

ANALYSIS, REPORTING AND FORECASTING WITH QLIKVIEW

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Abstract: Any Business Intelligence solution - as a complex process of collecting, processing data, generating reports on the basis of which analysis and final business decision-making is achieved, proves its efficiency both through the speed of the process and through clear and concise form. The QlikView application can be a solution for companies that want to define a coherent performance analysis model at the organization level. In this article, we highlighted the importance of using QlikView in data analysis, reporting, and forecasting within a company.

Keywords: Business Intelligence, analysis reports, forecasting, QlikView

JEL Classification Codes: C80, M10, M15.

1. INTRODUCTION

Time is Money is a well-known slogan in business. But acting on time, making well-grounded decisions based on the proper understanding of one's own business can make a difference between its success and bankruptcy. Interpreting a report in its classical form takes too long and often requires additional data and clarification from the extended management team. A well-thought-out Business Intelligence (BI) system integrates all of these essential data sources and pre-calculates sets of indicators that integrate them into intuitive, easy-to-follow and interpreted control panels [1]. In summary, BI facilitates the analysis process and consistently supports decisions.

QlikView, the Business Intelligence software solution, is one of the most advanced tools a powerful management team uses daily in making business decisions. Using a BI solution improves control and efficiency in the company, allowing the integration of historical information with available data from all sources. Sometimes, BI solutions can even be used to make predictions or simulations based on "what-if" scenarios for operational and financial results.

In business environments with increased competitiveness and growing growth, marked by the need for quick access to informed decision-making information, the use of QlikView provides the essential asset that ensures business stability and long-term profitability.

In the companies where it is deployed, QlikView quickly becomes the manager's preferred work tool, as it gives them an overview of their business. The platform interface is very friendly, providing users with an intuitive experience. Thanks to its easy-to-use interface and the strongest data-indexing engine, users can explore data immediately. With QlikView, users do not need months or weeks of training to begin interacting with the application. The training sessions last from a few hours to a maximum of 2-3 days, depending on the role of the users.

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QlikView software is a leader in business intelligence and data discovery solutions. In the world, over 38,000 clients rely on Qlik solutions [2] to order information from various sources, exploring the hidden relationships between data leading to discoveries which give rise to good ideas. Here are some of the main benefits:

- The unique associative In-memory technology.
- Easily consolidates multiple data sources.
- User driver - simple to use, you do not need technical knowledge.
- All data, always visible.
- Minutes to change.
- Insight driven - associations, searches and real-time analyzes.

Sales growth, cost reductions, productivity gains, trend identification, inventory optimization, cash flow, impact analysis what-if are some of the challenges QlikView is successfully responding to.

With QlikView, business users can:

- Discover hidden trends and make discoveries that lead to innovative decisions.
- Ask questions and follow perspectives on their own or in collaboration - on the go.
- Search all the data and get the whole picture - just type any word or phrase in any order in the QlikView search box to instantly get associative results to allow them to see new connections and their data.
- Take Business Intelligence at your discretion without having to go back to IT or business analysts for new requests or reports.

2. THE USE OF QLIKVIEW APPLICATION IN DESIGNING ANALYSIS REPORTING AND FORECASTING

The organizations can rethink their analytics strategy and thereby redefine their enterprise across three essential criteria:

1. UNDERSTAND the business by enabling everyone to:
 - a. Access any and all data
 - b. Ensure self-serve, governed data
 - c. Gain deeper, real-time insights
2. SIMPLIFY the enterprise landscape by providing solutions that are:
 - a. Simple to use
 - b. Simple to understand
 - c. Simple to manage
3. TRANSFORM the future with line-of-business (LoB) scenarios to:
 - a. Visualize new outcomes
 - b. Predict new opportunities
 - c. Plan new strategies

With QlikView, you can analyze a huge amount of data, with a click away information about articles, partners, cash-flow, profit, discounts, fixed assets, stocks, etc. Irrespective of the volume of data, they can be represented and analyzed through an unlimited number of views [3].

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

1. Analysis. QlikView for business analysis enables organizations to measure, monitor and track key performance indicators. The click-based interactive visual interface provides users with instant access, facilitating quick and complex management analyzes.

Analysis pages are interactive, they help users explore their data and look for answers to questions. Analysis pages are where you come to spend more time and interact with the application on a deeper level to explore the data. Typically each page has a part of the business it is exploring or a specific technical objective (such as a page just for Comparative Analysis).

Example: 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 value and number of clients (we can study what happens to the value if the number of clients rises, or the other way) (see figure 1).

The dimensions of this graph can be changed so that to be displayed the values and the number of clients 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.

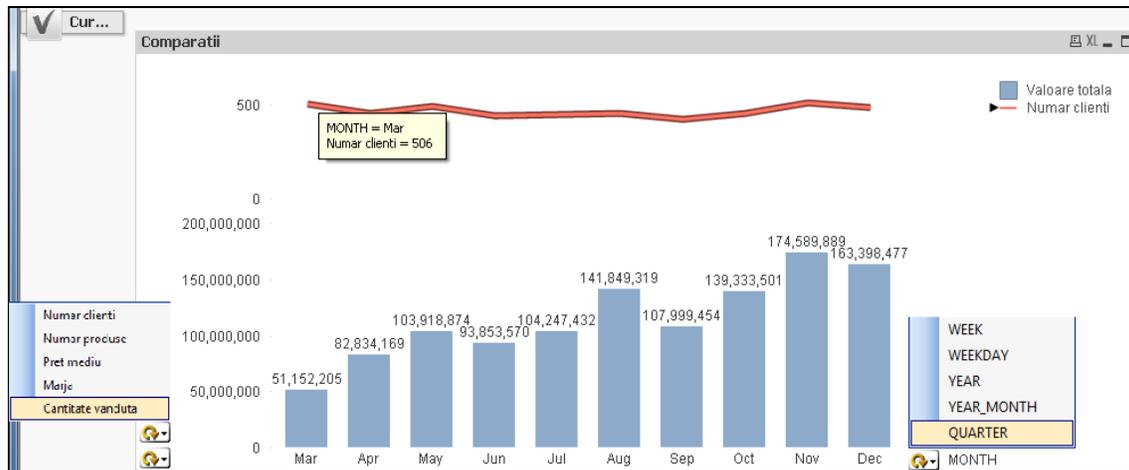


Figure 1. Evolutions per periods (Source: developed by the author using QlikView)

2. Reporting. QlikView reports connect to most databases (Excel, Access, Oracle, MySQL, SQL Server, SQLite) at the same time [4]. Thus, a QlikView report can retrieve information from multiple sources at the same time and display them in an organized and intelligible way for analysts, sales team, controllers, etc. QlikView reports help with decision-making, following an overview of company information.

Reports can be automatically generated in a predefined or interactive format, giving the user the flexibility to define their own data selection criteria and to view the data in the desired format.

Reporting pages give the most granular information with lots of tabular data and should ultimately lead to action. It's where a user can spend a lot of time sorting and filtering through the details. This is a large part of the cognition phase of perception.

With the QlikView application we can:

- get reports in a short time (a few minutes);
- perform analyzes that can positively affect decisions;
- create reports in Microsoft Office, PixelPerfect, as well as HTML reports.
- form multi-level reports due to advanced features such as scripts, conditional formatting, inclusion of content, use of templates, logos and images.
- provide users with the ability to receive reports at their request directly from the application.

Example: Period comparisons will be 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. This thing is very important in business, because we don't have to wait till the end of the week to have access to information, but it is considered a week starting from current date (7 days ago).

In the next diagram, we can observe the evolution from seven to seven days of the quantity sold by the company, the obtained value as well as the average price from each warehouse. There are made a few comparisons between days and it is established also the average on each period.

Period Evolution - Quantities KG									
LocatieDepozit	10.08.2017-04.08.2017	03.08.2017-28.07.2017	27.07.2017-21.07.2017	20.07.2017-14.07.2017	P1/P2	Difference P1-P2	Difference P1-P3	Difference P1-P4	
	2,944,288	3,488,108	3,322,922	3,462,851	84.41%	-543,820	-378,634	-518,563	
S	246,005	259,810	187,036	219,063	94.69%	-13,805	58,969	26,942	
GJ	236,850	269,370	295,620	302,320	87.93%	-32,520	-58,770	-65,470	
TC	212,538	230,395	264,966	304,753	92.25%	-17,857	-52,428	-92,215	
AG	356,560	381,030	315,790	375,240	93.58%	-24,470	40,770	-18,680	
JB	502,180	629,210	559,705	588,980	79.81%	-127,030	-57,525	-86,800	
BV	536,275	582,793	650,155	615,575	92.02%	-46,518	-113,880	-79,300	
VL	853,880	1,135,500	1,049,650	1,056,920	75.20%	-281,620	-195,770	-203,040	
Period Evolution- RON									
LocatieDepozit	10.08.2017-04.08.2017	03.08.2017-28.07.2017	27.07.2017-21.07.2017	20.07.2017-14.07.2017	P1/P2	Difference P1-P2	Difference P1-P3	Difference P1-P4	
	24,559,706	27,718,657	24,759,246	23,849,294	88.60%	-3,158,951	-199,540	710,412	
S	2,021,849	1,908,022	1,422,317	1,532,292	105.97%	113,827	599,532	489,556	
GJ	1,974,860	2,179,854	2,142,268	1,996,483	90.60%	-204,994	-167,408	-21,622	
TC	1,801,067	1,879,139	2,002,474	2,179,645	95.85%	-78,072	-201,407	-378,578	
AG	2,671,593	2,767,254	2,154,495	2,420,675	96.54%	-95,661	517,098	250,918	
JB	4,224,816	5,103,355	4,018,299	3,922,587	82.79%	-878,539	206,516	302,229	
BV	4,482,789	4,472,651	4,895,881	4,357,383	100.23%	10,138	-413,091	125,406	
VL	7,382,732	9,408,382	8,123,513	7,440,229	78.47%	-2,025,650	-740,781	-57,497	
Period Evolution - Average Price									
LocatieDepozit	10.08.2017-04.08.2017	03.08.2017-28.07.2017	27.07.2017-21.07.2017	20.07.2017-14.07.2017	Column2/Column3	Difference P1-P2	Difference P1-P3	Difference P1-P4	
	8.3415	7.9466	7.4510	6.8872	104.97%	0.3949	0.8904	1.4543	
AG	7.4927	7.2626	6.8226	6.4510	103.17%	0.2301	0.6701	1.0417	
S	8.2187	7.3439	7.6045	6.9948	111.91%	0.8748	0.6142	1.2240	
BV	8.3591	7.6745	7.5303	7.0786	108.92%	0.6846	0.8288	1.2806	
TC	8.4741	8.1562	7.5575	7.1522	103.90%	0.3179	0.9166	1.3219	
VL	8.6461	8.2857	7.7393	7.0395	104.35%	0.3604	0.9068	1.6066	
BV	8.3380	8.0924	7.2467	6.6039	103.04%	0.2456	1.0913	1.7341	
JB	8.4130	8.1107	7.1793	6.6600	103.73%	0.3022	1.2336	1.7530	

Figure 2. Evolutions per periods (Source: developed by the author using QlikView)

3. Forecasting. In the face of unstable market and economic conditions, companies need to use any means necessary to stay ahead of the market. Forecasting is one of them.

QlikView software can assist businesses in shaping growth strategies and can increase

the efficiency and effectiveness of forecasting [5]. Here's how.

a. Accuracy. For example, revenue forecasts should answer questions about what you sell, who you sell and when you sell. The precision of your data and forecasts is essential in order to get the right product in front of the right customer at the right time, as well as optimize purchases and distribution to increase profitability.

By having an accurate snapshot of your historical sales patterns, you are able to accurately project future revenue, sales and customers to keep you ahead of the market.

b. Comprehensiveness. The existence of multiple data storage locations is common within businesses. Typically, businesses use different applications to process different types of data, and because of this, data is stored in different locations, such as ERPs, CRMs, spreadsheets and more. When the time comes to build reports and forecasts, it is not uncommon for sales managers to lose track of certain information, because they simply don't remember where some data is stored. Therefore the quality of their reports and forecasts suffers.

QlikView software is equipped with the ability to store data from multiple sources in one location. And if, for instance, data is not stored in the program, it can be imported quite easily and saved within the database. This will enable sales managers to build comprehensive, high value reports.

c. Timeliness. All too often, sales managers spend weeks on end building sales forecasts. The lack of a single data repository causes sales managers to spend days tracking down information and compiling them, prolonging a process that could have been done within minutes if supported with the right technology. With QlikView software you can store many different types of data in one location.

Aside from this, QlikView is equipped with simple interfaces and configurable functionalities to enable users to understand the system and use it efficiently. As a result, data compilation is expedited, allowing sales managers to draw insights quickly and produce timely forecasts.

d. Clarity. The most important aspect of reporting is its clarity and readability. Some sales managers, to save time, present reports the way it was built, without simplifying it for non-technical readers. Business leaders and board members are then unable to comprehend the report and the meeting accomplishes little or nothing. A report may be complex, but its output should have the capability to mask this complexity by presenting the data in a simple and easy to comprehend manner.

Example: "What-If ratings". What-if analysis is a data-intensive simulation whose goal is to inspect the behaviour of a complex system (i.e., the enterprise business or a part of it) under some given hypotheses called scenarios. More pragmatically, what-if analysis measures how changes in a set of independent variables impact on a set of dependent variables with reference to a simulation model offering a simplified representation of the business, designed to display significant features of the business and tuned according to the historical enterprise data [6].

What If analysis is basically where you take some numbers you know, add some assumptions to get to numbers that might be correct - if your assumptions are right. A typical example would be taking last years figures and projecting what next years might be, based on some criteria.

QlikView can do this elegantly by allowing variables to be changed to capture the assumptions and then using these in calculations. In QlikView, What-If Analysis is implemented using sliders or input box. In What-if Analysis, users can adjust the value of variables and see the effect on the data set in the chart or table.

In figure 3, this report determines how the margin value, the total value, the average price and the total amount changes if the price of the product or the quantity changes, or both, simultaneously (decrease or increase).

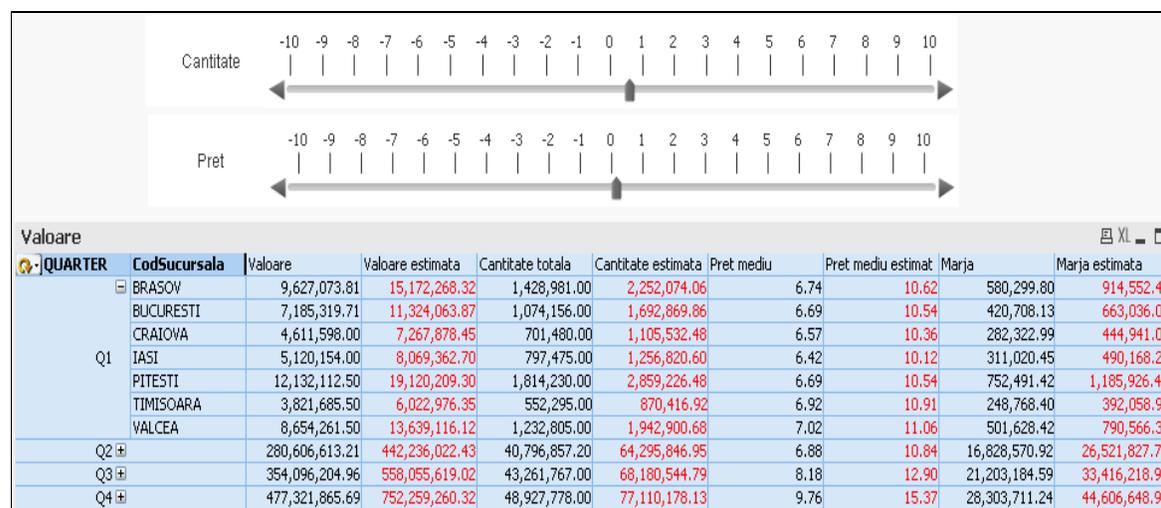


Figure 3. Ratings "What If" (Source: developed by the author using QlikView)

3. CONCLUSIONS

QlikView software are focused on delivering clear reports using simple visual representations that can present the data in a simple manner. With clear reports, it will be easier for sales managers to draw out existing trends and project future trends. Subsequently, your forecasts will also be presented clearly, enabling business leaders to quickly comprehend it and take action.

Overall, Business Intelligence tools have been proven to increase the accuracy, clarity, and comprehensiveness of data and the timeliness of the forecasting process, to ultimately deliver high-quality forecasts.

Through QlikView, management has all the information needed to improve the company's overall performance. Users have access to consolidated data, both at the holding level and at each company level, with the analysis of the indicators being made up to the smallest detail in the databases.

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