



Munich Personal RePEc Archive

## **Business intelligence instruments for sales monitoring**

Serbanescu, Luminita

University of Pitesti, Romania

April 2008

Online at <https://mpra.ub.uni-muenchen.de/13942/>  
MPRA Paper No. 13942, posted 11 Mar 2009 02:21 UTC

# BUSINESS INTELLIGENT INSTRUMENTS FOR SALES MONITORING

Șerbănescu Luminița

*University of Pitești, Faculty of Economics Sciences, Pitești, str. Negru-Vodă, bl. D3, sc. a, sp. 1, Argeș, luminitaserb@yahoo.com, 0745030906*

*Abstract. The managerial structures need a powerful instrument for measuring, monitoring and tracking down the key business processes. Under harsh competitive conditions, managers are now forced to solve complex problems, often not sufficiently clearly- defined, which have multiple-planned implications. Their reactions to the business demand must be not only quick, but also the right ones. They must achieve short-term results, but also have long-term orientation. The BI solutions have appeared as a response to managers' demands to obtain quickly matched synthesis information, with explanatory details, associated with the displayed synthesis. In this article, I will present a BI solution, implemented through QlikView Application, thanks to which it is possible to monitor the company sales, (by establishing the performance pointers).*

*Keywords: sales, business intelligence, QlikView, monitoring, evolutions*

The IT revolution which invaded all the domains of human development could not ignore the world of sales. The reasons why Business Intelligence needed to be introduced, at a certain moment, in the activity of a company or institution in our country are not only due to the need to face the competition imposed by the European market, to the standards and the legislation that have to be observed, but also to the acute need to save time and to enhance performance.

An efficient solution for Business Intelligence must not be limited to a single department of the company. Its beneficiaries must be from all the hierarchical organizational levels so as maximum of profit can be taken from this application. Business Intelligence is also needed because all the companies need information in order to make decisions.

The Organizational Management considers Business Intelligence to be a vital means of activity improvement, gaining of competitive advantage and meeting the strategic goals.

In Romania, the market of Business Intelligence solutions, together with that of ERP solutions (Enterprise Resource Planning), experienced an impressive evolution due both to the national economical development and to meet the need of companies to remain competitive on the market.

The work instruments which Business Intelligence applications offer give the managerial department of the company the possibility to get involved and to begin analyzing data, without having to wait for the IT departments to hand in complex reports.

To be more precise, such applications can do many operations and, what is more, they can be done in various departments of the company. One of the activities performed by this application is marketing analysis.

In this way, demographic analysis are done by using the information about clients and the data of sales, the response to price, the preferences regarding products. By using this information, the marketing campaigns can be better planned and their effect can be measured. As for the analysis of sales, the system identifies the tendencies, analyzes the seasonableness and establishes matches between products. By using this information you can set sales aims and you can measure the progress with regard to these aims.

In order to build the monitor of sales application we made use of the QlikView application, a strong and complete pack of Business Intelligence software and of data analysis which offers a better means of handling the data of a business.

The strong engine Business Intelligence of QlikView analysis uses the revolutionary technology AQL (Associative Query Logic), which accesses structured information from various sources in an interactive and dynamical way, propelling the selections of analysis throughout the entire available data basis in order to build an associative, non-relational and extremely efficient data basis.

AQL offers QlikView the possibility to work with millions of data cells and yet to answer the questions within less than a second. By replacing the classic relational technology with AQL, QlikView replaces the need of pre-aggregation of data.

Furthermore it gives the possibility of connecting to any source of data (ERP, CRM, Microsoft Excel, logs, Access data bases), thus achieving the gathering of the pieces of information generated by the multitude of independent applications used within a company.

Any objective in QlikView – from lists to graphics and tables – is accessible through a “click”. QlikView enables the users to find their own way towards the analysis and understanding of things.

To give an example we considered a company that deals with product distribution. The company has got several warehouses situated at different addresses and furnishes products to several clients from all over the country. The used information refers to:

- Articles characterized through: Product Code, Product Name, Weight, Product Group, Group Type;
- Customers defined through: Customer Code, Customer Name, Location Code, Customer Location Name, Customer Group, Customer Group Type, Department, Town, Invoicing Code;
- Invoice heading which comprises: ID, Invoicing Code, Date, Warehouse Location, Warehouse and Bill
- Invoice lines consisting of: ID, Product Code, Quantity and Price.

The most important operation that can be done very easily with QlikView is the “Filter” spreadsheet. This allows visualizing several pieces of information at the same time. The operations that can be made on this page are:

- The simple or multiple selection: for example if we select a certain product we can visualize information about the name, the customer’s type and location to whom the product was distributed, about the group of product to which the particular product belongs, the warehouse, the delivered quantity and the price of the product,
- The search: for example, if we want to find a bill number in order to see the information comprised in this particular bill (sold product, date of release, quantity, price), we have to select the thing corresponding to the bill and introduce the number of the bill. As the numbers are being introduced, all the bills that have the specified values comprised in their number are selected (see fig. 1).

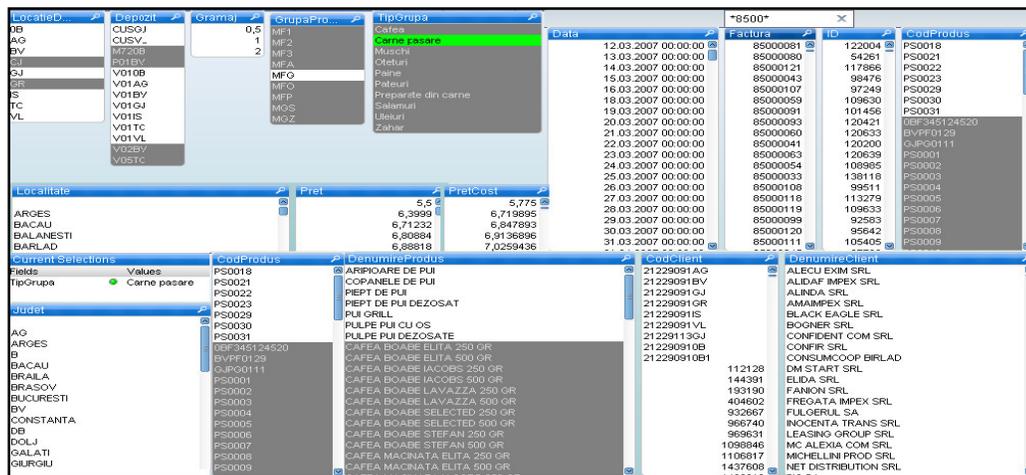


Figure 1 - Filter Page

A very important thing for the drawing of all the spreadsheets is the dimension established as representative for them. Thus we used as dimensions: time, location of warehouses, customers, products, etc. These can be selected and altered on each sheet and we can use combinations of these dimensions in order to define groups. Using the information taken from the database described above we made the following spreadsheets:

1. **Sales map:** where the sales in each warehouse are graphically represented for the selected period. We can get a clear picture of the sales from each day, week or month, for a certain group of products, or for a certain group of customers. (see fig.2)

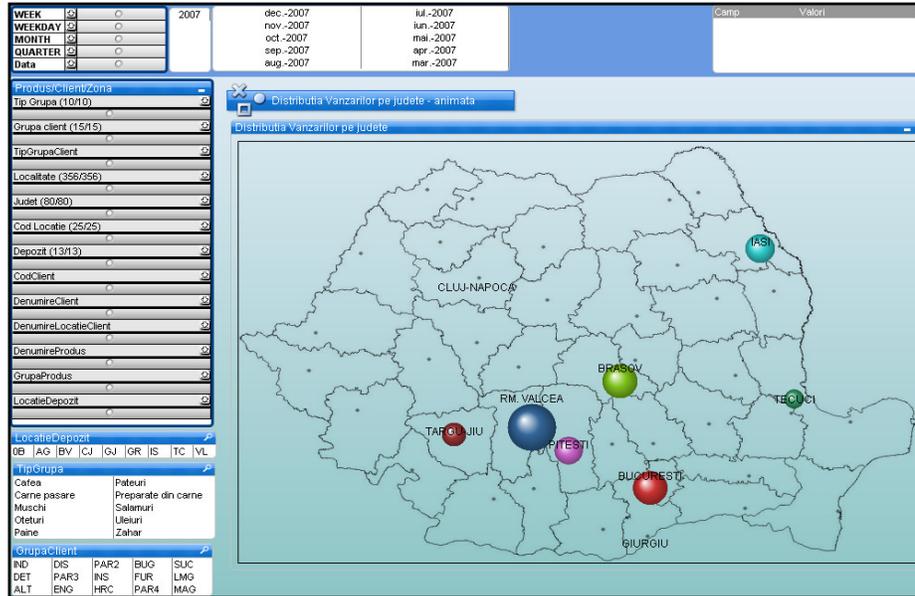


Figure 2 - The Sales Map

2. **Q, RON, PM** which contains the following graphics:

- Periodical evolutions. It is a graphic representation of the sales from each month following several dimensions, such as: value, pieces, average price.
- The number of clients, products and sales volume. Here we analyze the sales from the monthly point of view.
- Top 10 customers. It displays the first ten clients in the order of the sold values.
- Comparisons. Here we draw graphics in which we can change axes depending on the values used(see fig. 3)
- 

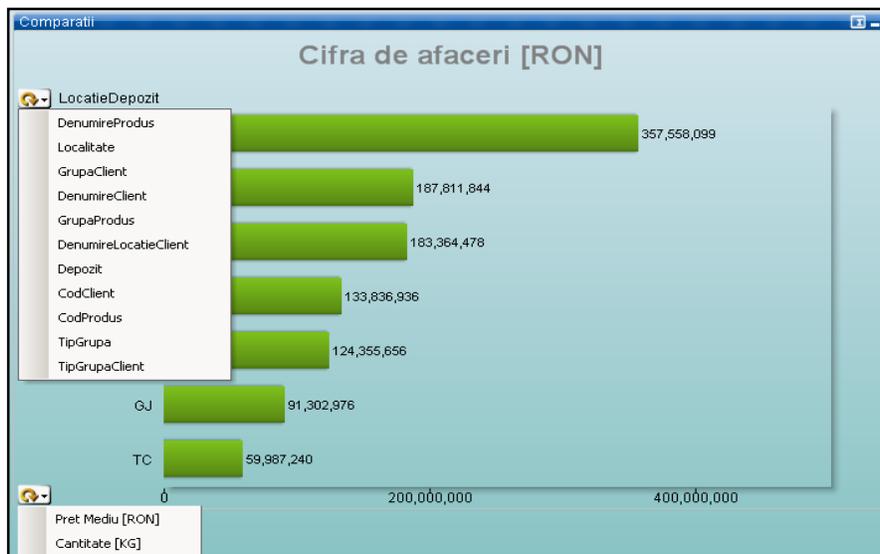


Figure 3 - Comparisons

- 
- Region sales. We build the annual or monthly evolution of sales for each warehouse.
- 

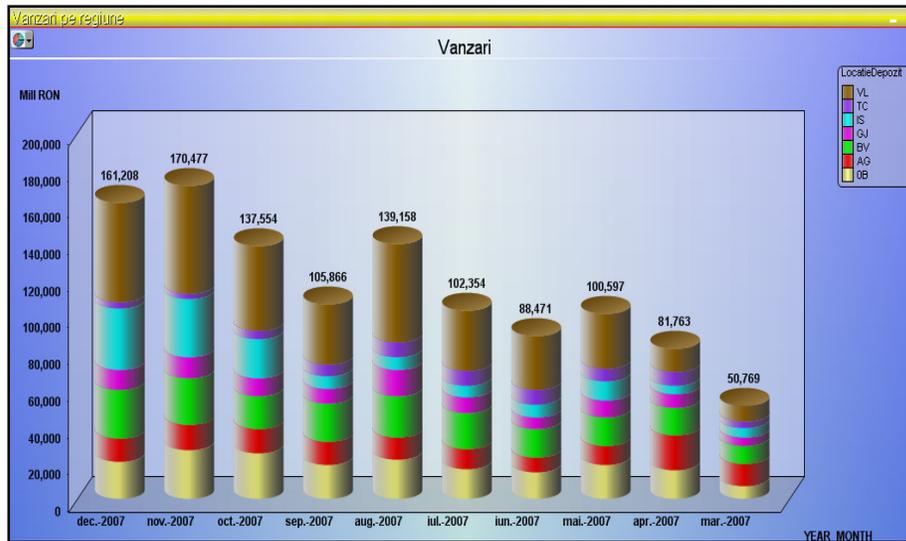


Figure 4 - Region Sales

3. **Comparative evolution** where we make a detailed analysis of the sales following several dimensions graphically represented on one axis or two. Here we can establish if there is or not logical correlation between the chosen dimensions, on certain periods of time, for example between the average price and quantity (we can study what happens to the quantity if the average price rises, or the other way) (see fig. 5)



Figure 5 - Comparative evolution

4. **Comparisons on certain periods** such as:
  - Comparisons between the days of the week. We build the evolution on a certain day of the week of the value, average price and sold quantity. For example, establishing the date of 01.08.2007 we get specific data for the three dimensions only for the day of Wednesday from the current or previous

month (we take in account the last 4 weeks) and we compare these days to one another in order to establish if there was or not an evolution of the sales.

Evolutii zi - Valoare RON									
Locatie	Depozit	T-0 (01.08.2007)	T-7 (25.07.2007)	T-14 (18.07.2007)	T-21 (11.07.2007)	Coloana2/ Coloana3	Diferenta T0-T7	Diferenta T0-T14	Diferenta T0-T21
t		4,344,112	4,634,616	3,949,187	3,687,886	93.73%	-290,504	394,926	656,226
AG		259,812	320,942	463,697	465,338	80.95%	-61,130	-203,885	-205,526
BV		655,476	693,099	843,129	699,785	94.57%	-37,523	-187,654	-44,309
TC		293,085	424,314	273,638	308,544	69.07%	-131,229	19,447	-15,459
IS		270,244	282,547	195,321	166,160	95.85%	-12,303	74,923	104,084
VL		1,249,132	1,920,804	987,690	1,103,699	65.03%	-671,672	261,434	145,433
GJ		402,850	363,064	321,544	205,321	110.96%	39,787	61,306	197,530
OB		1,213,513	629,845	664,159	739,040	192.67%	563,669	349,354	474,474

Evolutii zi - Pret Mediu									
Locatie	Depozit	T-0 (01.08.2007)	T-7 (25.07.2007)	T-14 (18.07.2007)	T-21 (11.07.2007)	Coloana2/ Coloana3	Diferenta T0-T7	Diferenta T0-T14	Diferenta T0-T21
IS		8.1836	7.5772	6.8173	6.5507	108.00%	0.6064	1.3663	1.6329
GJ		7.8514	6.8770	7.7202	7.2591	114.17%	0.9744	0.1312	0.5923
BV		7.8178	7.1077	6.5836	7.0605	109.99%	0.7100	1.2342	0.7572
AG		7.8154	7.7810	7.0314	6.5603	100.44%	0.0344	0.7840	1.2551
VL		7.5902	6.6283	6.2392	6.2253	114.51%	0.9619	1.3510	1.3649
TC		8.5362	7.9768	7.1032	6.9411	107.04%	0.5614	1.4350	1.5971
OB		8.1639	7.7182	7.2487	6.4498	105.76%	0.4458	0.9152	1.7142
OB		8.3934	7.3055	6.4432	6.0212	114.89%	1.0679	1.9502	2.3722

Evolutii zi - Cantitati KG									
Locatie	Depozit	T-0 (01.08.2007)	T-7 (25.07.2007)	T-14 (18.07.2007)	T-21 (11.07.2007)	Coloana2/ Coloana3	Diferenta T0-T7	Diferenta T0-T14	Diferenta T0-T21
VL		530,830	611,653	579,290	562,978	86.79%	-80,823	-88,460	-32,148
TC		146,300	240,800	139,050	159,010	60.76%	-94,500	7,250	-12,710
AG		35,900	54,976	37,750	47,638	65.30%	-19,076	-1,850	-11,938
AO		34,230	48,420	74,320	74,750	70.69%	-14,190	-40,090	-40,520
IS		34,420	41,086	25,300	22,890	83.78%	-6,666	9,120	11,550
BV		83,870	89,076	119,910	105,670	94.16%	-5,206	-36,040	-22,800
GJ		51,530	51,080	48,840	29,080	100.88%	450	2,690	22,450
OB		144,580	86,215	134,120	122,740	167.70%	58,365	10,460	21,840

Figure 6 - Days of the week comparisons

- 
- Period comparisons era done using the same dimensions, but we establish a certain period for which we want to visualize sales evolution. For example, if we use a 7 days period, this does not mean that we built the evolution for that week, but for a 7 days period previous to the analysis date.
- Monthly comparisons – we draw the sales evolution following the three dimensions for each of the 12 months previous to the analysis date.

## Conclusions

The need of Business Intelligence solutions is obvious, especially in those companies where the top-management realizes they cannot make tactic decisions in due time based on the existent information under certain forms inside the company, they cannot harmonize the strategies in order to reach the aims and the are dangerously heading towards a competitively risky situation on the market. Taking the current dynamics into account, the data a company holds must be used 100%. They must be translated into information which can answer the critical questions of the management. In the cases where the reports still represent the main support for decision making, presenting all the necessary data but not an analysis or interpretation of these, the need for a Business Intelligence software will, sooner or later, impose itself in a clear way. That is because the current business environment does not accept anything else but well-founded, fast and based on reliable information decisions which, once taken, gain credibility and extra value for the company.

Evidently, when we take into account the implementation of such a solution, one of the questions that arise concern the possibility of customizing of the application taking into account the needs and aim of the company. Not only is the answer a positive one, but it also constitutes one of the main advantages such an application offers.

The benefits of implementation of a Business Intelligence system are:

- It simplifies the analysis for each person in the company;
- It is easy to use – the ultimate users do not need training;
- It is flexible – unlimited dimensions that can be changed within seconds;
- It is integrated – solution of business analysis integrated with the ERP system and other independent applications used within the company;
- It is strong – immediate response for huge bulks of data.

## **Bibliography**

1. <http://www.qlikview.com>
2. IRENE BARRALL, CHRISTINE JOHNSON, TONYA TRAPPE and GRAHAM TULLIS, Intelligent Business, <http://www.intelligent-Business.org>
3. QWT Business Intelligence – Enterprise Script, QlikTech International, 2005
4. QWT Business Intelligence – Professional Layout, QlikTech International, 2005
5. WAQAR SADIQ, FELIX RACCA: Business Services Orchestration, Cambridge University Press, 2003