmission & Distribution Departments, which is agreed by consensus, and then assessed, processed and furnished as an indicator.

At present, about 400 ratios or indicators related to investments, O&M costs, management costs, call centre costs, quality, reliability, losses, etc. are available.

The performance of each company is qualified through balanced scorecards in order to assess and compare performance taking into account the external conditions in which the service is provided.

The best industry practices are identified through the analysis of practices made by the Best Performers (First Quartile companies) that are not carried out by the other companies.

Summarizing, companies may nowadays hold Benchmarking information necessary to design and implement any process improvement project.

INTRODUCTION

Benchmarking is a process that consists in assessing and comparing the performance of a sample of companies to identify their strengths and weaknesses in the search of the best practices in the industry.

It also allows comparing the performance of a company through the monitoring of the evolution of efficiency ratios within a certain period of time. Thus, by knowing this evolution, a company can plan improvements and set goals to achieve within a certain period of time.

Benchmarking methodology implicitly carries global comparison to obtain estimations or trends of what happens in other companies, knowing that each company carries a series of defining particular characteristics (dimensions, services rendered, history, expansion needs, regulatory aspects, topography where service is rendered, etc.).

Figure 1 shows the steps to follow in Benchmarking analysis, and the subsequent performance improvement process oriented towards producing improvements in the participating companies and in their internal processes.

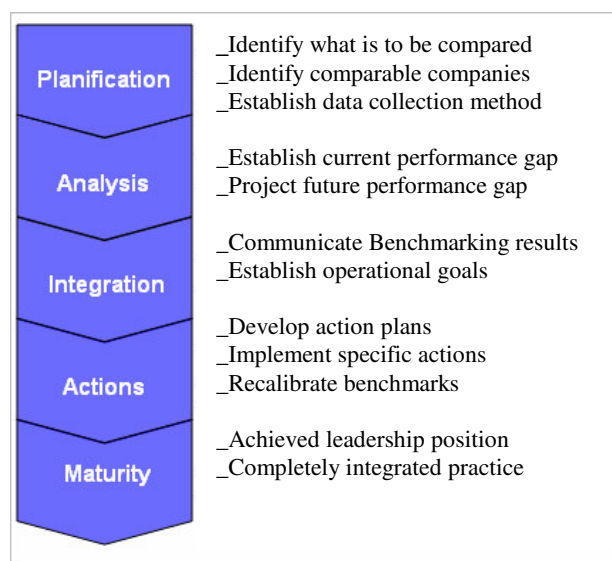


Figure 1: Steps of the Benchmarking process

METHODOLOGY

The Benchmarking program for energy distribution companies carried out in South America consists in two parts: One for the Customer Service (CS) area and another one for Subtransmission and Distribution (S&D) technical areas.

The baseline information used in the program is obtained through agreed questionnaires answered by the participating companies. The information in the questionnaires is encrypted to ensure non-disclosure, and it is then processed and presented as ratios, and process and task description

tables. This processed information is used to assess each company's performance and to identify the best practices applied in the industry.

Each company's performance in the CS as well as in the S&D area is assessed by the use of a Balance Scorecard in which the most relevant ratios related to company performance are included.

Scorecard Definition and Calculation

The aspects taken into account in the Scorecard, CS and S&D, are defined in each program to assess company performance. In general, these aspects are:

- Investments
- Costs
- Reliability
- Security
- Staffing
- Losses
- Customer point of view (CS only)
- Internal point of view (CS only)

A table like Table 1 is produced for each company, where ratios included in each category defined in the Scorecard and their weighted factors are presented. Likewise, the place of each company's ratio in quartiles is calculated. Therefore, a score is assigned to each ratio: 2 points for the 1st Quartile (Q1); 1 point for the 2nd Quartile (Q2); 0 points for the 3rd Quartile (Q3); and -1 for the 4th Quartile (Q4). The company general grade is then assessed.

COMPANY NAME		Main Performance Ratios	
CATEGORIES		Quartile Score	
A Costs (35%)			
O&M by client (include Substations)		Q2	1
O&M by MWh sold (include Substations)		Q1	2
O&M by km of distribution (include Substations)		Q1	2
Investments by client (include Substations)		Q1	2
Investments by MWh sold (include Substations)		Q1	2
Investments by km of distribution (include Substations)		Q1	2
B Reliability (24%)			
SAIDI including programmed outages		Q2	1
SAIFI including programmed outages		Q2	1
SAIDI excluding programmed outages		Q2	1
SAIFI excluding programmed outages		Q2	1
C Security (18%)			
LTIR (include Substations of distribution)		Q3	0
LTSP (include Substations of distribution)		Q4	-1
RIR (include Substations of distribution)		Q4	-1
D Personnel (12%)			
Fix personnel (FTEs) (include Substations) by 100 kolients		Q2	1
Percentage of activities carried out through outsources se		Q4	-1
E Technical losses (12%)			
Annual percentage of technical losses in low voltage		Q1	2
Annual percentage of technical losses in medium voltage		Q1	2
GENERAL PERFORMANCE		Q1	17

Table 1: Example of scorecard

The companies with a general performance of Q1 are called "**Best Performers**" and they are the starting point for Best Practice analysis.

The ratios included in the Scorecard are chosen taking into account the experience of past years and the Scorecards used in programs developed between companies belonging to more demanding markets (e.g. the fifteen-year experience in North America). Figure 2 shows how ratio, Scorecard, and Best Practice results are presented as an example.

Identification and Validation of Best Practices

The practices to be analyzed during the program are chosen taking into account current South American trends, the Practices analyzed in other countries, and the experience from past years.

Once "Best Performing" and "Other" companies are identified, if the chosen Practices are really used on a larger percentage by "Best Performing" companies than by "Other" companies needs verification.

This point is very important since it allows observing the trends of the companies with the best relative positions. Practices used by "BP" companies can make a difference in their performance in relation to "Other" companies.

Please notice that when performing the validation, the percentage of use by "Best Performing" companies may be less or equal than "Other" company percentages. This does not imply that the Practice under study is a bad practice. It simply shows that it is used by the best companies as well as by the others, and it does not make a difference.

Cost Drivers and Characteristics

For efficiency assessment, the lowest cost under demandable service conditions is related.

A way to identify service conditions and to relate them to the costs is through "Cost Driver" and "Characteristics".

Characteristics are service conditions that cannot be changed in the short or medium term, or, in some cases, never (e.g. concession area topography, customer demography, relation with employers, etc.).

In spite of management and applied practices, the "Characteristics" influence the company's ability to be a "Best Performer".

Distribution Characteristic analysis allows a better perspective of the results obtained through the Scorecard, since it positions each company within the context in which they render the service. The table in Figure 3 shows four quadrants in this situation. The points obtained in the Scorecard are modelled in the vertical axis, and characteristic points are modelled in the horizontal axis. The places where the axes intersect are the mean Scorecard and the characteristic values respectively.

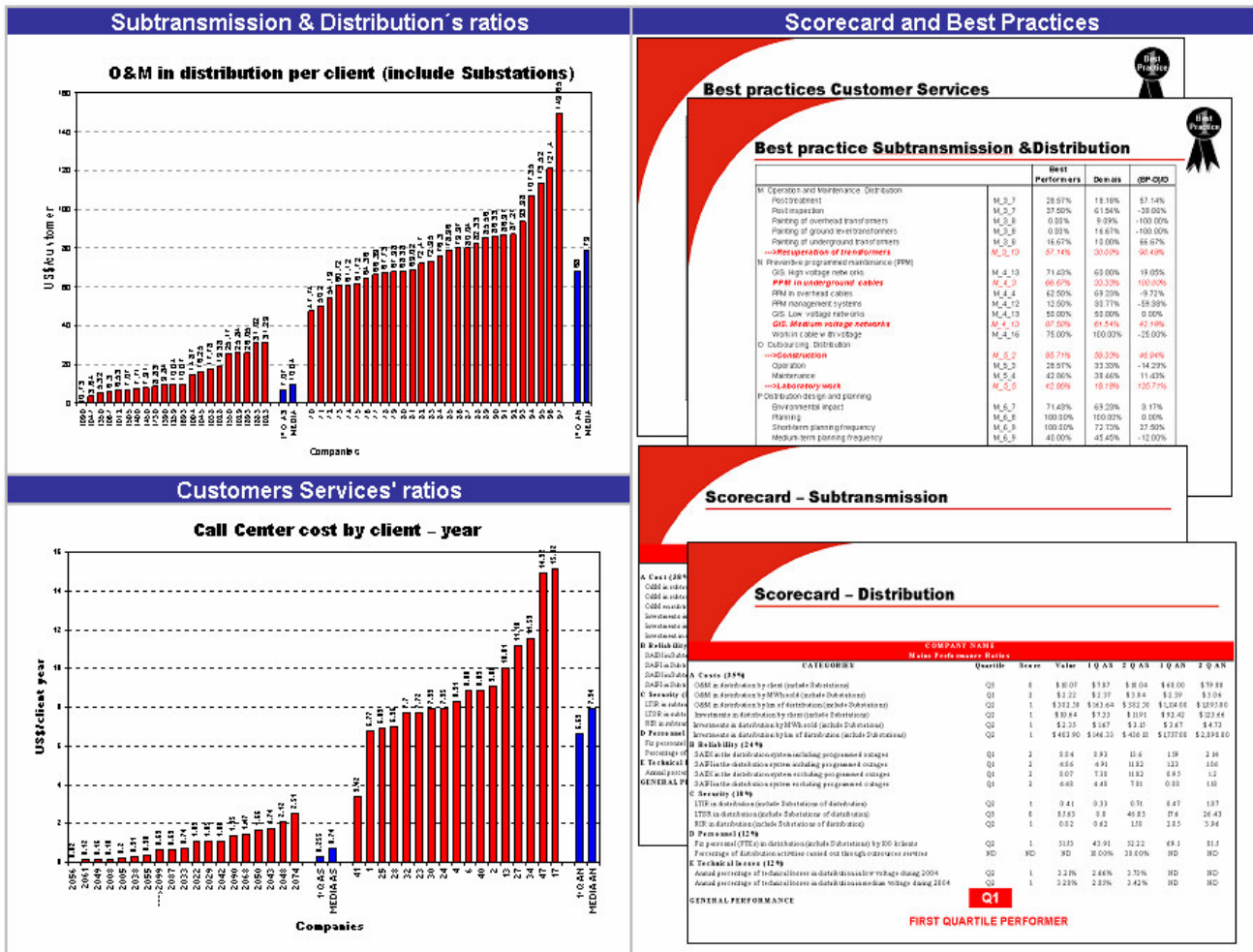


Figure 2: Example of the results of the benchmarking program

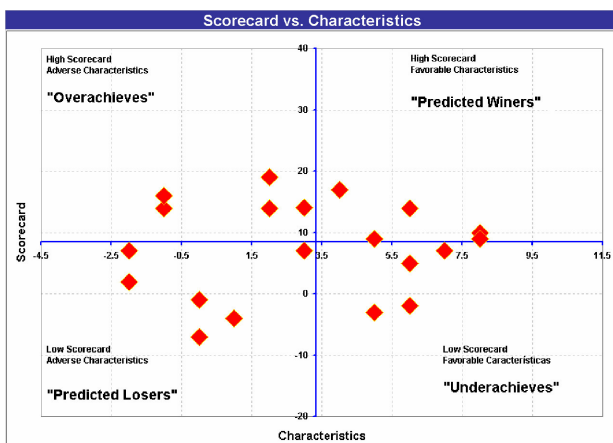


Figure 3: Scorecard and characteristics chart

Therefore, companies with high scores rendering their services in more favourable conditions than the media, are located in the first quadrant, they are "Predicted Winners", while companies with low scores rendering their services in more unfavourable conditions than the media, are located in the third quadrant, they are "Predicted Losers".

BENCHMARKING AND PERFORMANCE IMPROVEMENT PROCESSES

There is a continuous relation between the Benchmarking process and performance improvement actions to increase company efficiency with the subsequent increase of value for the shareholders.

BM program results are an important part of the analysis and assessment to define and project future company performance. Based on a sample of different types of ratios (technical and commercial) in a scenario of about 30 Latin American and 50 US Power Distribution companies, improvements with acceptable benefits can be obtained, achievable functional goals to start a development process of action plans and their implementation.

Assessment of Company Operative Processes

In the studies related to operative process improvement in technical and commercial areas, different sources of information are used to know the status in which the company under study is, and then have the elements to

define which processes need adaptation. The goals usually set are related to:

- Reduction of Annual O&M Costs
- Improvement of Service Quality Index
- Improvement of Customer Satisfaction Index
- Optimization of Investments

The next graph shows the results that can be achieved when certain area costs where company main processes have been assessed and the BM program ratios have been used in some cases are reduced.

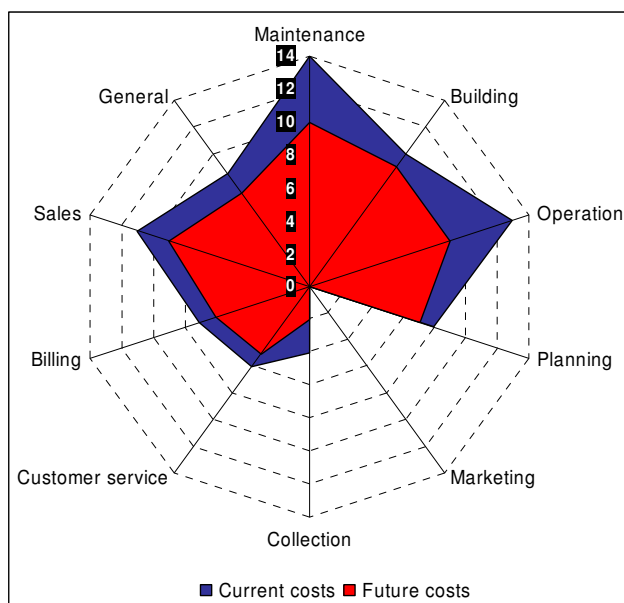


Figure 4: Cost reduction chart

One of the sources of information is the values or ratios obtained in Benchmarking programs. The rest of the information is usually obtained through interviews with company staff, system diagnostics, and operative process chart analysis.

In the assessment of performance improvement operative processes for Power Distribution companies, two of the main functions considered are Technical and Commercial operations. Said functions are associated with these company areas and their processes.

The Technical area basically includes operation and maintenance of the facilities required for Subtransmission/Distribution to satisfy current and future customer demand of the required service and product quality conditions. Other processes such as Engineering & Construction, and Planning, are also included.

On the other hand, the Commercial area includes Service Requirements, and Customer Claims or Consults, and Reading, Billing, and Collection. Non-technical Loss Elimination, Debtor Management, and Power Purchase processes are also included.

Ratios Application

For each process or subprocess under analysis, there are comparison ratios between companies of similar characteristics to the company under study to improve performance. The ratios given by the BM program, disintegrated in quartiles, allow assessment of which is the most adequate value to be taken as a comparison value. For the chosen ratios, company general and particular characteristics are known.

For S&D and CS area processes and subprocesses, an assessment between the ratios obtained by the BM program and the company under study can be made.

CONCLUSIONS

The Benchmarking program represents company performance analysis, basically comparing them with others of similar characteristics. Best practices and their current status are identified to establish "Best Performing" companies and to set objectives.

The importance of the Benchmarking program results allows applying them to different company uses such as:

- Performance Measurement Development
- Diagnostics
- Performance Objectives
- Support with Regulation Authorities
- Process Improvement Project Support
- Best Practice Identification

The Benchmarking program is dynamic since the ratios are improved every year as a result of meetings with the companies, where the results are analyzed in depth. Therefore, companies can apply them to new practices or processes.

The results reflected by the management report, which is submitted to each company, is the base to develop performance improvement tasks in different process lines in which weaknesses have been detected.