"BEST PRACTICES ON INSTITUTIONAL PERFORMANCE INDICATORS SYSTEM IN R&D&I PUBLIC ORGANIZATIONS – THE CASE OF MILITARY ORGANIZATIONS."

Maria Cecilia Pereira[1] and Desirée Moraes Zouain[2]

[1] Centro Tecnológico da Marinha em São Paulo – CTMSP
Superintendência da Qualidade
Av. Prof. Lineu Prestes, 2468
05508-000 São Paulo, SP
mcecilia37@hotmail.com
ctmsp-70b1@ctmsp.mar.mil.br

[2] Instituto de Pesquisas Energéticas e Nucleares (IPEN / CNEN - SP)
Av. Prof. Lineu Prestes 2242
05508-000 São Paulo, SP
dmzouain@ipen.br

ABSTRACT

This paper reflects the partial results of a Master degree research, performed in IPEN and CTMSP in Brazil. The focus of this research is to establish the best practices for an Institutional Performance Indicators System in Public Research, Development and Innovation (R&D&I)I Organizations, particularly, the military ones.
In public sector, especially military Institutes that are strongly committed to R&D&I, there have been changes in order to modernize the organization management. The focus, in our days, is on the Performance Indicator System, financial or not, strategic, tactic and operational, as a tool for the organizational control over the accomplishment of settled plans, the completion of the mission, everything according to a continuous improvement process.
Among the many approaches underlying the development of a Performance Indicator System, since the 90s, the ***Balanced Scorecard – BSC*** stands out. It is based on the studies developed by *Kaplan and Norton* in1986. By using the *BSC* approach, it is possible to construct a Performance Indicator System that makes available the information, financial or non-financial data, in logical format.
This paper presents the results of the international and national experiences review of I*nstitutional Performance Indicator Systems*, applicable to the public organizations of R&D&I, preferably military organizations, and identify the best practices of these Systems. At the end of this paper, it is conducted a comparison among the experiences analyzed, in operation or planned, and are established some suggestions for an Institutional Performance Indicator System for a Military R&D&I Organization.

1. INTRODUCTION

The main objective of this paper is to present the partial results of a Master degree research that is being developed in the "POST GRADUATION" program of the Institute of energy and nuclear research in São Paulo and the CTMSP, in Brazil. The main objectives in this research are:

- To Study and understand national and international experiences of Institutional Performance Indicator Systems for public R&D&I organizations, particularly, the military ones.

- To establish the best practices for an Institutional Performance Indicators System in Public R&D&I organizations, particularly, the military ones

2. CONTEXT OF THE BIBLIOGRAPHICAL AND DOCUMENTARY REVIEW

2.1. Management Excellency in Public R&D&I Organizations

In Brazilian military R&D&I organizations, specially the military ones, there are actions and mobilizations to guide and to establish lines of direction for elaboration, harmonization and implantation of management plans and strategical planning in activities of science, technology and inovation. These actions happen, normally, provoked for external stimulatons, such as:

- Decree Nº 5,563 - of 23.02.20051: nº 10,973 regulates the Law nº 10,973, of 2.12. 2004, that it makes use on incentives to the innovation and the scientific and technological research in the productive environment, and gives other steps;
- Portaria MD nº 1,317 - of 04.11.2004 - Approves the Politics of Science,Technology and Innovation (C, T & I) for the National Defense;
- Decreto no 5.378 - de 23 de fevereiro de 20051 - Institui o Programa Nacional de Gestão Pública e Desburocratização - GESPÚBLICA e o Comitê Gestor do Programa Nacional de Gestão Pública e Desburocratização, e dá outras providências.
- Decree in the 5,378 - of 23.02.2005 - Institutes the National Program of Public Management and Unbureaucratization - GESPÚBLICA and the Managing Committee of the National Program of Public Management Pública and Desburocratização, and gives other steps.

In this context, about the efforts developed by diverse organizational units of the Navy of Brazil, the documentary revision raised the existence of following publications (already duly analyzed for the authors) that guide the activities of R&D&I in the Navy of Brazil:

- EMA-131. Manual de Gestão Contemporânea. 1a rev. 2002. Publicação emitida pelo Estado Maior da Armada (EMA). O propósito desta publicação é orientar a inserção dos conceitos de Gestão Contemporânea (GECON) no âmbito da Marinha do Brasil.
- EMA-131. Manual of Contemporary Management. 1a rev. 2002. Publication emitted for the State Biggest of Armada (EMA). The intention of this publication is to guide the insertion of the concepts of Contemporary Management (GECON) in the scope of the Navy of Brazil.
- EMA-410. Plan of Scientific and Technological Development of Navy - PDCTM. Publication emitted for the General staff of Armada (EMA). This document has the intention to establish priorities and goals, in accordance with knowledge to be dominated, and to guide the effort expended in the execution of the activities of the System of Science and Technology of the Navy.

2.2. The International Experience

Some international experiences raised from the study's bibliographical review are now presented:

[1] Disponível em (https://www.planalto.gov.br/ccivil_03/_Ato2004-2006/2005/Decreto/D5378.htm). Acesso em 30/05/2007.

2.2.1 The Pentagon Renovation Pogram

The *Pentagon Renovation and Construction Program (PENREN)* is an initiative in wide-scales responsible for the modernization of the infrastructure of the Technology of the Information of the North American Department of Defense, including all its subordinated agencies, as the Secretariat of Defense and the General staffs of the Army, the Navy, and the Air Force and the Marines.

The PENREN hired Performancesoft, founded in 1993, to manage its performance administration initiative, using the Balanced Scorecard system as a way to automatize its structure, while it provides a clear visualization of goals and better alignment of the activities to the strategies and politics of the organization.

The *Pentagon Renovation and Construction Program* is the most recent example of the Agency of Defense of U.S.A. that uses management tools to develop the alignment and the visibility of its action and programs, and is responsible for the transformation of the Pentagon headquarters, with 60 years of existence, in a modern, flexible and highly integrated work environment.

The Performancesoft solutions, using the methodology of the Balanced Scorecard to manage the organizational performance, provided the PENREN to automatize its structure, providing a clear visualization of goals and a better alignment of its activities to the strategies and politics of the organization. The robustness of the solutions also allows that the PENREN to extend its Performance Administration and balanced scorecard initiatives for other areas of the organization, helping to spread the high administration strategy to the operational level.

2.2.2 The quality guarantee in ships – The Australian Navy Case[2]

The *Directory of Submarine Sustainment* (*DSMS*) da marinha australiana executa o controle da qualidade dos serviços e atividades verificando se eles atendem aos requisitos mínimos correspondentes estabelecidos pelo Contrato do Programa de Garantia da Qualidade (C*QAP – Contract Quality Assurance Program)* da Divisão de Sistemas Marítimos (*MSD - Maritime Systems Division*).

The Directory of Submarine Sustainment (DSMS) of the Australian navy executes the quality control of the services and activities verifying if they attend to the corresponding minimum requirements established by the CQAP (Contract Quality Assurance Program) MSD (Maritime Systems Division).

Until 1998, there was an excess of confidence on the part of the Division of Security of the Quality of the Australian navy in accepting certification ISO 9000 of a contractor as a guarantee of the quality of a product or a service. However, this idea after fell in discredit the occurrence of a fire on board the ship "Westralia", that it put in doubt the practical ones of effective control of the quality.

From 1998, to correct the deficiencies of the Quality Control until then adopted, the Division of the Australian Maritime Systems developed a program that guarantees:

[2] Disponível em (http://www.navy.gov.au/publications/trade/jun04/qa.html). Acesso em 30/05/2007.

- the ability of the supplier and the conformity of the product or service to the specified contract;
- the ability of the overseer of the Quality and the tack of the organizational unit to the lines of direction, norms and politics of institution's quality control.

The program supplied to Australian navy's submarine maintenance directory, ways of evaluate the contractors' ability and its attendance capacity of the established requirements, also introducing ways of activities performance verification and the cost of the contract. Moreover, it also established a new culture of performance evaluation, not only of customers and suppliers, but also of other organizational units.

2.2.3 The National Aeronautics and Spaces Administration Plan – Washington – EUA[3]

The American normative Act (GPRA - Government Performance and Results Act), evaluated by the North American congress and signed by the President in 1993, provides a new tool to improve the efficiency of all the American federal agencies. The Act guides the governmental bodies to develop a strategical plan focused in the customer, focus the activities of the agencies in concrete missions and goals, and manage and measure results to justify activities, priorities and budgets in accordance with strategical missions. The intentions of the GPRA are the improvement of the people's trust in the Government performance; the improvement of the Federal Program administration; the effectiveness and the public responsibility and the improvement of the decisions of the North American congress about to national the human and national finantial resources.

In fulfilment to the GPRA, NASA established a Strategical Administration System. The System is defined in NASA Strategic Management Handbook (NASA Procedures and Guidelines 1000,2). This Strategical Plan leads to a serie of documents that defines the reason of the agency existence and its goals to be reached in the next twenty five years.

A good example of success reached by NASA thanks to the Strategical System of Administration and its program of Quality control and performance evaluation was the sending of non-tripulated spaceships to Mars, whose collected images have been seen by people from the entire world.

2.2.4 The *Australian Nuclear Science and Technology Organization* (*ANSTO*)[4]

The *Australian Nuclear Science and Technology Organisation* (*ANSTO*) is the nuclear research organization of Australia. With approximately 950 people, the ANSTO is responsible for the execution of specialized analysis, products and scientific services of the government, industry and other organizations of research. Its activities are directed to the development of new knowledge, to the quality of services and support action to the enterprise chances.

[3] Disponível em (http://www.hq.nasa.gov/office/codez/plans/2000Handbook.pdf). Acesso em 30/05/2007.
[4] Disponível em (www.ansto.gov.au). Acesso em 30/05/2006.

2.3. 2.4.1 Strategical vision of ANSTO

To be recognized as an International Center of Excellency in science and nuclear technology for the benefit of Australia.

2.4. 2.2.4.2 The Mission of ANSTO

- Provide the development and the implementation of government politics and initiatives in nuclear areas, national and internationally;
- Operatize installations of science and nuclear technology, for the benefit of the industry and the Australian and international research community;
- Develop searches for the advance of science and nuclear technology;
- Apply in the nuclear science, techniques to face the ambiental challenges of Australia and to increase the competitiveness of the Australian industry;
- To produce and to advance in the use of radiofármacos with sights to improve the health of the Australians.

2.2.4.5 The ANSTO Politics

- Maximize the return in investments, specialization of technicians and installations. ANSTO operates diverse nuclear installations to one high level of efficiency, what assures a return in investment for the Australian Government, customers collaborating partners.
- Work in the evolution of the knowledge of the benefits of Science and Nuclear Technology. Through a good communication and commitment with the industry and research the ANSTO crew are dedicated in their jobs stimulating the adoption of nuclear science and technology applications.

2.2.4.6 The ANSTO Annual Report

According to its annual report from 20065, ANSTO undertook a research of performance evaluation in the past four years, and, based on the evaluation of these results, it intends to report:

- establishment of one leader tem of management and project research;
- establishment, evolution, quality and operation of contribution agreements between organizations;
- consolidation of strategical partnerships and in a long period;
- monitoring of projects and strategies
- structure for the improvement and conscription of staff.

Thanks to the excellency of the quality reached in all its activities, ANSTO is today a world-wide reference in activities of R&D&I in the nuclear area.

[5]Disponível em (http://www.ansto.gov.au/info/annual_report_0506/files/ANSTO_AnnualReport2006.pdf). Acesso em 30/06/2007.

2.5. O *Balanced Scorecard*

A new boarding to the strategical management was developed at the beginning of the 90's by Robert Kaplan (Harvard Business School) and David Norton. They named this system Balanced Scorecard - BSC. It supplies a clear lapsing of what the organizations must measure to "balance" the analyzed perspective. (AVERSON, 1998).

The BSC gives a vision of the organization under four perspectives, and the development of results measures, and the gathering and analysis of data from each one of these perspectives:

- the learning and growth perspective;
- the internal processes perspective;
- the customer perspective;
- the financial perspective.

In Figure 1 it is possible to observe the vectors that enclose the perspectives of the customer, the internal processes, the learning, the growth and the financial perspectives. The vectors form a new Indicators system that informs such as complex objectives, as relatively restricted objectives: to clarify, to get consensus and to focus the strategy to communicate it to all the company assuring a good management.

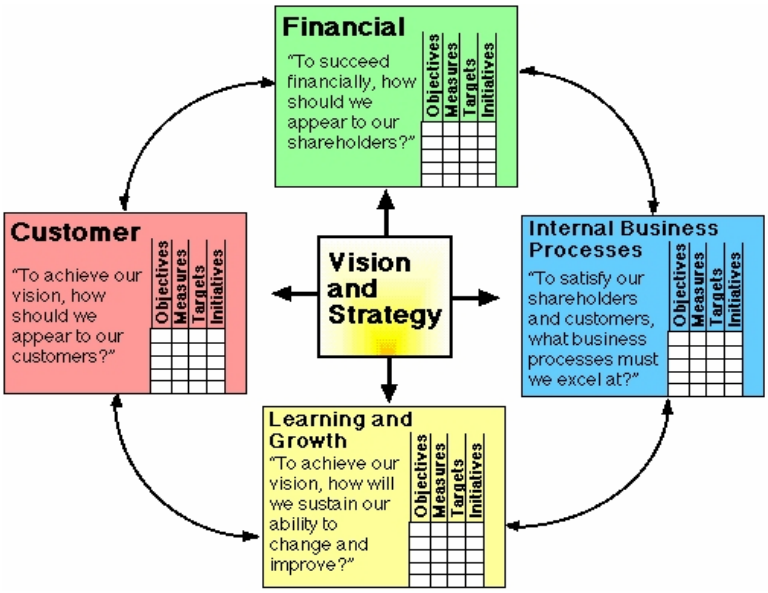

Figura 1: O *Balanced Scorecard* fornece a estrutura necessária para a tradução da estratégia em termos operacionais.[6]

2.5.1 Result Measures and the Performance Vectors

The measures of result without the performance vectors do not communicate how the results are reached, besides, they do not offer a clear indication of effectiveness of the implemented strategy. On the other hand, the vectors of performance without the result measures may cause operational improvements to the business unit in a short period, but they will not reveal

[6] Kaplan, R.S.; Norton, D.P. "*Using the Balanced Scorecard as a Strategic Management System*", Harvard ***Business Review***, janeiro-fevereiro, 1996.

if those business-oriented improvements represent the expansion of business with existing and new customers e, consequently, a better financial performance. (Kaplan & Northon, 1997)

A good Balanced Scorecard must contain an adequate combination of results and vectors of performance of the business-oriented strategy of the unit. It must be the translation of the business unit strategy in the form of a articulated set of measures that define the long period strategical objectives and also the mechanisms to reach these objectives.

3. CONCLUSION

Based in the searched articles in the documentary review, it can be observed that the implantation of an Indicators system lined up to the Strategical Planning and the use of the Balanced Scorecard it's being adopted successfully in Public R&D&I Organizations all around the world, specially in Military Organizations that act in research, development and innovation. The study of the best practices for an Institutional Performance Indicators System in Public Public Organizations of R&D&I, focusing preferential the Military Organizations, using the Balanced Scorecard, intends to bring many benefits and to be a reference for these Organizations, in the control, accompaniment and continuous improvement of the performance of its activities.

The study is inserted in the current context of Systems of Institucional Pointers of Performance of the organizations, with approach in the strategical boarding of the Balanced Scorecard, having a basic and innovative role in the development of this new boarding in Brazil and, in particular, the public organizations with strong performance in research, development and inovation.

The waited result of this work is to make possible the unfolding of the application of the present study in public organizations, in special the Navy Technological Center in São Paulo, who act in research, development and innovation, as well as the improvement of the System of Institucional Pointers of Performance, currently already implanted, adjusting it it the applicable norms and lines of direction.

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