QLIKVIEW APPLICATION - SUPPORT IN DECISION MAKING

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Abstract: Control over the company, an objective that any manager wants, can only be exercised on the basis of real and complex business data. For this, a higher level of application is required, with Business Intelligence applications that provide information that no one else can offer faster. Winning time can be used to identify other issues related to available information or activities that add value to the company. After all, management time is a decision, and the decision is valuable only if it occurs at the right time. In this article I presented the benefits of implementing a business intelligence solution in a company, as well as how to design analytical reports using the QlikView application.

Keywords: Business Intelligence, Analysis reports, Dashboard, QlikView.

JEL Classification Codes: C80, M10, M15.

1. INTRODUCTION

According to international analysis cabinets, the demand for world-class Business Intelligence solutions is steadily increasing. Locally, such estimates are missing, the only clues to this being forecasts of market players. Evolution of QlikTech's local partners, providing QlikView Business Intelligence, is in line with the global trend.

Today, there are eight basic products and services on the market (Qlik, 2017):

1. Qlik Sense, the new generation self-service-oriented visual analysis application. With Qlik Sense, business users of all types and skill sets get powerful, flexible visualization and discovery on any device. Qlik Sense offers a cutting edge experience in a smart, responsive, HTML5 client that allows people to quickly explore information and gain critical insights. Qlik Sense runs on our second generation QIX engine, offering a new level of dynamic calculation and performance for broadly deployed, self-service oriented analytics.

2. Qlik Analytics Platform, which underpins Qlik Sense and supports the development of custom analysis and integrated analysis applications. The Qlik Analytics Platform provides direct access to the power of the QIX engine through open and standard APIs, extensions API, engine API, and management APIs. This allows developers to build fully custom applications, embed analytics in operational apps, utilize third-party visualizations, and extend analytics wherever and however they are needed, harnessing the same power in their apps as Qlik Sense but with much greater flexibility.

3. QlikView, guided analysis solution and dashboard solution. QlikView allows users to rapidly build and deploy analytic apps without the need for professional development skills, driving faster response to changing business requirements, shorter time to value, and more

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insight across the organization. QlikView offers interactive dashboards and analytics applications, purpose built by developers, which guide the user to discovery. QlikView apps offer a beautiful, pixel-perfect interface, delivered through any browser, which can be customized for complex use cases and solutions while still allowing for an unmatched level of interactivity and discovery.

4. Qlik NPrinting for collaborative analyzes and reports. Qlik NPrinting is the advanced report generation and distribution application for Qlik Sense and QlikView, allowing organizations to create great-looking reports quickly, in a variety of popular formats including Microsoft® Office, PDF, and web. Qlik NPrinting ensures that the right reports get to the right people, how and when they need them, through managed distribution and user self-service. With Qlik NPrinting, Qlik can serve as a single solution for both interactive analytics and reporting, allowing organizations to retire legacy BI systems and save significant costs.

5. Qlik GeoAnalytics, for advanced mapping and geographic analysis. This allows our customers to add interactive maps to their applications, and offers geospatial tools that can analyze both location and non-location data together to better understand patterns and uncover hidden relationships and insights. Qlik offers a combined mapping and geographic analysis add-on product for both Qlik Sense and QlikView, and a geo-coding service is also available.

6. Qlik Sense Cloud, providing visual analytics online. Qlik Sense Cloud enables individuals, teams, and businesses to create and share Qlik Sense apps online, or share applications created in Qlik Sense Desktop. People can privately share their apps with others through a simple email invitation. All users can fully interact with and explore applications from any device, including mobile devices.

7. Qlik DataMarket, integrated data-to-service solution; Qlik DataMarket providing a comprehensive library of data sets from trusted sources offered on a subscription basis. A wide range of topic areas are available, including business demographics, currencies, population, economic indicators, and weather. Data is accessible from within Qlik Sense through a simple graphical user interface that guides the user through the data merging process, and is also available in QlikView. With Qlik DataMarket, anyone can easily augment their analyses with external data to get an "outside-in" perspective for added context and broader insights.

8. Qlik Connectors, the broad package of connectivity options for on premise and cloud-based data sources. Qlik Connectors provide connectivity to a wide variety of data sources, both internal and external. From file based sources, operational applications and databases to websites, cloud-based applications and big data sources, Qlik Connectors allow rapid data access and integration using pre-configured, production-proven components. Qlik Connectors include the Qlik Salesforce.com® Connector, which improves CRM analytics and visibility, the Qlik Connector for SAP, enabling analytics from a variety of SAP systems, and Qlik Web Connectors, a comprehensive suite of pre-configured connectors for major social media and web-based data sources.

2. BENEFITS AND FUNCTIONALITY OF THE QLIKVIEW APPLICATION

More than 570,000 users of over 13,000 customers in 95 countries use QlikView in daily analyses (WinMentor, 2012). Companies in various industry sectors have built powerful QlikView-based solutions. Their success came from the main benefits of QlikView:

- Incredible adoption speed in the company (ease of implementation and minimal need for training for use).

- Significantly improved workflow versus traditional OLAP solutions.

- The amount of investment needed is far below any other Business Intelligence solutions available on the market at this time.

- Fast responses: Data processing in memory produces immediate results, no matter the complexity of the query, even for billions of volumes.

- Incomparable flexibility: QlikView does not require a data repository, so users can quickly link data from different sources, and at the same time add new data in just a few minutes (Vasile 2010).

QlikView clients in Romania include: Carrefour, Vel Pitar, eMag, Vodafone, HelpNet, Interbrands, Den Braven, Flanco, Humanitas, Zarea, Farexim, Apavital and others.

From the end user's point of view, the QlikView computer system provides two important functionalities: free data warehousing in search of relevant information and various data presentation possibilities (Howson, 2013). These functionalities are closely linked and it is difficult to say which operation is navigation and which presentation (figure 1).
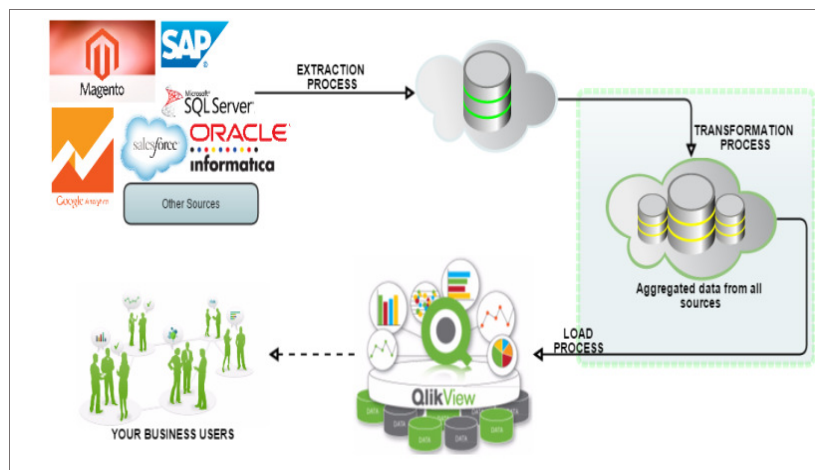
Figure 1. The computer system in a company that uses the QlikView application
(Source: https://www.qlik.com/us/products/why-qlik-is-different)

Navigating through the data warehouse is done by specifying the selection criteria. The user can easily express simple criteria, or combine them with logical operators to search for information. The application allows you to access all the information present in the database at one time (in one screen), selecting one by simply clicking, and searching by writing the appropriate criteria.

Specifying the presentation should allow the data analyst to find the optimal ways to visually exploit the extracted data. In addition to the presentation-specific graphing options, it is important for the user to view multidimensional data in the form of tables (Sherman, 2014). Thus, complex tables can be designed to group lines and columns expressing defined dimensions and different aggregation levels.

3. THE USE OF QLIKVIEW APPLICATION IN DESIGNING ANALYSIS REPORTS

For designing analysis reports I will use QlikView Personal Edition, a free version of QlikView. It is designed for students or small businesses. QlikView Personal Edition is the full version of QlikView Desktop and uses the same installation package, the only difference is that QlikView Personal Edition works without a license.

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

QlikView is software that allows the creation of multi-source data reporting panels. It can connect almost any source system that stores tabular data (QlikTech International, 2011).

QlikView will import and model data through scripts and link them to the elements on the graphical interface of the application. In the scripts the fields and tables to be loaded are specified. Data structure can also be manipulated using expressions.

In addition to tables in the database can be defined in the edit window and other tables required for applications. For example, it is very important to have a table containing the periods of time after which different information can be displayed (year, month, week, quarter, weekdays, etc.).

Once data loading is complete, the data must be shaped as a relational database structure to communicate with the interface elements.

Data shaping is required to reunite, concatenate, bind or relate imported offline tables through a script. The QlikView Script Editor supports all common types of syntax (If, While, For, etc.), variables, functions, and scripting language is similar to SQL (Turban et al., 2007). Tables in the data model will automatically link to each other when they detect a common field (one column) with the same name (see figure 2). This is easier to see if we look at how the Microsoft Access data model works (here's easier, you only need one key) and how a Pivot Table can be accessed.
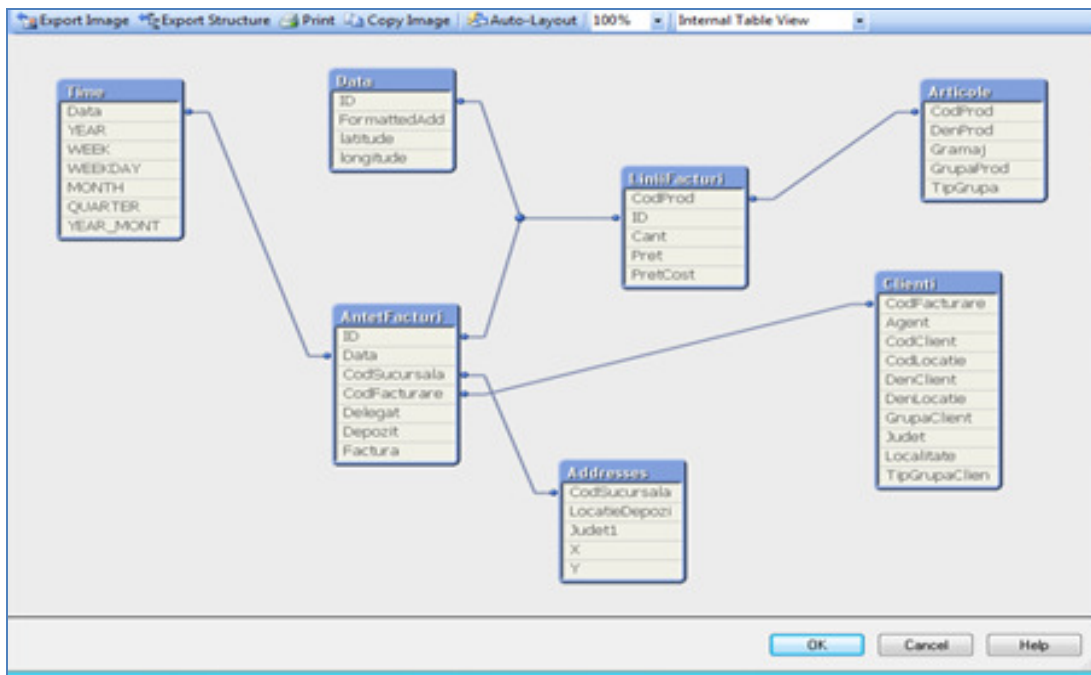
Figure 2. Viewing the database (Source: developed by the authors using QlikView)

To illustrate the use of QlikView, I created a series of charts which contains the evolution of sales on various periods and groups.

1. In the graph in figure 3, the monthly quantity sold from each deposit is presented. It can be seen that this graphic can be changed by a few clicks to display the quantity, the average price or the value of the products. For each of these, we can display monthly, weekly, yearly, quarterly, or weekly information. At the same time, we can choose to display the same information for each product, group of customers, product groups, invoice code.

This chart provides very important information that helps us decide which areas are the best-selling products, which products are best sold, which customers are the most active, tracking daily, weekly, monthly, quarterly or annual sales quantities or average sales price. With a single click, we can change the way this information is presented, namely by choosing another type of chart or table.
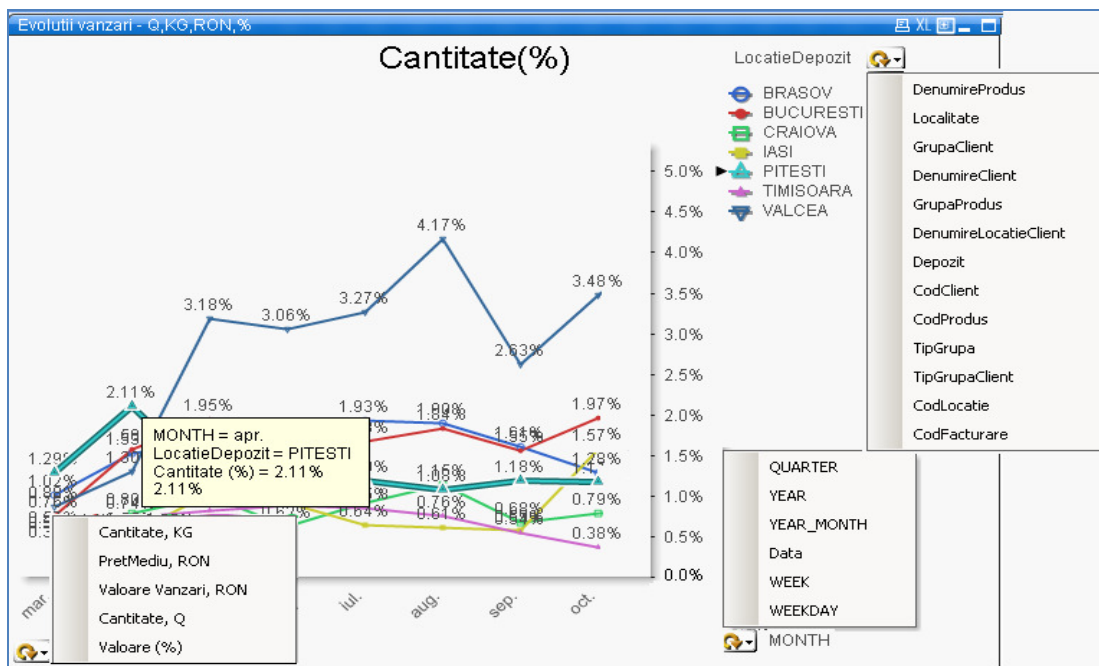
Figure 3. Sales evolution (Source: developed by the authors using QlikView)

2. In Figure 4 there are 4 graphs in a spreadsheet that show in different forms the total quantity of products sold, the average price, the margin and the value of sales on different groups and on different types of periods.
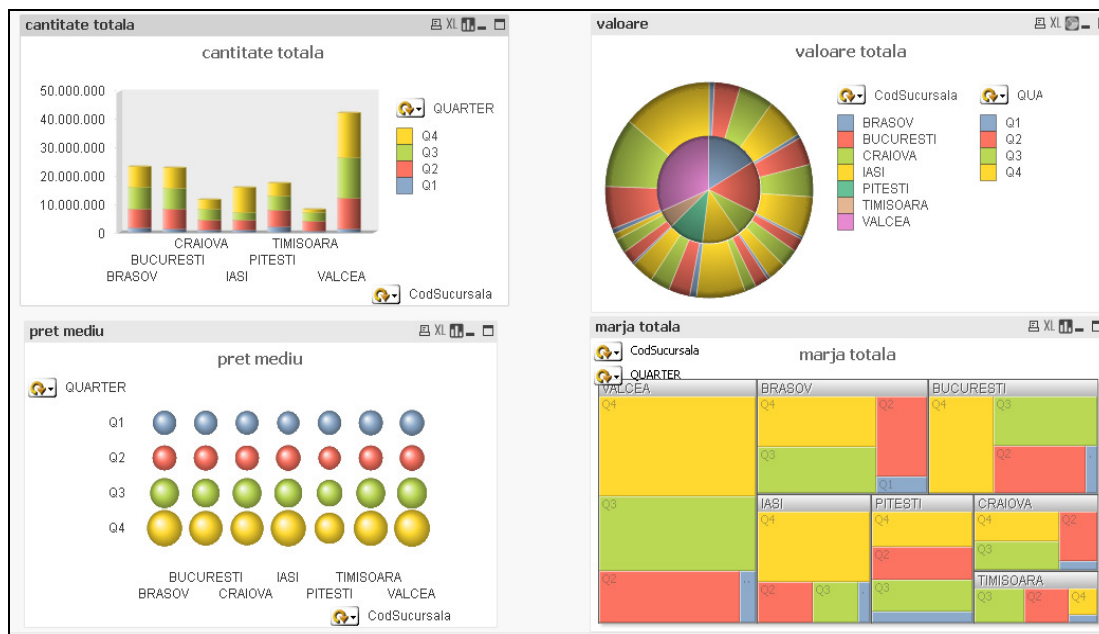

Figure 4. Evolutions per branch and quarter (Source: developed by the authors using QlikView)

3. The table in Figure 5 contains a record of the total quantity sold, the average value of the quantity sold, the total value obtained, the average value obtained, the average price and the number of products sold by branches and for different periods of time. To build this table, we need two dimensions: "CodSucursala" and "Period".

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Figure 5. Sales evolution table (Source: developed by the authors using QlikView)

The table below shows that some branches are expanded quarterly, and the last branch is shown condensed, automatically calculating the amounts for the entire period. It is noticeable that there are red-writing values on the white background because they are inferior extremes and written values with white on blue background for values exceeding the maximum admitted. In a PivotTable table, simply dragging the mouse can change the line ends with column heads (see fig. 6).

Figure 6. Changing lines and columns (Source: developed by the authors using QlikView)

4. "What-If" ratings. In figure 7, this report determines how the margin value changes if the price of the product or the quantity changes, or both, simultaneously (decrease or increase).

Managerial decisions related to the sales price level will take into account the two major components of the sales price: the purchase price of the goods and the trade margin.
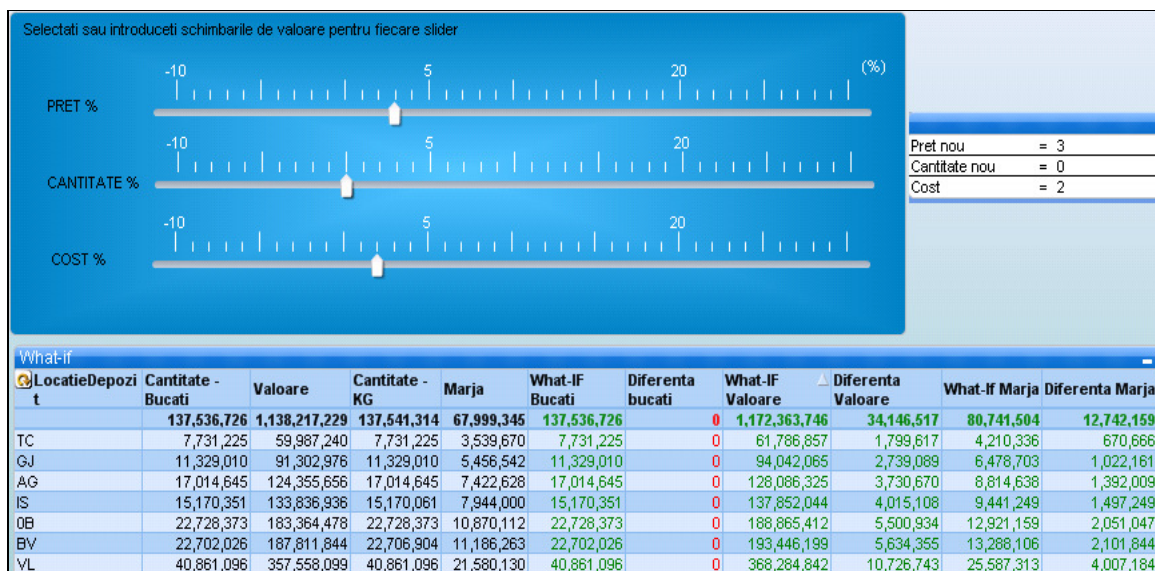

LocatieDepozit	Cantitate - Bucati	Valoare	Cantitate - KG	Marja	What-IF Bucati	Diferenta bucati	What-IF Valoare	△ Diferenta Valoare	What-If Marja	Diferenta Marja
	137,536,726	1,138,217,229	137,541,314	67,999,345	137,536,726	0	1,172,363,746	34,146,517	80,741,504	12,742,159
TC	7,731,225	59,987,240	7,731,225	3,539,670	7,731,225	0	61,786,857	1,799,617	4,210,336	670,666
GJ	11,329,010	91,302,976	11,329,010	5,456,542	11,329,010	0	94,042,065	2,739,089	6,478,703	1,022,161
AG	17,014,645	124,355,656	17,014,645	7,422,628	17,014,645	0	128,086,325	3,730,670	8,814,638	1,392,009
IS	15,170,351	133,836,936	15,170,061	7,944,000	15,170,351	0	137,852,044	4,015,108	9,441,249	1,497,249
OB	22,728,373	183,364,478	22,728,373	10,870,112	22,728,373	0	188,865,412	5,500,934	12,921,159	2,051,047
BV	22,702,026	187,811,844	22,706,904	11,186,263	22,702,026	0	193,446,199	5,634,355	13,288,106	2,101,844
VL	40,861,096	357,558,099	40,861,096	21,580,130	40,861,096	0	368,284,842	10,726,743	25,587,313	4,007,184

Figure 7. Ratings "What If" (Source: developed by the authors using QlikView)

For the manager of a business unit it is necessary to simulate the price changes, the quantities sold and the purchase costs. For example:

- if the purchase cost is increased by not more than the percentage increase of the price of the products, the margin will decrease, otherwise the margin will increase;

- if the quantity and price increase, the margin will increase;

- if the purchase cost is increased by more than the price of the product, the quantity of products should be greatly increased in order for the margin to increase.

4. CONCLUSIONS

For most of today's companies, new technologies lead to overloading the system with various information, often inappropriate, incorrect or misleading, making it more difficult for management to make decisions. It is true that the different approaches to retrieving and processing a large amount of information, often unnecessary, can be achieved with a high consumption of resources. However, there are companies who manage to extract from those streams, processed and consolidated information in an easily understandable format, useful in the decision-making process. Hence the need to develop business intelligence information systems to support companies.

A well-designed business intelligence solution ensures that information across the organization is available in a consistent and reliable way. Essentially, the BI improves the performance of both the IT department by the fact that employees in this department are relieved of the recurring tasks of creating and modifying data reports that are needed both by the top management and the department managers because the latter can accomplish themselves with just a few clicks, obtaining the necessary information in real time and in the desired format as well as the overall activity of the company, through the positive impact of such a solution on key performance indicators of the company.

BI solutions are part of the analytical category, collect data from all existing applications in the company, and run a different database in order not to hamper the operational segment.

The BI extracts all existing data in the company, regardless of the application or their age, consolidates and processes them, allowing analyzes for extended periods of time on multiple performance indicators. If the reports generally have a standard visual format, the BI allows you to select the information you need and deliver it in a format of your choice: tables, charts, dashboards, etc.

In the near future, business intelligence solutions will become indispensable tools in managing any company, as quick and good decisions will become critical to survival and evolution on the current market.

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