Business Intelligence Tools for Payment Analysis

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Abstract
Taking good decisions in the business we run is as important as taking good decisions in our private life. We have to make decisions that will influence the direction and efficiency of the activities of the company every day. We make decisions concerning production, marketing, personnel, etc. The decisions we make affect the costs, the sales, the profit, etc. As in our private life the key for the success of a company is the way in which we make decisions. The organizations must take efficient decisions. This can be done with the help of Business Intelligence (BI) solutions.
BI is a concept that brings about fundamental changes within companies and, if correctly implemented turns into good account the information necessary to measure, administrate, make decisions, and optimize the performances.
BI analysis solutions allow companies to gather strategic information from large, unstructured volumes of data, in the purpose of recognizing tendencies and defining business targets.
The solutions provide the mechanism through which users can examine historic evolutions, measure results, look for invisible exceptions in the standardized reports and create automatic alerts to signal in time problems that might occur.
The article presents a BI solution implemented by the means of QlikView application, for the analysis of salary costs. Since outsourcing services within human resources is a solution preferred by more and more Romanian companies I have taken as an example a company that provides these services to client companies.

Keywords: business intelligence, QlikView, HR management, outsearching, analisys

JEL classifications: M10 – General, M12 - Personnel Management, M15 - IT Management

Introduction

Any organization that records a business volume which cannot be administrated with the aid of the human factor only, has to implement a computerized management system for critical activities: the financial/ accountancy activities – usually the first to be computerized, Enterprise Resource Planning (ERP), Customer Relationship Management (CRM) are only some of the most widely spread systems used by various companies nowadays.

Even though these systems allow data access by generating various reports and statements, this set of functions is limited and usually available only for those in charge with the management of those systems, people with technical training – programmers or database

administrators. This is due to the fact that those who provide this type of solutions do not focus on report and analysis functions. Developing these functions poses problems at least as complex as those faced in developing operational systems. Providers of ERP and CRM systems often prefer partnership with business intelligence solution providers or even acquire them to enrich the range of functionalities they offer.

The most important benefit offered by BI is that it facilitates the making of the best decisions in a shorter period of time. This ability should be available for each business function and should be based on the common platform that provides clear, consistent and credible information.

Even though in Romania the interest for this kind of solutions does not raise to the level of the developed markets, it seems that the situation has changed lately. At the world level there have occurred changes in the basic philosophy of the BI software solutions.

Human Resource Outsourcing

To exemplify I will consider a company that operates with payment analysis for five client companies since there is a tendency towards outsourcing services in the case of small and medium size companies.

Here are a few reasons for outsourcing human resource services:

1 Varied competencies. A team of employees is needed (each employee with a different level of knowledge and different salaries, proportional with their training) in order to meet all the competency levels necessary in the human resources domain. When a specialist in payment is hired, he will have a salary twice as big as it is necessary for administrating personnel documents. If a personnel inspector is hired to administrate the database and the personnel documents, he will not have the necessary competencies to calculate salaries or solve the difficult problems that inevitably occur in any company. A specialized company will put at the customer's disposal its complete team made of specialists in human resources.
2 The human resource consumes other internal resources. The cost of an employee is given not only by his salary. Starting with the recruitment process, the initial training, the office and the computer he uses, and then the tax and other fees paid along with the salary. What is more, there is a need for continuous specialization due to the fast changes in the legislative system. All these are efforts that a company must make to have a productive employee who is permanently connected to the very fast changes. The provider of human resource services can administrate the above things more efficiently because it is his activity and it offers a more attractive working environment for a human resource specialist in the long term.
3 Availability is the key to success. If you have your own human resource department with one or more employees, it will not be profitable to hire more people with the same specialization, paid to be in stand-by to replace, when needed, an employee who is not available (sick leaves, vacation, projects etc). If you do not dispose of these resources, the activity will be blocked repeatedly and for unacceptable periods of time. The human resource service

provider can manage better these shortages because it has more resources and whenever a problem occurs, there is always someone available to solve it.

4 The customer is more demanding than the employer. It is easier to ask more from a provider than from your own employee. And when the demands are not met it is easier to end a agreement with a provider than to fire an employee who no longer meets the requirements of his position.

5 Improving cost efficiency. If we take into account the costs necessary to administrate a human resource department that can be run by a well-trained man or two less efficient ones, with a simple service agreement which is a totally deductible expense with no movement of prices for a year, the advantages of outsourcing become obvious.

Implementing a BI solution for payment analysis

To implement a BI solution for payment analysis I have used the QlikView application that ensures connection to any data source (ERP, CRM, Microsoft Excel, logs, CSV files), thus gathering all information generated by the multitude of independent applications used within a company.

The benefits of QlikView application can be summarized as follows:

1 Turns to good account the user's intelligence. It allows its users to make the right decisions, at any time and no matter where they are. The results can be printed as reports, saved as PDF documents, sent to Microsoft Excel or copied to other Microsoft Office applications.

2 Fast to implement, easy to learn, user friendly. Final users can use QlikView applications in only a few minutes, which has as a result fast exploitation and low costs.

3 It is the only architecture for analysis, applications and report. Through a careful control of the users' rights, the companies can provide ad-hoc analyses to key-persons, printed reports to distance users, dashboard metrics to executive managers and analytical applications to middle managers.

4 It always provides an answer. Any QlikView object – from lists, to charts and tables – is available with a «click». QlikView offers its users the power to find their own way to analyze and understand the things.

5 Integrates all available data for analysis. No matter if the data is stocked in the data warehouse or in operational systems, it is permanently available for usage in QlikView applications.

6 Fast ROI (return on investment) and low costs. With QlikView, a completely functional prototype application can be available in just a few hours. QlikView supports an unlimited number of dimensions and procedures that can be added in a few minutes. QlikView implementations allow a quick return on investment.

An important characteristic in projecting the calculation pages with the aid of QlikView application is given by defining the dimensions which are set as representatives. Thus I defined as dimensions: the customer company, department denominations, employees' positions, the period of time, etc. these can be selected and modified on each page and combinations of these dimensions can be used by defining groups.
The most important operation that can by done very easily with the help of QlikView is the calculus page „Filtre". This allows

visualization of more information at the same time. The operations that can be done on this page are the following:

- Single or multiple selection: for example, if a certain department is selected (i.e. the IT department – see fig.1) there can be visualized information on the companies that have this department, on the employees and their positions, on the budget groups, on the number of sick leave days or vacation days taken, on the number of training days, on the number of hours worked over a certain period of time.

Figure 1: Filtre Page

- Search: for example if we want to look for a certain person to find information on the company s/he works for, the standard wage, the net salary ,the gross salary, the incentive categories received, holydays, sick leaves taken, the number of training days the corresponding object is chosen and the name of the employee is introduced. As the letters are being introduced all the employees that have in their names those values are selected.

Used data is modified for tests, but real data ratio is preserved. The reports are varied and are obtained either by changing the type of charts or with the help of the multiple selection criteria: the time period, data on salary earners and salaries, on departments and the existent positions. The reports may take the form of a table or chart and can be visualized and printed directly from the application, by the means of a web-site, or can be exported to excel for further processing.

Part of the reports projected to make an analysis of the payment expenses specific to each of the chosen company are shown as follows:

1 **Standard wage analysis:** the departments within a company and the positions within the departments are shown in the form of a table (see fig. 2). The following information is calculated for each position, for a three month period: the number of employees with the same position, the total sum and the average of the monthly standard

wage, as well as the minimum and the maximum standard wage given in a month. This table can be modified, just with a few "clicks", to obtain the same statement for each employee, examining the differences in the salary for the same employee but also the differences in the salary for two employees with the same position. The monthly evolution of these parameters is easy to follow, and comparisons can be made between nonconsecutive months.

Figure 2: Standard wage analysis

2 *Salary evolution per month* for each employee of the customer companies. This report shows the standard wage, the gross salary, the incentive category received over a period of three months (as selected) by each employee. For each employee, the differences in the standard wage, in the gross salary per month as well as the periods of time when s/he was given incentives can be easily noticed (see fig. 3). The information in this table can be rearranged .By targeting the month this will become column heading and we can see the value of the three components (standard wage, gross salary, incentive category) for each month. At the same time we can make selections such as: to display data for one customer company, to visualize information on a certain department, on a certain position, etc.

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NUME_PRENUME	Tarifar Total	10/2008	09/2008	08/2008	Net Total	10/2008	09/2008	08/2008	Categorie prime Total	10/2008	09/2008	08/2008
Total	12,886,680	4,436,036	4,240,520	4,210,124	13,523,289	4,557,859	4,353,297	4,612,133	2,509,794	685,721	698,633	1,125,440
Popescu Ion 646	38,730	12,910	12,910	12,910	33,852	9,200	9,164	15,488	8,910	0	0	8,910
Popescu Ion 567	47,046	15,682	15,682	15,682	33,415	11,153	11,131	11,131	0	0	0	0
Popescu Ion 3616	47,046	15,682	15,682	15,682	33,393	11,131	11,131	11,131	0	0	0	0
Popescu Ion 876	29,580	9,860	9,860	9,860	28,499	10,499	6,999	11,001	10,572	4,932	0	5,640
Popescu Ion 781	26,916	9,158	9,158	8,600	26,308	6,501	6,500	13,307	10,148	0	0	10,148
Popescu Ion 3612	0	0	0	0	25,243	15,717	4,763	4,763	9,200	9,200	0	0
Popescu Ion 4087	23,550	7,850	7,850	7,850	24,746	5,594	5,580	13,572	11,271	0	0	11,271
Popescu Ion 4621	0	0	0	0	23,814	7,938	7,938	7,938	0	0	0	0
Popescu Ion 4622	27,000	9,000	9,000	9,000	23,689	6,413	6,388	10,888	6,340	0	0	6,340
Popescu Ion 4112	25,500	8,500	8,500	8,500	22,665	6,032	6,032	10,601	6,435	0	0	6,435
Popescu Ion 553	21,513	7,171	7,171	7,171	20,060	5,090	5,097	9,873	6,739	0	0	6,739
Popescu Ion 595	17,280	6,340	6,340	4,600	20,034	8,801	4,500	6,733	10,944	6,059	0	4,885
Popescu Ion 4309	16,200	5,800	5,200	5,200	19,454	4,117	3,696	11,641	11,200	0	0	11,200
Popescu Ion 4736	6,900	2,500	2,200	2,200	19,382	6,731	7,488	5,163	20,403	6,983	8,347	5,073
Popescu Ion 566	21,390	7,130	7,130	7,130	19,213	5,091	5,061	9,061	5,636	0	0	5,636
Popescu Ion 3509	27,000	9,000	9,000	9,000	19,189	6,413	6,388	6,388	0	0	0	0
Popescu Ion 154	27,000	9,000	9,000	9,000	19,189	6,413	6,388	6,388	0	0	0	0
Popescu Ion 2876	25,800	8,600	8,600	8,600	18,345	6,104	6,104	6,137	46	0	0	46
Popescu Ion 4638	19,500	6,500	6,500	6,500	17,990	4,612	4,612	8,766	5,850	0	0	5,850
Popescu Ion 4498	15,000	5,000	5,000	5,000	16,891	5,004	5,322	6,565	8,800	2,050	2,500	4,250
Popescu Ion 594	17,130	5,710	5,710	5,710	16,873	4,053	8,767	4,053	6,629	0	6,629	0
Popescu Ion 2529	18,310	6,300	6,300	5,710	16,385	4,862	4,470	7,053	4,226	0	0	4,226
Popescu Ion 4610	13,500	4,500	4,500	4,500	16,095	3,315	6,392	6,388	9,000	0	4,500	4,500
Popescu Ion 4114	16,500	5,500	5,500	5,500	15,836	3,919	4,109	7,808	5,785	0	285	5,500

Figure 3: Salary evolution per month

3 ***Bonus analysis*** contains for each department of the customer companies the sums in the incentive category (bonus) given to the employees every month (see fig. 4). The chart can be used for statistics on the bonuses given by a company to its employees in a month or over a certain period of time. At the same time, the sums in the incentive category given by each customer company to its employees can be compared, for the whole company or for each department. By placing the mouse on a certain department in the chart (a certain colour) detailed information on department, month and the incentives given to employees are shown.
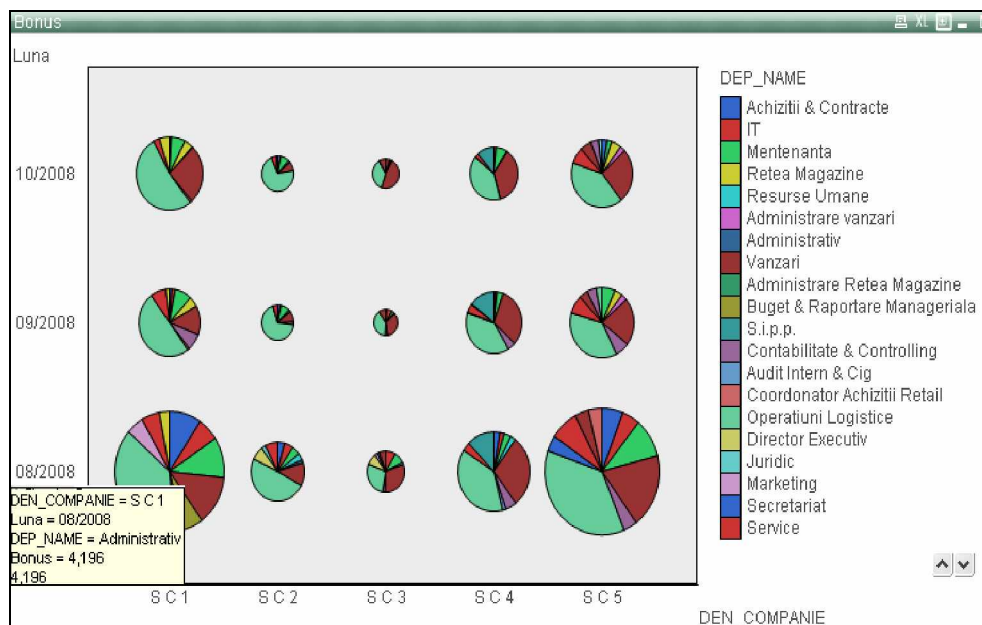
Figure 4: Bonus analysis

4 ***Leave records*** contains information regarding the average number of vacation days taken by the employees of each company over a three month period. A simple click can change the chart to visualize information on sick leaves and the number of meal tickets per employee or change the period of time (one month on nonconsecutive months). The same information on leaves can be displayed in a chart but grouped on a department, on positions or on budget groups.
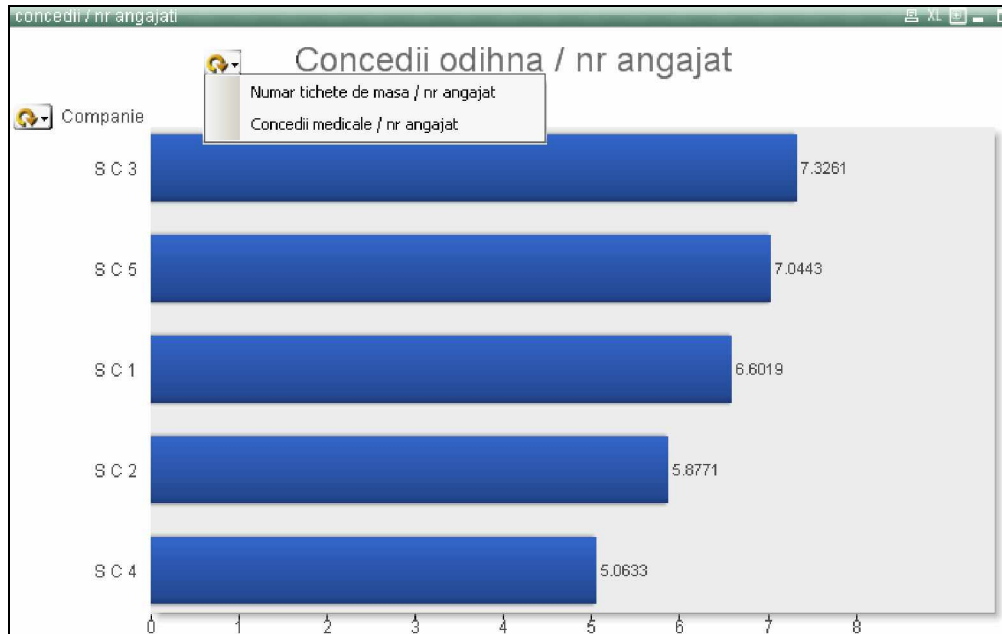

Figure 5: Leave records

Conclusion

I consider that in the future Business Intelligence solutions will become indispensable tools in the management of any company since quick and good decisions will become critical for survival and evolution on the European market. Romania shows a great potential to assimilate IT solutions, the receptivity for Business Intelligence solutions becoming more and more obvious both as mentality and practical application within the Romanian business environment. There are still problems, as there are Romanian managers that still need to be convinced to adopt global Business Intelligence solutions.

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.

The need for business intelligence systems can be easily explained: in order to survive on the competitive market, a company must try to develop a success strategy; to develop a success strategy the ability to anticipate the future conditions is necessary; understanding the

past is the best way to predict the future. Business intelligence does this.

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