

MAINTENANCE PERFORMANCE CONTRACTS – HOW TO BUILD A KPI ROADMAP TO PROVIDE QUALITY SERVICES FOR CLIENTS

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Abstract

Nowadays, every company around the world needs to answer two basic questions about its Business Strategic Plan to have results, provide quality services to clients and have incomes to the shareholders:

- What's the direction to run the business?
- What's the time to achieve the expected results?

The external and internal challenges that one company has to deal with daily have important impact in the answering of these two questions. For example, thinking about a company which has no expected maintenance performance results, the answers could be:

- What's the way to run the business?

Hire a Specialized Maintenance Company to manage your assets with techniques capable to bring more availability, maintainability and possible low costs;

- What's the time to achieve the results expected?

The necessary time to provide the payback of the investment done by the client due to the know-how and expertise of the Specialized Maintenance Company;

The companies run their business to attend the goals established in the Business Strategic Plan and in this scheme there is another question to answer:

- How to become a Specialized Maintenance Company part of the Client's Business Strategic Plan as an allied due to the responsibility of maintaining the main machines by manufacturing products with quality to provide expected incomes?

Maybe, the answer could be easier: a KPI Roadmap to guide the services providing in a road of results and in the agreement with the Business Strategic Planning. Yes, but how to build this KPI Roadmap to make it effective?

It will be possible only with teamwork between the client and the Specialized Maintenance Company, because adopted business practices will bring benefits to both companies.

The objective of this work is show how to build KPI Roadmaps with different clients which would be suitable for their core-business, expected delivering results, being in the Business Strategic Plan direction and bringing to both companies incomes. These KPI Roadmaps were

built from 2005 to 2007 by a Brazilian Specialized Maintenance Company in their different clients in the food, cosmetic and chemical industrial areas.

Keywords: key performance indicators, maintenance service contracts, benchmarking indicators

1 New Requirements of the Modern Business Environment

The business world, nowadays, is becoming more focused to the administration of information, and make decisions and to obtain fast answers is indispensable weapons to reach the results wanted in the expected time, according to SLATER (1999).

That tendency was discussed thoroughly in the century passed by companies in the world that were concentrated in re-evaluating their mission and vision in the market that were inserted. The same author of the sentence above, mention that in the 21st century, the changes would be faster and the advantages of the patience, of the paternalism and respect for the traditions would be an impediment for the world today.

In fact, in these days, the globalization process establishes international demands where the main rule is "to do more with less and with requested quality". This process brings to us the factors of competitiveness that are:

- Productivity: to do more with less;
- Innovation: to do better;
- People: to do well;
- Efficiency: appropriate costs;
- Effectiveness: appropriate services to the customers' needs;
- Effectiveness: care with the atmosphere and people;

Besides, there are the internal and external challenges that should be faced daily.

In this scenario, the companies that want to develop their performance must understand all variables in the current market solve the daily challenges.

And the question is: what is the better direction that must taken to achieve the expected results by the shareholders and clients in the minimum possible time?

Picture 1: What's the direction to take?
What's the time for take it?

2 How to deal with this situation?

According to SINK AND TUTTLE (1993), the basic beginning of an administration system is that cannot manage that we cannot measure.



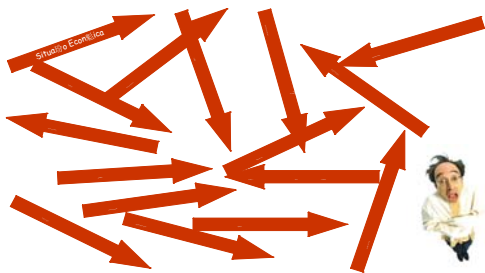
Que direção tomar?



Em quanto tempo?

Returning the duality of time and direction, the companies, through methodologies of Strategic Planning, establish their objectives and goals, drawing which results they want to reach with base in their Mission and Vision.

This strategic planning is the base to the companies can address their efforts to face the daily challenges, leaving the situation of the illustration 2 and 3, becoming competitive.

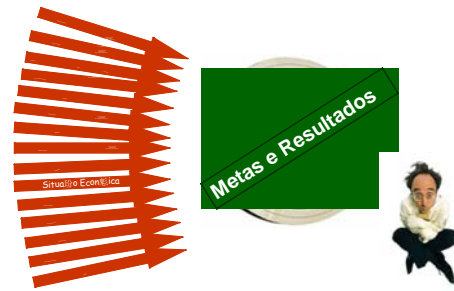


Picture 2: Without planning!

Therefore, in agreement with SINK AND TUTTLE (1993), the best measurement systems are a mixed of objective and subjective, quantitative and qualitative, intuitive and explicit, difficult and easy, good-sense and rules of decision or even artificial intelligence to have warranty that the established Strategic Planning will be reached satisfactorily.

3 The importance of Maintenance Area and Management of Maintenance Contracts in the Strategic Planning of the Companies

In the current view of the world economy, the industrial maintenance area has a great impact in the competitiveness, profitability and productivity in large and small companies of any market. According to ARCURI (2003), the companies have preponderant influence in the development of the countries and for the results would be concrete and absolute the activity of industrial maintenance has an essential strategic influence.



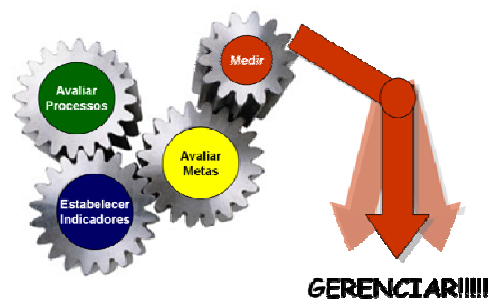
Picture 3: With planning!

In Brazil, the maintenance activity, according to ABRAMAN (Brazilian Association of Maintenance), is a business about US\$ 28 billion a year, employing 20% of workers in the companies. In richer countries, like the USA, Japan and Germany, these values are still more impressive, reaching US\$ 300, US\$ 175 and US\$ 130 billion, respectively.

In this market, according to SARATT & FONTANELLA (1994), a service maintenance contract is an administration action used, commonly, as a business philosophy, that consists in the commercialization of specialized services to do activity-middle in the companies and this one can focus their efforts in your core-business achieving competitiveness and quality.

This type of contract won larger prominence, in Brazil, in the last decades, when Brazil got in the economy globalization process. This action was motivated by the companies to develop effective strategies based in processes of partnerships through the administration of assets looking for excellence in: quality, productivity and reduction of costs.

However, it is essential doing service maintenance contracts with companies that have efficient tool in their businesses systems that measure their own performance guaranteeing results expected by customers' Strategic Planning.



Picture 4: System of Administration of Processes.

4 How to Evaluate and to Measure the Performance of Service Maintenance Contracts? The KPI Roadmap.

As all business activity, the maintenance area performance should obey explicit criteria of Efficiency, Effectiveness, Productivity and Quality, that turn it economically attractive.

According to TAVARES (2001), to make possible the

evaluation of the Return On the Investment (ROI) for the maintenance area, it is necessary an effective administration of the information for analysis of decisions, based on reports with appropriate indicators at each administration level being generated by consolidated and reliable information systems, mainly, when the maintenance area is delegated to a service maintenance company.

For the Information Management it is necessary:

- To define a System of Information;
- To establish the Performance Indicators;
- To build a Map of Indicators;
- To establish a Process of Benchmarking;

In the next sections it will be described a study case that reference how Maps of Indicators were built with Customers to measure the performance of contracts with service maintenance company.

4.1 The Beginning of this Work

This work was initiated in 2005, in three customers that had as main objective to align the maintenance activity managed by maintenance service company with the guidelines of the customers' business through maps of capable Indicators to measure the impact of the maintenance performance managed by a maintenance service company in the expected results.

The following activities were accomplished:

- Detailed evaluation of how worked the systems of information in the maintenance industrial area;
- Detailed evaluation of the information contained in the reports generated evaluating the applicability of the same ones in relation to each customer's strategic planning;
- Structuring of the indicators for evaluation of the maintenance performance close to the customers correlating the same ones with the indicators macro of the business;
- Analyzing of the indicators in the processes of each customer's maintenance, in other words, structuring of the indicator back forward;
- Consolidation and formatting of the new management report;
- Evaluation of the obtained results;

4.2 The Information System

For The Construction of the KPI Roadmap, it was defined joined to each customer an Information System that allowed the structuring of indicators of:

- Efficiency: evaluation of the results related to the inclusion of the programmed actions in the universe of strategic actions;
- Effectiveness: evaluation of the results related to the

adherence of the executed actions;

- Productivity: evaluation of results associated to the relationship between the reached results and the actions and resources used to reach them;
- Quality: evaluation of results related consistence among the programmed actions and accomplished ones.

Each customer possessed a different information system that was studied and adapted to the need of this work to assist the established purpose in a reliable and effective way.

4.3 Performance Indicators

After the adaptation of the information systems in the clients, it was necessary to define and structure the indicators.

In agreement with EWERTON (2003), there are two types of indicators:

- Middle Indicators (drivers). It's measure factors which show tendency of the indicator in which we are interested or they show that the necessary ways are being provided (used to advance problems).
- Results Indicators (outcomes). It measure results which are interested in reaching, if they be not reached, nothing else can be made to change the reality.

However in both cases, it is important to point out that the process of choice of the indicators should consider that the same ones are:

- Appropriate: to measure the operational aspect precisely that it needs to be measured;
- Acceptable: to be considered by all;
- Clear: clear message in relation to that it was measure;
- Comparable: it can be compared to data internal or external to the company;
- Simple: to be easy to understand, to collect and to interpret.

According to NASCIF (2002), the Indicators should accompany the performance of the maintenance in their main processes and not in the private aspects.

"It is better to have few important indicators and to measure them!"

4.4 Roadmap Indicators

With the defined performance indicators, the stage of the construction of the Roadmap Indicators began. That process had as main objectives:

- To separate the Indicators in the areas of Productivity, Engineering, Financial and Strategic;
- Definition of the indicator for each area above;
- Definition of the calculation memorial, units and sources of data;

- Definition of the weight of the each indicator in the evaluation of the performance of the service maintenance company;
- Definition of goals for each indicator;
- Establishment of indicators existent benchmarking for comparison base;
- Establishment of as the indicator it should be interpreted and which actions should be taken before its results;

4.5 Management Report

It was established for each customer, a Management Report to present the performance indicators to make fast interpretation of data to take strategic actions.

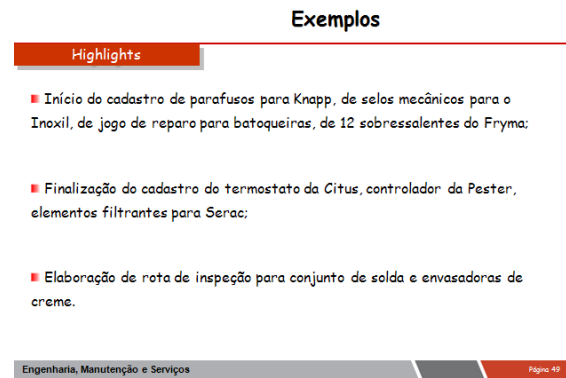
In the next pages, there are examples of some sections that compose this Management Report, that it was structured in the following main topics:

- Highlights: relevant facts and prominence in the observed period;
- Action Program: curves of progress of the activities macro of the contract;
- Engineering Studying: panel of information of the status of the engineering studies in development;
- Performance Indicators: indicators established with the customer;
- Top Ten: equipments that presented critical behavior, diagnoses and actions for solution;



Picture 5: Main Sections of the Management Report

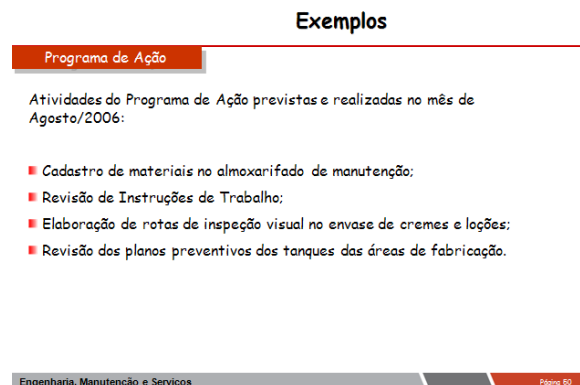
In this section of Highlights the main actions realized are described related to productivity, efficiency, quality, and costs among others. It is a section that allows evaluating the activities done by the maintenance service company aligned to the real need of the customer's business.



Picture 6: Example of Sections of Highlights

Each contract has, in the beginning, the establishment of a Master Plan of Businesses that is set up joint to customer base on the contract with the service maintenance company. That plan possesses the main activities that need to be accomplished, monthly, for the contract to assist that it was established. Every year of contract that Master plan is evaluated through an evaluation of results and revised before the customer's new expectations regarding the results in the maintenance area.

In the Panel of Engineering Studies, there is a relationship of the studies in process, the responsible for the same, the stage in that the same is and the investments, losses and earnings opportunities established before the current status of the work. It is a simple and visual form for the customer to analyze the problems that are being studied and if the same ones are in agreement with the needs of each productive process.



Picture 7: Example of Section regarding the Master plan

In the case of the performance indicators, the establishment of the same ones was accomplished correlating the same ones with indicators of the operation areas and financial of the customer. The main ones used they are:

- a) Cost of Maintenance for the Produced Unit: an indicator tha evaluate the contribution of the maintenance cost in the costing of the final product
- b) Cost of Maintenance for the Revenue: an indicator that evaluate the maintenance investments are aligned to the growth of the company;

Exemplos

Estudos de Engenharia				
Modelo Estimado	Base Agrega. Estimado	Plano Pratico, Escopo, Risco	Plano Alinhadores	Nome do Estudo
Formado	Formado	Formado	Formado	Soluçõe
Caracterização	Caracterização	Caracterização	Caracterização	Caracterização
Formulário Soluções	Formulário Soluções	Formulário Soluções	Formulário Soluções	Formulário Soluções
Identificação Problema	Identificação Problema	Identificação Problema	Identificação Problema	Identificação Problema
Observação Problema	Observação Problema	Observação Problema	Observação Problema	Observação Problema
Análise do Problema	Análise do Problema	Análise do Problema	Análise do Problema	Análise do Problema
Plano de Ação	Plano de Ação	Plano de Ação	Plano de Ação	Plano de Ação
Ação	Ação	Ação	Ação	Ação
Verificação	Verificação	Verificação	Verificação	Verificação
Diagnóstico de efeitos?	Diagnóstico de efeitos?	Diagnóstico de efeitos?	Diagnóstico de efeitos?	Diagnóstico de efeitos?
Padronização	Padronização	Padronização	Padronização	Padronização
Conclusão	Conclusão	Conclusão	Conclusão	Conclusão

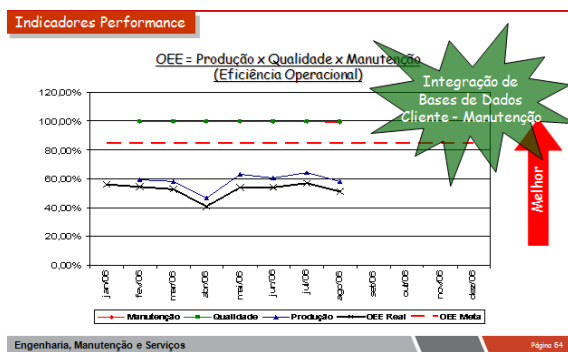
OBS: Os dados abaixo serão preenchidos conforme evolução dos Estudos de Engenharia

Período Estimado	Período Estimado	Período Estimado	Período Estimado	Período Estimado
R\$ 24.210,00	Investimento	Investimento	Investimento	Investimento
R\$ 987,00	Prazo	Prazo	Prazo	Prazo
2 meses				

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Picture 8: Example of Section of the Panel of Studies of Engineering

Exemplos



Picture 9: Example of Indicator of Performance

OEE (Overall Equipment Effectiveness) is an indicator very used for many companies in the world to monitor the efficiency and effectiveness of the equipments driving them the improvement of the operational performance. OEE is a critical point of union between costs and operational performance in the productive process, in other words, to translate the amount of losses that the company to be accomplishing with processes no controlled.

This indicator is resulted of the combination of three factors:

- Operational performance of the Equipments;
- Productivity of the Process or Equipment;
- Quality of the Final Product

This indicator when used, it propitiates the integration of the bases given of the maintenance area, production and quality and it evidences, in very clear way, the portions that what part are contributing to the low performance of the process .

5 Conclusion – The Challenge of using the KPI Roadmap

This work with KPI Roadmap is a work of continuous evaluation of the indicators in relation to its value, its impact in the process of taking actions and its applicability.

As main results of this work, it's possible to mention:

- Better alignment of the strategy of performance of the contracts to the strategic planning of the customer's business;
- Reduction of indicators "half" and larger use of indicators "end";
- Better process of taking decisions in the maintenance area with immediate reflex in the administration of the customer's businesses;
- Possibility to evaluate the performance of the maintenance contract with the correlation of related indicators: maintenance costs, operational efficiency, use of maintenance technology and service to the internal customer;
- Recognition for the customers' parts involved that now the reports possess more management information than tactics and operational contributing to a more appropriate administration.

Nowadays, the great challenge of that continuous work is to intensify the use of the correct indicator inside of a reliable information system associating the maintenance indicators to the strategies of the customer's business and, to continue measuring to MANAGE!

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