

# **Business processes benchmarking**

## **A methodology analysis through practical cases**

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### **Abstract**

Arising of competition in the global market and the use of modern technologies have driven efforts to improve the competitive factors of companies. Consequently, new approaches to increase productivity and improve performance in the industrial processes are required. This paper intends to present an alternative for development of a group of enterprises from various industrial sectors, with distinct characteristics. Its description is based on experiences and results achieved in a project developed by a team of the Industrial Engineering Program of Rio Grande do Sul State Federal University together with a group of industrial enterprises selected by FIERGS - the Rio Grande do Sul State Industries Federation - Brazil.

### **Keywords**

Business Processes Benchmarking, Industrial Partnership, Competitiveness.

## 1 INTRODUCTION

The expansion of the world economic competition in the last decades, and the consequent stimulation of concurrence, have contributed to the development of production management techniques and methodologies devoted to improve quality and productivity of companies.

The beginning of the 90's has shown some significant changes in Brazilian economic scenario. The increase of the internal concurrence, caused by economic opening and by the retreat of importing taxes, bring to the internal scenario a new variable only undergone by enterprises that actuate in international markets.

Thus, excluding a small group of companies and industrial sectors that has already presented competitive conditions due to their market characteristics, the greatest majority of Brazilian industrial sectors have shown an inappropriate situation considering the new international competitive reality.

Concerning this fact, the Rio Grande do Sul State Industries Federation, an official organism to support the industries development, has searched for a program that contemplate and cover some lacks identified in the improvement programs conducted in the industrial enterprises. Otherwise and simultaneously, the existing experiences in Brazil and other countries in this subject were considered.

In this way, a group of technicians and teachers of the Industrial Engineering Program of Rio Grande do Sul Federal University were contacted, in order to design this project. This task was also supported by SENAI/RS - Industrial Learning National Service - Rio Grande do Sul State Division.

## 2 SCOPE OF THE PROJECT

The proposal of the project was developed during the second half of 1994. The design of this project took into account results of an inquiry about quality and productivity conducted on 120 industrial companies in 1994. This inquiry has permitted an evaluation and analysis about the general programs adopted by the companies to increase their competitive conditions.

Otherwise, considering the importance of taken into account specific conditions concerned to the enterprises, it was verified one basic point. The best methods of production management

and competitiveness development are determined by intrinsic characteristics of production systems.

At this point of view, enterprise's business processes show different possibilities to be improved, specific to their realities, composed by an appropriate arrangement of the available techniques and methodologies. On the other hand, similar conditions of business processes, although pertaining to industries of different industrial sectors, constitute good objects of competitive models benchmarking.

The project itself is directed to attend two basic objectives:

- to compound a group of industrial enterprises, representing various sectors, that gradually evolve to constitute a reference in production management in Rio Grande do Sul State;
- to enable managers and supervisors to develop competitive models suitable to each company.

Considering these points, the project is based on a specific methodology that gradually drives the companies to a definition of their particular competitive model. This task is supported by a set of courses to provide satisfactory results through the utilisation of the most adequate techniques.

### 3 DESCRIPTION OF THE PROJECT

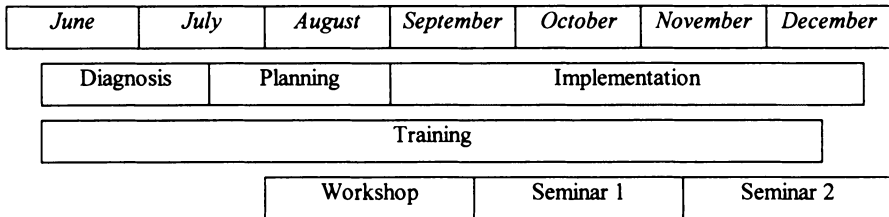
#### 3.1 Stages of the project

The project started with a company diagnosis to identify external threats and opportunities and internal strong and weak points. The methodology of diagnosis took into account the dimensions of quality, costs and time to compound the enterprises performance measurement, in a similar way as that proposed by Hronec (1993). This evaluation has driven to an action plan, in order to improve the competitiveness through the activities concerned with the project. The action plan was elaborated focused on the idea of business processes improvement, following the proposition of Harrington (1991). Subsequently, the companies participated in a training program, that intend to permit an overall vision of the production management

alternatives and to introduce specific tools and techniques, which were destined to be applied in the practical activities.

During the successive stages of the project various events were realised, focusing the evolution and results achieved by the companies in the improvement processes. This has been identified as an excellent opportunity to conduct a benchmarking of processes' improvement.

Figure 1 shows the various stages of the project and their realisation periods.



**Figure 1** Stages of the project.

### 3.2 Participants, events and further information

In this first edition, 20 industrial companies of different sectors like building construction, leather treatment, tobacco preparation and shoes, capital goods, packing, toy, household, hydraulic pumps, cloths and electrical components manufacturing have joined the project. These enterprises, of medium and large size, have among 200 and 1,600 employees and annual incomes between 20 and 200 million dollars. They actuate in the regional, national and international markets and are located in the Rio Grande do Sul State, up to 180 km from Porto Alegre, where FIERGS and SENAI headquarters are installed.

Each company has defined an internal team of 8 employees to co-ordinate the activities and has involved about 20 employees in the execution of the activities defined. They received about 300 hours of training courses and applied approximately 250 hours in internal activities defined in the action plan. Each company received 12 monitoring visits of a technician of the FIERGS - SENAI team designated to audit the company evolution. The final price of the project for each company was approximately US\$ 26,000. The project events, developed from June to December 1995, including monitoring visits, internal workshops, seminars and courses, are shown on table 1.

**Table 1** Events of the project in 1995

<i>Month</i>	<i>Week</i>		<i>Events</i>
June	19-23	Seminar	Preliminary Seminar 1 - Diagnosis
	26-30	Visits	Diagnosis
July	03-07	Visits	Diagnosis
	10-14	Seminar	Preliminary Seminar 2 - Planning
	17-21	Visits	Planning
	24-28	Course	Total Quality Management
August	31-04	Course	Business Processes Reengineering
	07-11	Visits	Planning
	14-18	Course	Quality Systems and ISO 9000
	21-25	Workshop	Internal Workshop
September	28-01	Course	Problem Solving Techniques
	04-08	Course	Quality Management Tools
	11-15	Course	Applied Statistics and Reliability
	18-22	Visits	Implementation
	25-29	Course	Internal Consultants Preparation
October	02-06	Visits	Implementation
	09-13	Course	Performance Indicators
	16-20	Course	Team Dynamics
	23-27	Course	Cost Management Systems
November	30-03	Visits	Implementation
	06-10	Seminar	Seminar 1 - Partial Results
		Course	Logistics and Suppliers
	13-17	Visits	Implementation
20-24	Course	Production Planning and Control	
December	27-01	Course	Just in Time Manufacturing
	04-08	Course	Manufacturing Resources Planning
	11-15	Visits	Implementation
	18-22	Seminar	Seminar 2 - Final Results

## 4 PROJECT EVALUATION AND ACTIVITIES PERFORMED

### 4.1 Training evaluation

The training courses associated to the project were evaluated by the companies, considering the course program and its application, the instructor qualification and the material supplied.

A resume of this evaluation is shown on table 2, where is also indicated the number of participants in each course as well as the approval on the following topics:

- (1) course program and its application
- (2) group participation in the training
- (3) instructor knowledge and qualification
- (4) training methodology
- (5) quality of the didactic material supplied

**Table 2** Evaluation of training courses

<i>Courses</i>	<i>Participants</i>	<i>(1)</i>	<i>(2)</i>	<i>(3)</i>	<i>(4)</i>	<i>(5)</i>
		%	%	%	%	%
Total Quality Management	43	90	57	100	76	71
Business Processes Reengineering	40	74	63	100	89	91
Quality Systems and ISO 9000	41	91	94	100	97	94
Problem Solving Techniques	40	81	84	97	88	88
Quality Management Tools	42	82	85	97	74	79
Applied Statistics and Reliability	34	59	70	100	85	96
Internal Consultants Preparation	38	74	78	78	74	91
Performance Indicators	33	81	69	91	69	87
Team Dynamics	37	97	93	97	87	77
Cost Management Systems	33	94	82	100	94	82
Logistics and Suppliers	25	95	86	100	100	100
Production Planning and Control	27	77	59	100	82	64
Just in Time Manufacturing	26	80	65	100	90	75
Manufacturing Resources Planning	19	85	100	100	100	87

## 4.2 Methodology, monitoring and operational support evaluation

The companies have also evaluated the overall methodology used in the project, considering events realised (diagnosis, planning, implementation and seminars) and the evolution and results obtained. Considering the monitoring activity, the companies have evaluated the qualification of the technical team and the audit realised. Finally, the support structure was also evaluated. The results of this evaluation are presented on table 3.

**Table 3** Evaluation of methodology, monitoring activity and operational support

	<i>Regular</i>	<i>Good</i>	<i>Excellent</i>
	<i>%</i>	<i>%</i>	<i>%</i>
<i>Methodology</i>			
Diagnosis	12	44	44
Planning	-	89	11
Implementation	-	89	11
Workshop and Seminars	-	78	22
<i>Monitoring and Operational Support</i>			
Qualification of Technical Team	-	-	100
Monitoring Visits	11	22	67
Operational Support	-	33	67

## 4.3 Activities performed

Starting from the initial diagnosis, where the critical factors were identified, the companies have planned actions to be developed during the project. These short and long term actions have involved wide or restrict applications, structural and operational focus, depending on the managerial stage of the company, its production system, cultural environment and economic situation. During the seminars, the companies have discussed various of these points due to the different situations verified.

## 5 PRELIMINARY RESULTS AND FINAL REMARKS

The project evolution has permitted to identify some preliminary results (FIERGS, 1996). The project has provided an environment of interchange about resources management, but not about production technology. This has encouraged the enterprises to discuss their points of view without to expose their industrial secrets. It could be mentioned information interchange about critical competitive factors, similar problems and its solutions and needs in terms of infrastructure to apply techniques and methodologies.

Table 4 shows the main activities conducted by the companies in this project, divided into three main levels, which gives a good idea about the benchmarking possibilities between the companies.

**Table 4** Number of companies that evaluated or implemented activities

<i>Classes</i>	<i>Activities</i>	<i>Evaluation</i>	<i>Implementation</i>
General	Strategic Planning	6	1
	Market Research	3	4
	Mapping and Analysis of Processes	7	3
	Organisation of Company Structure	2	1
	Company-Wide Communication	4	8
Managerial	Performance Indicators	6	2
	Revaluation of Cost Methods	4	2
	Revaluation of Suppliers	2	4
	Productivity Increase in Production	4	3
	Identification of Scrap and Losses	3	5
Operational	Reduction of Production Costs	4	3
	Reduction of Inventory Levels	1	-
	Reduction of Administrative Cycle Time	2	2
	Lead Time Reduction	3	3
	Development of Technical Assistance	2	2



The evolution of activities until December 1995 let believe that the project will achieve satisfactory results. This fact, demonstrated by the desire of the enterprises to continue this process, has conducted to create a new advanced project for the current participants and to repeat this project in 1996 for another group of enterprises.

Some enterprises have considered that these results were achieved through disruption of internal paradigms and discussion in an external environment.

The pragmatic structure of the project was considered by all participants as one of the most important and positive points of the project. Otherwise, some questions about the form, content and extension of the methodology were made.

The internal work required by the project was considered reasonable by the participants. Some companies, on the other hand, considered excessive the personnel required by the project.

Different characteristics of the companies and theirs production systems were considered in terms of benchmarking on two points of view: as a positive fact, concerning exchanges possibilities, paradigm disruption and the internal processes focusing; as a negative fact, due to the relative difference of the companies situation, which has blocked the exchanges in some cases.

The companies were previously prepared for the benchmarking events. It was used various benchmarking concepts proposed by Spendolini (1992). Some interesting benchmarking actions between the companies were achieved, involving different fields and matters. Some of the most significant are identified below:

- benchmarking on concurrent engineering, realised by the design areas of two capital goods machines manufacturing companies;
- benchmarking on total quality training for temporary personnel, realised by a toy manufacturing company and a tobacco preparation company;
- benchmarking on work standards establishment for temporary personnel, realised by a tobacco preparation company and a building construction company;
- benchmarking on ISO 9000 preparation processes, realised between a hydraulic pump manufacturer and a chemical industry;
- benchmarking on distribution logistics processes, between a household manufacturing company and a cloths' manufacturer;

- benchmarking on suppliers' materials consignment, realised by a toy manufacturer and a capital goods manufacturing company.

Finally, the formation of a cross-functional group qualified to conduct autonomous improvement processes was considered the main contribution of the project, providing a continuous improvement attitude in the enterprises.

## 6 REFERENCES

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## 7 BIOGRAPHIES

Álvaro Gehlen de Leão is graduated on electrical engineering at Federal University of Rio Grande do Sul - UFRGS, Brazil and has worked during four years for Hewlett-Packard in Brazil as materials engineer. Presently, he is concluding his master of science thesis on industrial engineering, in the domain of cost management systems. He has collaborated on the design of this project and participates in the technical team.

Peter Bent Hansen is graduated on mechanical engineering at Federal University of Rio Grande do Sul - UFRGS, Brazil and has worked during 10 years for the Electrical Energy State Company - CEEE in the production area. Nowadays, he is concluding his master of science thesis on industrial engineering, in the domain of business and production processes management. He actuated on the design team of this project and co-ordinates its 1996 edition.