

# Improve of Business Intelligence Usage in Brazilian Chemical Industry in Global Crisis of 2008, 2009 and 2010

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**Abstract.** From 2008's to 2010's a serious financial crisis forced many sectors to drastically review their production and sales plans. Sectors like the chemical industry were reorganized to deal with the challenging scenario found. This article's objective is to demonstrate how the world crisis from 2008 to 2010 was an opportunity to improve the business intelligence architecture usage, bringing benefits for a brazilian chemistry industry, helping the company on process standardization, data quality improvement and process automation.

**Keywords:** Chemistry Industry, Business Intelligence, Best Practices, Worldwide Crisis.

## 1 Introduction

On 2008 it began a global economic crisis born on the subprime real estate market in the United States. The crisis had consequences as deterioration of bank balance sheets and a strong reduction in interbank liquidity. As a crisis direct result there was a fall in industrial production and prices, which meant that capitalist firms had to postpone investment on new projects [11, 3].

The global economic crisis represented a turning point in the history of capitalism. Besides being the most severe economic crisis faced by capitalist economies since 1929, it was also a social crisis which, according to forecasts by the International Labour Organization, the number of unemployed increased from 20 million to 50 million by the end of 2009. The fall in income due to the crisis of the poor and the maintenance of international prices of food commodities at high levels, the number of undernourished people worldwide increased by 11% in 2009 and for the first time, surpassed one billion [10].

With the advancement in technology in recent years, companies started to operate with the support of Information Systems (IS) to achieve cost reductions and to create competitive advantage. One big trend in IS is the expansion of the system scope from a purely operational to support a broader scope, involving also support to decision taking process [2, 5].

An IS example to support decision-taking is an architecture of Business Intelligence (BI). It provides assistance to identify situations in thousands of information. BI became something so popular in industries that it was cited as one of the highest priorities of the new millennium projects by more than half of the executives of information technology [6, 8].

Due to the recession, many companies did not have the financial capital for new investments. So, companies had to review their processes and information systems to remain competitive in a scenario of large cost savings.

In a Brazilian chemical industry this scenario of global crisis strengthened the dissemination of best practices in the use of Business Intelligence architecture. Were reinforced corporate governance rules, processes were improved and standardized, and the usage of the BI architecture by company's employees was increased.

As there was not enough money to invest on new projects, the global crisis created a great opportunity to increase the usage of BI architecture with the use of reporting tools like Business Objects (BO) and the Business Information Warehouse (BW).

## **2 Best Practices for Using a BI Architecture**

The implementing and maintenance processes a BI architecture are similar. The vast majority of deployment best practices can also be considered as useful to ensure a good use of the architecture implemented. In the scenario of financial crisis, it was very important to apply best practices to encourage the use of the BI architecture of the company and thereby support decision-making.

Some of the best practices for deploying a BI architecture are: end-user involvement, to avoid proprietary architectures that are hard to integrate, to have the BI as a philosophy of work to be used by the company, to have the participation of experienced and practical consultants; the presence of an environment development, references to the tools of choice, training, participation in the design of an expert on multidimensional modeling, a team dedicated to DW [7, 12].

Communication is very important to define and encourage the use of a system. It is a complex process that involves issuing, receiving and understanding verbal and non-verbal messages. Interpersonal relationships are involved and often there may be incorrect understandings and other problems that make the message sent not properly understood [9].

BI should not be intended as something static, focusing on a few users, the scale factor is of utmost importance. The technologies used must allow growth in volume and queries [4].

The old models of relationship between employee and employer are currently being reviewed. More flexible strategies have been used to help reconcile the various types of professional work and professional interests. For these reasons, workers need to be constantly recycled to keep their knowledge up to date and develop other skills [1].

By studying the use of monthly indicators of BI architecture usage, it was possible to point out clearly who did not use the architecture and to work to understand the

reason for nonuse. Among the reasons there were the following justifications: the lack of technical knowledge, distrust of information from and access no longer needed.

### 3 Methodology

We conducted a literature search with the keywords: Business Intelligence, Chemical Industry, Financial Crisis, Information Systems that found Master's dissertations, articles, books and web pages with relevant content. We accessed scientific databases like SCIELO, SCOPUS, EBSCO and WEB of Knowledge for retrieving searched topics' relevant articles.

Two tools were chosen to be analyzed, the tool BO and the tool BW ([http://www.sap.com/brazil/solutions/sapbusiness\\_objects/index.epx](http://www.sap.com/brazil/solutions/sapbusiness_objects/index.epx)). Both tools are aimed at extracting reports from databases of the most varied subjects such as Sales, Purchasing, Production, Projects and others.

From the reports found on such tools, there are corporate (Core Reports) and not corporate (Non Core). Core Reports are standardized and used by a large number of people, areas and countries. Non Core Reports are users customized reports created because of special needs or exceptions that the core could not face.

Audit Databases were used to report how many times per month a user has accessed the tools BO and BW during all months of the years 2008 to 2010. If a user had used the system, there was no specific action taken with him. If he had not used, it was questioned why the non-use. The development of this paper is based on the study, revision and implementation of bio-inspired computing techniques for solving combinatorial optimization problems.

### 4 Results, Conclusion and Future Work

There was similar business analyzes with different results. To face this, all the data extraction criteria had to be analyzed, studying the reason for divergence. It was observed the importance to combat such groups of distrust to clarify myths and correct mistakes. Several meetings and trainings were done on such purpose and the benefits were amazing, the users really increased their trust on BI tools and data quality.

As a result of the work against these mistrust groups, there was an 8% increase of BW active users as showed in Fig. 1.

From 2009 to 2010, the number of active users on BW tool changed from 62 % to 70%. On BO tool, it went from 30% to 74%.

This study reinforced that monitoring the use of a BI architecture is as important as it is its implementation. BI architecture are very important for business processes automation, reducing the number of failures, minimizing rework and manual processing of information. Thus companies can gain in productivity and cost reduction. A BI architecture is used to support decision-taking and to speedup data collection and processing for the management of functional departments in several businesses.

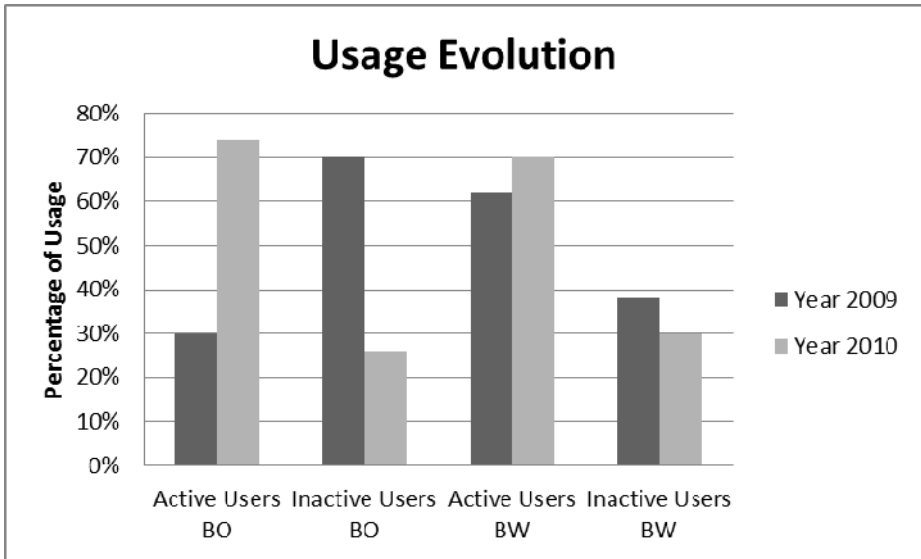


Fig. 1. BO and BW tools usage evolution between years 2009 and 2010

A continuation of this research is the study of other types of scenarios of economic or social circumstances where the use of BI tools can be beneficial as well as the application of similar studies in other sectors of the economy such as automobiles or services.

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