NECESSITY TO IMPLEMENT A BUSINESS INTELLIGENCE SOLUTION FOR THE MANAGEMENT OPTIMIZATION OF A COMPANY

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Abstract:

In order to make correct management decisions, based upon exact and up-to-date information, we need something more than intuition. Taking into consideration that in large organizations there is a great amount of information related to production indicators, financial reports given by sales, balance sheets, prognosis etc, managers often lack the qualitative information, updated in real time and transaction data on the basis of which a decision-making support system can be built. Implementation of a Business Intelligence solution in a company responds to the passage towards a new organizational culture, that of a management based upon clear, measurable objectives assumed by the company and employees at each executive level. In this work, I tackled the importance of implementation of a Business Intelligence solution in a company and I presented a case study in which I designed a few analysis reports with the help of QlikVew application. The analysis of various data types, reference and search filters put at disposal by QlikView application helps users to synthesize valuable information. Practically, electronically stored information generates possibilities of data analysis in real time for substantiation of future decisions and actions regarding management, marketing and sales. Business Intelligence should be considered as a solution which will complete the company's IT system and offer an extra efficiency in the business management, performances improvement and decisions making.

Key words: Buiness Intelligence, management, reports, analisys, QlikView

JEL classification: M12, M15

INTRODUCTION

As to accomplish their daily tasks, employees need up-to-date information. In this sense, they spend much of their time making different analyses to ensure the minimum of necessary information to them and also to their superiors. As a result of this situation, the effective work time allocated to accomplish the specific tasks is affected by the time allocated to the reporting.

Analysis of data generated by a company's activities is an exhausting activity which implies considerable human and time resources especially if the volume of information is great. However, visual representations simplify things allowing users from any level of the company to better understand the data on the basis of which they have to fulfill their goals. For example, a sales agent wishes to know the sales volume realized in a certain time period (for example in the last year or on several months) on each location (on deposits or per clients). As the majority of his colleagues, he uses static reports in the form of list for data storage and processing and will try to obtain the necessary answers from tables of figures, often a slow process and without many results. Their conversion into visual representations is yet much more efficient: trends can be observed and understood better and quicker.

A BI system comes to help non-technical users with very quick and intuitive modalities of data processing and visualization, allowing to persons from any level of the company to ask questions and receive answers in only few seconds(Anandarajan & Srinivasan, 2004). Through only few steps, we can obtain interactive reports easy to understand by anyone.

Business Intelligence software solutions are practically decision support systems and can comprise various functionalities starting from the simple static reporting under the form of tables or/and graphs, visual analysis, performance management through the monitorization of synthetical indicators of performance, planning / budget, statistical processing, dashboards etc(Zillman, 2010).

This work is divided into three sections. In the first section, I shall point out the reasons for which it is necessary the implementation of a BI solution within a company. In the second section I

shall emphasize the way of design of sales'analysis reports realized by a distribution company. In the final section I shall present some conclusions.

WHAT CHANGES DOES THE IMPLEMENTATION OF A BUSINESS INTELLIGENCE SOLUTION BRING UPON THE MANAGEMENT OF A COMPANY?

Business Intelligence refers to informatic systems of identification, extraction and analysis of data available within a company, systems whose purpose is to provide a real support for business decision-making.

We can define Business Intelligence as the platform of information presentation in a correct, useful and specific way by each decision maker in due time in order to be helpful in making efficient decisions.

The success of an organization depends of the method and rapidity with which it responds to changing market conditions. Business Intelligence solutions provide an advantage to organizations through the data basis overview, allowing them to make better decisions in a quicker rhythm(Dresner, 2010). Each employee can have such an overview and can dispose of a set of directing lines in order to act. These guiding marks are based upon a clear definition of the most important performance indicators. Any BI solution takes over information from various sources, either internal or external to the organization, no matter the format and integrates it in an unique substantial datawarehouse. Thus, all data are gathered in a single place, without duplicates.

On the basis of substantial data, BI system allows analyses of exceptions which lead to the identification of causes of problems revealing themselves within an organization. Realization of interactive visualizations can last only few minutes. These can be "assembled" in an interactive form for a general insight(Moss & Atre, 2003). Depending of the facilities of the BI system or the platform upon which it is developed, the analysis reports can be shared with anyone through the Internet. These can interact directly with the report: they can filter, sort out and rearrange the information. The analysis reports can be shared also through other methods: they can be embedded on a site, on a blog, can be used in presentations or exported in a static format as PDF.

The reason why Business Intelligence is needed in the activity of a company or of an institution in Romania is connected to the need to cope with the competitiveness imposed by the European market, by the standards and the legislation that must be observed, as well as by the acute need for a time and profit and performance economy. The problems faced by most of the organization, especially by the public ones, is the lack of fast, centralized and relevant information, the huge amount of information only partially used and the impossibility to turn the data into benefits, as a result of users' superficial and sporadic access to it.

A few reasons for which a company needs a BI system can be defined as follows:

1. Easy and quick data access. A BI solution allows for the analysis of a great volume of data, bringing at one click distance, substantial information about products, clients, cash-flow, profit, discounts, stocks etc. Data can be represented and analyzed through an unlimited number of visualizations from which trends or problems can be easily observed and decisions are taken much simpler. Access to BI system and corresponding data is no longer limited by the hardware component, the information can be accessed from any device desktop or mobile: smartphones, tablets, portable computers. Flexibiliy is an important aspect for most managers and the online collaboration offers not only mobility but also liberty in choosing devices(Raisinghani, 2004).

2. Exploration, understanding and discovery of new information. A BI system is simple, visual and easy to understand, offering employees the liberty to answer questions on the spot. The way of visualization can be changed only by a single click depending of the needs of every user. A BI solution allows users to focus on questions, on finding solutions to problems and not on how to use the system.

3. Relevance and deep data analysis. Each employee from a department needs information with direct impact upon the activity he develops. The employee's burdening with irrelevant information or data to which it shouldn't have access can have the contrary effect and affect his performance. Fast customization of reports and analyses according to the needs of each user will

contribute to the employees' targeting towards relevant indicators and making of correct and informed decisions.

4. Short response time. A BI solution includes a support system in making decisions which is acted by a database. This database offers managers access in real time to ad hoc reports, online tables, graphic dashboards. Moreover, the instruments of alert-notification which allow for the constant monitorization, notification and automation of some processes offer the possibility to the company to answer fast in certain situations defined as critical.

The new BI era integrates information into the decision process through the means of decision services, relates business processes to rules that may be changed at any time, and integrates BI benefits to capabilities provided by teamwork, cooperation, and business process management. The best organizations are still in the first stage of BI maturity. According to John Hagerty, vicepresident of Advanced Marketing Resources Research, organizations may be in one of the following stages of BI maturity (Henschen, 2008):

a) Stage 1: introduction of BI instruments into the problem areas of the organization.

b) Stage 2: introduction of BI instruments into different business parts.

c) Stage 3: cooperation and recognition of cause-effect relation between different business parts.

d) Stage 4: running the organization so that "everyone singing from the same sheet of music".

Business Intelligence solutions are now more necessary than ever, taking into consideration the worldwide economic circumstances. It is essential to make the best business decisions based upon real and exact information. They help to control and diminish costs, to seize opportunities and obtain the profit growth(Turban & other, 2007).

Soon, tables and graphs manually conceived for data processing will become history. In the actual context, BI solutions become more than simple solutions of cost reduction: they are business instruments with strategic impact for managers who wish such a power of understanding of processes and opportunities within organizations they lead. The change from the approach „pen and paper", which most of the times servs only to a predominantly tactical management with reduced impact upon activity, to professional BI solutions represents a great step for businesses which find themselves in front of a determining choice for their future(Stodder, 2008).

In the last years, most Romanian managers started to adopt slowly but surely, software applications of business intelligence type which offered them support to make decisions in real time on the basis of precise information, to measure, manage and optimize the performances so that companies become efficient and obtain benefits.

DESIGN OF SALES ANALYSIS REPORTS WITH THE HELP OF QLIKVIEW APPLICATION

In order to design the reports on analysis we used the QlikView application, which is an excellent tool in analyzing the critical information on a business. QlikView is a complete BI platform with ETL functionality (Extraction, Transformation and Loading), especially developed to allow users to rapidly combine data from multiple sources, an in-memory data warehouse and a set of BI instruments well integrated to develop very interactive graphic applications. It fits especially the needs of departments and work groups because of the ease of use and independence from IT.

QlikView is a complex and powerful BI software package and data analysis which offers a better way to work with the data of a business(QlikTech International, 2011). The graphic interface offers an increasing interaction to the users. With a few clicks on the mouse, they have immediate access to information that goes from the general level to the level of the slightest details. The organizations, thus, succeed in discovering still unsuspected information, in understanding better what is going on in their current activity and, as such, in making the best decisions for their development.

QlikView application offers the power to handle great amounts of data in an easy way and allows the data analysis from multiple sources, demonstrations of scenarios "How would it be if?" and printing of complex reports in any way without restrictions(Swoyer, 2008).

From the analysis of the reports and charts projected with the QlikView application a manager can answer in a short time the following questions, questions that are vital for the company:

1. Which customers bring the highest/ lowest value?

2. Which parameters affect sales?

3. What competitive advantages does the company offer to its customers as compared to its competitors?

4. Which are the products or industries that lose/ earn money?

For exemplification I have considered a company that merchandises many products. The company has many storehouses at different addresses and delivers products to many customers 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.

As a result of the connection of QlikView application to spreadsheets which contain data previously explained, we obtain the following image of the database (see figure 1):
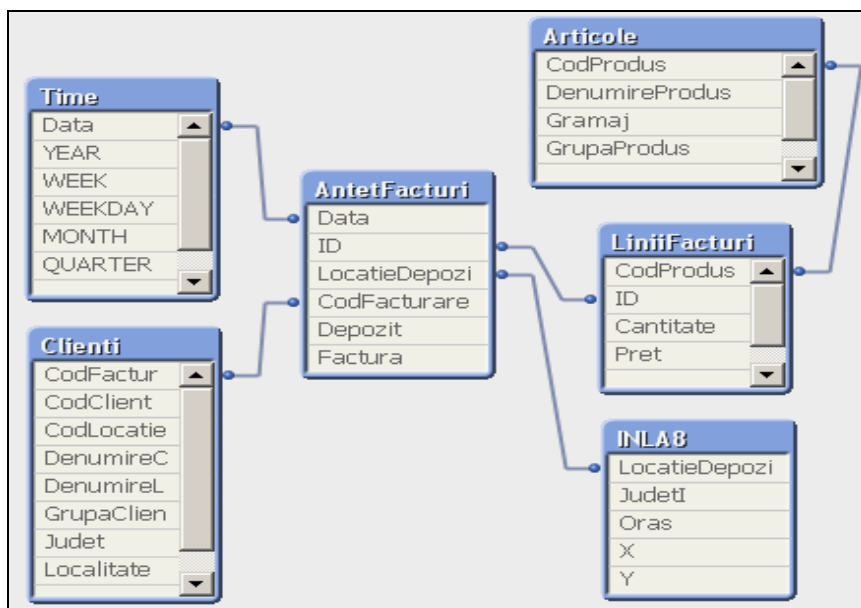

Figure 1. Image of the database

I will present part of the reports made to show the usefulness of implementing a BI solution in a company:

1. Client groups. In this report, there are emphasized the clients from each location, per groups of client. We can notice for each group of clients the total quantity purchased and by changing the option from menu, it is displayed the value corresponding to quantity sold. This report is used to determine the way of distribution of products to clients on each location. We can notice that for example on Bucharest location, the best group of clients is "DET", fact which doesn't happen in other locations(see figure 2).

By simple or multiple selection, we can have a clear image of the quantity sold or value obtained for each group of clients :
- on a certain time period (on each day, week, month or year separately, on several months);
- for a certain group of products or for a certain product;
- for a specific type of clients (partners or non-partners);
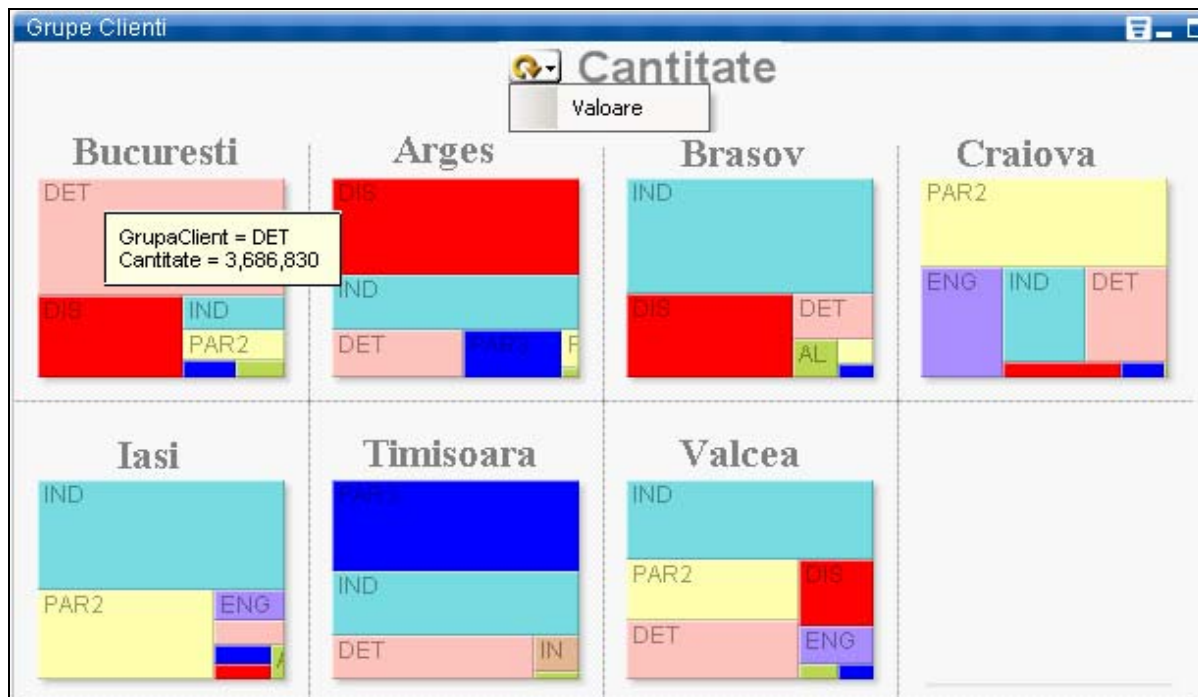- for a certain point of sale.

Figure 2. Client groups

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.

2. Product groups structure. In this graph it is presented the monthly value realized for all groups of products on each warehouse location. By a few clicks, there can be emphasized the products from certain selected groups corresponding to all groups of clients or to certain types of clients, on a selected period of months.
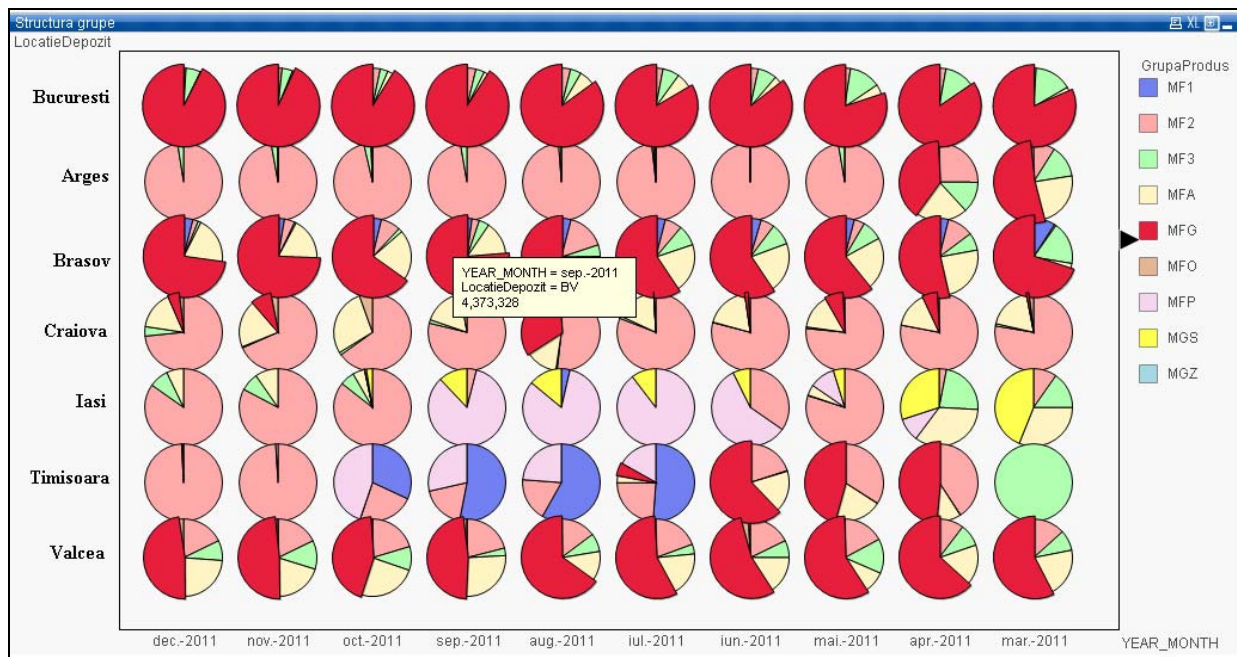
Figure 3. Product groups structure

3. Evolutions per periods. In this report 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 figure 4).

The dimensions of this graph can be changed so that to be displayed the quantities sold and the average price on another period of time (monthly, weekly, daily, annually, etc), for a group of products or many, for a group of clients or many, etc. At the same time, it can be displayed the comparative evolution between other coordinates as for example: quantities sold versus value, number of clients versus number of products, average price versus number of points of delivery, etc.

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.

Figure 4. Evolutions per periods.

4. Daily report. In the following table there are presented for each warehouse location the situations from a day regarding the quantity sold and number of clients. I also realized a comparison between current day and the day from previous week or with 2, respectively 9 days ago.

This chart can be modified easily by changing the dimensions, in this way, visualizing the same information grouped differently. For instance, we can find differences in the quantities and number of customers for a group of products , or for other customers or types of customers (partners or non-partners), or from certain warehouses, or from a locality, or from a invoicing code etc. Selections can also be made, for example, we can choose to draw a statistics only for a certain group of products, for a certain customer, a certain geographic area or for a certain group of customers etc. In fact, these selections can be made in all accounting papers built by means of this QlikView application(Manohar, 2008).

Figure 5. Daily report

Examples of this type can continue. It is important to keep in mind the fact that:

- from the point of view of the informatician who implements a BI solution within a company, this thing is realized with minimum effort, the solution customization according to company's needs being very easily to accomplish.

- from the manager's point of view, he has access to correct data in real time and can analyze and make decisions in a short time, which represents a real advantage on the competitive market.

CONCLUSIONS

One of the most efficient modalities to improve daily operations as well as financial previsions, profitability of certain sectors and hypothetical business scenarios (variation of certain indicators as number of products sold, number of clients, average price, average quantity sold) is the implementation of a business software system which allows managers and employees to make informed decisions when they found themselves in the maximum point of impact, in an easier and simpler way than at present. Thus, the most entitled person to make a decision will have access to valuable information. This is the final goal of software solutions of Business Intelligence type.

In Romania, systems of BI type are in best cases spread and used marginally in current activity. Even in the context in which there are certain investments in the field of information technology, a great part of the data used are not coordinated, analyzed or implemented as to improve operational performances. At present, because of the financing restrictions, most managers have to accept a single solution: a better use of resources they already have at hand.

Successful BI instruments are not only simple but also relevant: they are simple to allow the access to a great number of users by means of a friendly interactive interface – no matter the type or source of information – and relevant, so that users could use them to answer to their immediate needs and decisions which influence directly the business.

BI solutions improve the business' results providing a much better support to decisions making regarding the activity of the whole organization. This security is given by the qualitative level of received information, these being complete, clear, concise. Thus, the decision-making support can benefit from a competitive advantage on the market and can support considerably the fulfillment of development objectives of the business.

Solutions of Business Intelligence type mean reason, saving time, clear and complete image of premises on the basis of which business decisions are made. Moreover, they are solutions in continuous development on the basis of market dynamics and types of management needs. Obviously, in the next 2 years, solutions of Business Intelligence type will be a mandatory condition for business success.

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