A Model for the Assets Calculation and Evidence

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Abstract: The present paper aims at presenting the solutions of business intelligence which are designed to the improving of the process of data analyzing. We showed that the pieces of information are organized in structures which satisfy the need of complex and complete data analyses. The data warehouses, the multidimensional organization or the instruments for data mining are just few examples of technologies which are able to offer detailed analysis.

Key words: business intelligence, data analyzing, the structure of the model, dimensions, facts tables.

1 Introduction
The present economic context, especially the global economic crisis, brought to each and every organization a higher degree of attention when speaking about the strategic decision. The contractions suffered by the developed economic systems showed that there is not an ideal economic model or a successful business which might be applied anywhere and anytime. The information and communications technology overthrew the classic systems of production, management or marketing and brought new methods and models, based on intelligent solutions. The new instruments bases on board pictures which certify the rigorous way of data analyzing, of accurate knowing of the past and of indicating the best scenarios based on knowledge. The development of the data bases technologies led to the apparition of some big and very big data bases. Such a base, where a company keeps all data concerning the production, the bookkeeping, the clients, the suppliers, etc, is named data warehouse.

2 Stages of a model’s assets
The increasing of the information volume and the perfecting of the exploitation software directed towards a new quality of the data usage. Thus, one can obtain information about the clients’ preferences, their profile, the distribution and many others; we can identify in which region of the country a product is better sold, which are the preferences of a market segment of population. It is obvious that such pieces of information can not be obtained but using the processing, such as the multidimensional analysis, the statistic methods of prognosis and other mathematical methods applied to a great deal of data. The above mentioned mathematical methods require a very complex and specialized soft. The mathematical analysis of the data stocked in such deposits is named data mining.

The dimensional modeling is a technique which allows the conceptualization and the representation of the quantitative aspects of the activity, in a tight connection with the context where the respective activity took place [2]. In order to define a data model, we have to specify the following elements:
- The structure of the model, constituted from the objects of the model and the relations between them;
- Operators which act on the structure;
- The integrity restrictions composed of all the rules and shortcomings imposed to the model in order to assure the correctness of the data;
- The structure of the model contains mainly objects referring to tables of the facts and dimension type.
Within the multidimensional model we meet more objects types, which are very important for the analysis: The dimensions – represent attribute compound structures, settled on diverse hierarchical levels. The OLAP Council defines the concept of dimension as being a structural attribute of a cube, composed of a list of members, seen by the user as being of the same type (for examples all the months, the terms, the years form the dimension Time) The dimensions represent a very concise, intuitive way of organizing and selection of the data for exploitation and analysis. [4]
The facts tables – are central tables which group all the indicators referring to an analyzing subject, paring the same dimensions assembly and they cannot be deduced from other indicators [1].
A determined role in analyzing the immobilizations administration is represented by the facts and measures identification which generate the facts table. This above mentioned table will be the biggest of the tables in a deposit; it is so-called the dominant table. It groups all the indicators referring to the immobilization administration which share the same assembly of great
dimensions and which can not be deduced from other indicators. Thus, we shall mention some measures, analyzing criteria and detail levels.

<table>
<thead>
<tr>
<th>No</th>
<th>Measure</th>
<th>Analyzing criterion</th>
<th>Detail level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Liquidation expenses ((L_e))</td>
<td>Time Immobilization structure Immobilization administration</td>
<td>Monthly</td>
</tr>
<tr>
<td>2</td>
<td>Immobilization value ((I_v))</td>
<td>Time Immobilization structure Immobilization administration</td>
<td>Transaction Monthly</td>
</tr>
<tr>
<td>3</td>
<td>Input immobilization value</td>
<td>Time Immobilization structure Immobilization administration Entering source</td>
<td>Transaction Monthly</td>
</tr>
<tr>
<td>4</td>
<td>Output immobilization value</td>
<td>Time Immobilization structure Immobilization administration Destination</td>
<td>Transaction Monthly</td>
</tr>
</tbody>
</table>

We shall exemplify the indicators deduced from the identified measures, by respecting the calculating formulas:

- **The liquidation degree** \(= \frac{L_e}{I_v}\), detail level – monthly
- **Immobilization usage efficiency** \(= \frac{I_v}{C_f}\), detail level – monthly, where \(C_f\) is cash flow
- **Wear coefficient** \(= \left(\frac{L_e}{I_v}\right) \times 100\), detail level – monthly
- **Wear degree** \(= \left(\frac{U_p}{N_p}\right) \times 100\), detail level – monthly, where \(U_p\) is Usage period and \(N_p\) is Normal period of usage
- **Immobilization usage efficiency (profit)** \(= \left(\frac{P}{I_v}\right) \times 100\), detail level – monthly, where \(P\) is Profit

When realizing any software solution, we begin with the users' requests, which base on their objectives and for the immobilizations, having prior the facts identified, we can structure the hierarchies on 5 dimensions: time, suppliers, recipients, immobilizations and administrations. The hierarchy organizes the parameters of a dimension after a relation determined in conformity with the detail level. They contain attributes of the type measures and external keys towards the dimensions tables. The facts are usually numeric data and generally additive, being valorized in a continuous way; they can be summed up and analyzed at different levels. The facts granularity can be different from the existing one in the data sources or it can have a more aggregate detailing degree.

**Metadata** – maybe represent the most important component of the data warehouse. In order to use the data warehouse, the users must know what types of data are found inside; the metadata are nothing more than data about data; data which describe the content of the warehouse and offer direct references to the data. Also with the metadata are defined different views, associated to some specific categories of users.

The scheme of the data warehouse is a collection of objects, including tables, visions, indices and synonyms. There are a lot of scheme types used for the multidimensional modeling; they vary each other from the way the objects can be arranged.

The star scheme represents the most used model of organizing the data warehouses. In this case, the facts table comprises, without redundancies, the great quantity of data, being accompanied by the corresponding dimension tables – as seen in the figure no.1. The facts table occupies the central position and it is connected to the dimension tables due to the external keys they contain. A simple star scheme consists in a fact table and a few dimension tables. With this case, the dimensions have got redundant data, which eliminate the necessity of some multiple links among the tables. With a star scheme there is only one link between the facts table and the dimension table.

With the multidimensional analysis, the data cube containing more than three dimensions bears the name of n-dimensional cube or hypercube. It is defined as being a group of data cells arranged after the data dimensions. A three dimensional matrix can be visualized as a cube, where each dimension forms a face of it [3].

### 3 Operations made over the multidimensional model

The OLAP applications must assure the users a multidimensional vision over the data. The multidimensional operations implemented into the multidimensional model are the following:

- **Drill Down and Roll Up** represent navigation operations within the hierarchical dimensions.
- **Rotations** represent the most usual operations and offer the user the possibility to choose the perspective to be used.
- **Sections** represent views or images specific to different categories of users; by operations of sectioning one
obtains bi dimensional slices. In order to visualize a project it is necessary a view of the data source. This represents a unique and unified view over the metadata in the specified tables. The content of a data source is posted up in Data Source View Designer, presented in the figure no.2. The figure no.3 describes the content of the Designer: 1. a diagram with the graphic representation of the tables and the relations between them; 2. tables (the arborescent structure) 3. diagrams (for visualizing the data sets in a data source)
In providing with the strategic data, necessary for the decisional process, one can appeal to a class of OLAP instruments specialized in business analysis system. These instruments have characteristics which differentiate them from the management informatics’ systems, as it is presented in the figure no.4. Within the cube, we have the calculated members, which are the result of some calculated expressions executions, when defining them. The above mentioned definition is memorized in the cube, but the values are to be calculated when interrogating. The data warehouses contain information which, observing the E.F. Codd’s rules can help to: - the static analysis based on historical data; - the dynamic analysis of the drill-down type, based on historical data; - the contemplative analysis; - the patterns type analysis.

4 Conclusions
From the perspective of the business management, the assistance in making decisions in business supposes that from a huge amount of data, be select, analyzed and visualized only the relevant and significant ones.

References:
Figure no.1 Model of the type star for immobilization

Figure no.2 The content of a data source
Figure no.3 The Designer content

Figure no.4. The IMOB cube