BUSINESS INTELLIGENCE TOOLS FOR IMPROVE SALES AND PROFITABILITY

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Abstract: Business intelligence (BI) is a broad category of applications and technologies for gathering, storing, analyzing, and providing access to data to help enterprise users make better business decisions. BI applications include the activities of decision support systems, query and reporting, online analytical processing (OLAP), statistical analysis, forecasting and data mining. 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).

JEL classification: M15, M21

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1. Introduction

Business intelligence is an umbrella term that refers to a variety of software applications used to analyze an organization’s raw data. BI as a discipline is made up of several related activities, including data mining, online analytical processing, querying and reporting.

Companies use BI to improve decision making, cut costs and identify new business opportunities. BI is more than just corporate reporting and more than a set of tools to coax data out of enterprise systems. An essential facility associated with the BI Systems is their capacity to connect themselves simultaneously and coherently to many data bases, which may be different operational systems (accounting, ERP, CRM, SCM, etc), results of many market researches, activity and access logs, or anything that can be relevant to the beneficiary organisation, general structured information, but available in varied formats, from text files to data base structures.

The Business Intelligence solution used accomplishes the following:
- marketing analyses – demographic analyses using information about the customers and sales records, price sensitivity, preferences for products. The usage of this information can lead to a better planning of the marketing campaigns and their effect can be measured.
- sales analyses – identifying tendencies, seasonal analysis, associations between products. By means of this information sales goals can be set and the progress can be measured in relation with the goals.

When charting a course for BI, companies should first analyze the way they make decisions and consider the information that executives need to facilitate more confident and more rapid decision-making, as well as how they'd like that information presented to them (for example, as a report, a chart, online, hard copy). Discussions of
decision making will drive what information companies need to collect, analyze and publish in their BI systems.

2. Objectives

Most companies collect a large amount of data from their business operations. To keep track of that information, a business and would need to use a wide range of software programs, such as Excel, Access and different database applications for various departments throughout their organization. Using multiple software programs makes it difficult to retrieve information in a timely manner and to perform analysis of the data.

The term Business Intelligence (BI) represents the tools and systems that play a key role in the strategic planning process of the corporation. These systems allow a company to gather, store, access and analyze corporate data to aid in decision-making. Generally these systems will illustrate business intelligence in the areas of customer profiling, customer support, market research, market segmentation, product profitability, statistical analysis, and inventory and distribution analysis to name a few.

To stay competitive, businesses need tools to take advantage of opportunities and avoid risk, in real-time. As a result, business-intelligence and related business-reporting tools are going through a transformation, driven by business leaders and their need for visibility into day-to-day operations.

Business intelligence tools, when combined with your operational data, enable you to:

1. Increase sales using fact-based selling tools.
2. Build profits by targeting profitable activities.
3. Increase customer loyalty and retain customers for life.

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.

3. Methodology

Seven steps to rolling out BI systems:

1. Make sure your data is clean.
2. Train users effectively.
3. Deploy quickly, then adjust as you go. Don't spend a huge amount of time up front developing the "perfect" reports because needs will evolve as the business evolves. Deliver reports that provide the most value quickly, and then tweak them.
4. Take an integrated approach to building your data warehouse from the beginning. Make sure you're not locking yourself into an unworkable data strategy further down the road.
5. Define ROI clearly before you start. Outline the specific benefits you expect to achieve, then do a reality check every quarter or six months.

6. Focus on business objectives.

7. Don't buy business intelligence software because you think you need it. Deploy BI with the idea that there are numbers out there that you need to find, and know roughly where they might be.

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.

The application QlikView, an extremely efficient instrument, performs a wide variety of analyses. I used it to develop a BI solution through which any piece of information that exists in the company’s database may be used and interpreted in an integrated context.

Any user/manager may settle his/her own set of analyses and value consequently that vital information to fulfill his/her responsibilities. Thus the decisions of each department are based on accurate analyses that use efficiently all available information of a company.

The graphic interface provides a high interactivity for the users. A few mouse clicks access immediately general or detailed information.

4. Analyses

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.

Part of the reports designed to monitoring the specific sales of the chosen company are shown below:

1. Q, RON, PM which contains the following graphics:
   a) Periodical evolutions. It is a graphic representation of the sales from each
month following several dimensions, such as: value, pieces, average price.

***Figure no. 1 - Weekly evolution of the average prices***

b) The number of clients, products and sales volume. Here we analyze the sales from the monthly point of view. Figure 2 shows the evolution of the number of distributed products, but by choosing from a menu there can be drawn diagrams for the number of customers or for the sales turnover.

From the table adjoining the diagram other selections can be done, for instance we can choose to draw the diagram for a certain product group, for a certain customer, for a certain geographical area, for a certain group of customers, etc. In fact these selections can be done within any spreadsheet built with the aid of QlikView application.

***Figure no. 2 – Monthly evolution of the number of distributed products***

c) Comparisons. Here we draw graphics in which we can change axes depending on the values used. Figure 3 may provide the average prices analysis on product groups for a certain period of time (year, month, day).
d) Top 10 customers. It displays the first ten clients in the order of the sold values.

2. Comparative evolution. The comparative evolution between the average price and the margin of products for a certain period (day, week, month, semester, year) is made on two axes (figure 6). At the same time, other comparative evolutions may be analyzed: between the average price and the sold quantity of products, between the average price and the number of customers, between the average price and the number of sold products etc.

3. The Key Performance Indicators (KPI). The key performance indicators are important for the teams, managers, or businesses in order to evaluate rapidly the progress to measurable objectives.

Every business area can choose to follow other types of KPIs, according to the objectives which are to be fulfilled. For instance, in order to increase the customers’ satisfaction, a calling centre can have as its goal to settle to answer to a specific number
of telephone calls in a shorter period of time.

**Figure no. 5 - Comparative evolution on two axes between the average price and the margin**

Another possibility is for the sales department to use KPIs in order to settle performance objectives, such as the number of the new products sold every month. Other example of such indicators could be defined:

- the average income on customer;
- sales versus target for every employee of the sales department;
- the success rate (the number of contracts signed of the total).

In the present case, I considered as performance indicators: the products value, the sold quantity, and the average price and I took into account the days of the current month and the days of the last month till the same day.

**5. Conclusions**

Business intelligence systems are contrasted to more classic forms of information gathering by their interdepartmental focus and their general overview...
towards business performance. They are also unique in their use of advanced technology and techniques to mine for data and to crunch that data in the most optimal manner. While a group in charge of market analysis might have a strong understanding of the particular sector of the market in which a business operates, their lack of the same detailed understanding about specific competitors and the inner management of the company make their information less useful. In a business intelligence model, all these various forms of business improvement are tied together so that communication is quick and easy, and each segment helps inform the other segments so their insights are even more valuable than they would be on their own.

All companies need information in order to make decisions. There is usually too much data spread in the IT systems of the company, but transforming the data into information that can be analyzed in order to make decisions is a difficult process. A Business Intelligence solution makes information accessible to the users who need it: analysts, and experts – multidimensional analyses, statistics; information consumers – dynamic interrogations, simple analyses; information users – reports.

Good BI systems need to give context. It's not enough that they report sales were X yesterday and Y a year ago that same day. They need to explain what factors influencing the business caused sales to be X one day and Y on the same date the previous year.

Business intelligence has been used to identify cost-cutting ideas, uncover business opportunities, roll ERP data into accessible reports, react quickly to retail demand and optimize prices.

This information system is a Business Intelligence product offers informational support to those with analysis and decision powers in the „Marketing” and „Sales” departments. Implementing a business intelligence solution has the following benefits:

- It places at the users’ disposal all relevant information about the business they need in due time.
- Simplifies the search for complex data and automatizes business processes.
- The solution is adapted to the specific requirements of the organization, unlike a prefabricated and difficult to adjust one.
- It makes use of the existing technologies: Excel and requires little training as it is based on the present knowledge of the users.
- It reduces the period of time for decision making, allowing rapid reaction to changes and generating a competitive advantage.

I believe 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.

**References**

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