GENERATE GRAPHICAL TREE STRUCTURES FROM DATA STRUCTURES DBF

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ABSTRACT: *This paper presents the concept of economic data structure in a tree form , which is then plotted through a tree . This model would combine the graphical representation of parallel series of different levels of representation type table that highlights the main features specific structure , evolution and trend of all levels simultaneously analyzed.*

This model removes some of the specific shortcomings representation tabular and graphical representation of parallel series , but the benefit of simplicity, flexibilit , clarity and elegance.

The difficulty lies in finding an algorithm model able to dynamically adapt to situations resulting from actual data taken from DBF tables , construction and placement of nodes , their union by dependency relations , and playback issues that differentiates nodes between them. This model is not currently in range of designs graphic applications like Microsoft Excel or similar .

The application is independent of the data source and can be emulated on DBF table type , but may generalize to other types of structures.

KEYWORDS: *tree structures, databases, graphics, tree from DBF, generated tree*

1. THE STATISTICAL INDICATORS AS TREE STRUCTURE

Most economic indicators primary subject of analysis, and research in terms of their structure and dynamics of structural components. This requires several categories of information that identify: the indicator element corresponding primary structure and temporal characteristics against which to do research.

- The research aims to highlight the behavior of the indicator in temporal context that highlights its fate and behavior over time, setting the trend for future stages, and behavior of structural components to share peculiar.
If we want to investigate amounts providers have to take into account the following:
- Space: origin (internal (AB, AG, HD, ...), external (EU, EU, ASIA, USA, etc.)) or product categories (food, drugs, etc.);
Temporal: year, month, day of receipt or acquisition.

Fig. 1 Tree representation of the indicator

These information are reflected by invoices or receipts relating to a period required, leading to structure them in a tree guy in Fig.1.

On this tree built with application specific tools MS Word to make the following observations:
- construction is done by the author with a prototype exists in MS Word and it is very tedious and difficult to complete, the system accepting retrieve information from other sources;
- levels numbered 0-3 are the expression characteristics under study:
  - level 0- the total value is the sum of nodes (son);
  - level 1 - consists of two categories of sources (import and external) whose value is the sum value corresponding sons;
  - level 2 - subcategory origin whose values are determined by the amount of invoices;
  - level 3 - fair values are actual bills, which are called primary data.
- the structure does not reflect the time evolution of the value, not the billing year studied, nor share (comparative weight) categories (nodes) in the total value provided it can be done mentally;
- leaves the tree is down which is not very natural though accepted reasons escapes me, and the top level is called the root, although I would not call it the trunk;
- the problem becomes more difficult if the calculation involved a large number of leaves and branches that
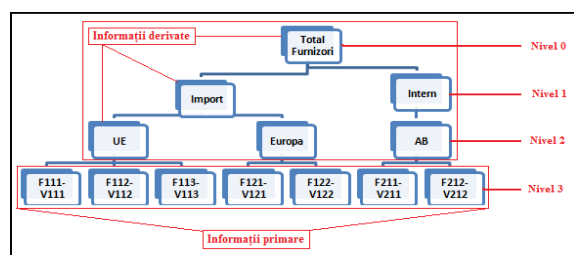
must be centralized on various criteria or change the order levels.

The question is whether it can generate, build such a tree, if it would specify the data source and the user would specify according to the wishes and imagination related fields, structure and field levels with the subject of the analysis ?

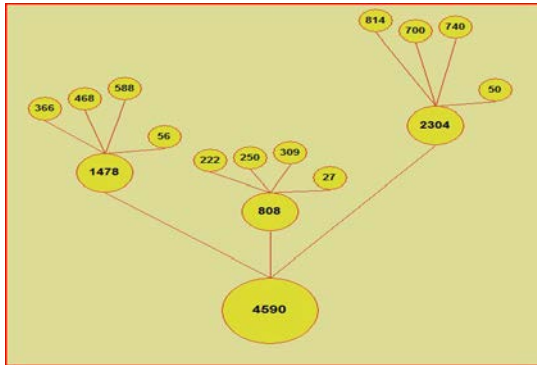A result is shown in the figure below as a model:

Fig. 2 Model the desired tree

1.1 The requirements set

Based on observations made in the preceding paragraph were fixed following requirements followed in making applications able to plot the economic indicators:
• any data source to DBF table type with interesting information;
• for each source to be able to keep the main parameters to reuse: list field values list for field level;
• the user should be able to define the area of information and levels of desired tree in the application;
• chart will represent the root down and leaves up;
• nodes will be sized proportional to the level at which they are located;
• leaves will have a minimum size according to the maximum size of the value level;
• the distance between the levels is inversely proportional to the level;
• distance of a node to the father will be proportional to the maximum level;
• leaves a node will have different colors, but all the same tree, and the nodes of the other levels have different colors;
• nodes can be represented graphically by a circle or rectangle, at the request of the user;
• method to support tree branches equal, regardless of value, and trees with branches proportional to suggest the dynamics and lower node in the node share a father.

1.2 Structural components that generate tree and their functions

Implementation of the requirements set out above is performed by an array of four procedures whose arranged function are as follows:
a. Pr_atree - is the procedure that provides vital functions necessary to generate the tree as follows:
• provides choice makes the processed source table that will provide value list fields that may be subject to review and possible fields of structure chosen value;
• choice of the analyzed field of the list established;
• setting levels in order to structure the value selection, level 1,2, ...;
• establish area target selection and filtering records that will be subject to processing;
• effective transfer of information extracted from the source in a table which will generate auxiliary leaves and nodes of level 0, 1, 2, ..;
• encode nodes generated, determine the node and set the node type: leaf, root and intermediate node;
• It creates a connection table, which contains the symbol father and son then make their codes required in other processes;
• for each node takes father node code, shall be the current number on the level of the node, and the current number in the father.
b. Pr_amod11 - is the procedure from the tables previously established general parameters of tree sketched as follows:
• determine the number of leaves in the tree;
• determine the maximum tree generated;
• determine the maximum leaf nodes;
• determine the number of digits to display the value of specific leaf nodes;
• fixed parameters Leaf nodes: top, left, width, height, distance between leaves;
• for other levels are determined by the general parameters of leaves based on mathematical expressions;
• transfer parameters established levels, each physical node, and different leaf nodes left parameter is recalculated based on the children and it centrally positioned.
c. Pr_gnoda12 - is the procedure that generates auxiliary nodes corresponding links father - son and calculates their characteristics depending on the characteristics of father and son.
d. Pr_gt11 - is the procedure that actually builds the tree under the conditions specified by the user. Set the general characteristics of the drawing window and through the table with main and auxiliary nodes according to type and run the following:
• General parameters are set drawing object: position, color, shape;
• if a node is drawn figure (circle or rectangle) the conditions set, then write the node and move to the next node;
• if the node is secondary segment is drawn connecting the father with his son.

1.3 Models of possible trees generated

The application is capable to generate the tree in several forms depending on user parameters are fixed at the beginning of dialogue generation, which can be found in the following figure.
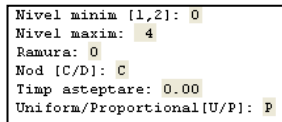
```
Nivel minim [1,2]: 0
Nivel maxim:   4
Ramura: 0
Nod [C/D]: C
Timp asteptare: 0.00
Uniform/Proportional[U/P]: P
```
Fig. 3 window parameters

The meaning of the parameters are as follows:
• minimum and maximum level of representation;
• branch or everything;
• node representation: circle or rectangle;
• While waiting for construction visualization;
• the tree: uniform or proportionate.

After fixing the parameters of the generated result will be a tree constructed as described above and set the user and looks like the following figure: tree branches and nodes proportional circle, which can be seen in Fig.4.
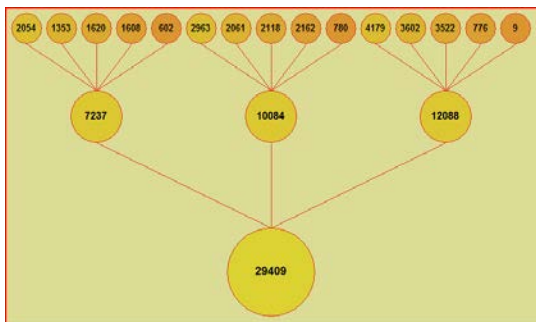

Fig. 4 Graphic branches and nodes proportional circle

Graph refers to the number of students enrolled in the undergraduate study, as day three faculties during a given period. It highlights the share of each faculty by the node on level one to the root, and the two are years of study IV, which differ and the altitude, and the faculty color.

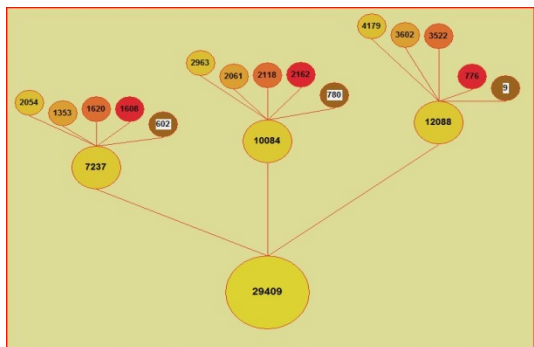Below is a uniform model in which nodes are the same altitude.

Fig. 5 Chart generated with uniform branches and nodes circle

To compare the two models do not refer them being obvious or easily infer the pros and cons and can work extra flavor, context, etc.

2. CONCLUSIONS

The work presented provides an original solution to a problem that may become a new standard for providing statistical information found in research, economic analysis and management information.

The model presented provides additional clarity and flexibility in generating multiple scenarios of data analysis-specific economic phenomenon and beyond. It is based on an object oriented approach and uses statistical indicators trigonometric generating mathematical tools, fasteners, dimensioning and bonding the joints between them according to the rules of generation and the size of the viewport.

Personally I consider the first model because I have not found in other media and in addition it is simple to install and use applications together with the management and decision support.

Besides generating facility several models, the application enables the user to link to any type dbf table, but will have first to define a few parameters specific to each graph. Additionally the application can be developed and adapted in the future to provide the ability to connect to other file types encountered in applications management and even transform their printed documents, something which is currently not possible.

The application was made in Visual FoxPro 9 has used many facilities offered by it, but do not exclude the possibility of adapting or its implementation in other programming languages that have facilities and facilitates graphical object oriented approach.

3. REFERENCES

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