FEATURES OF MATHEMATICAL METHOD'S APPLICATION IN THE ECONOMIC REGIONAL POLICY

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Presently to time for a decision ecologically-economic problems development of the informative systems which unite regions by the indexes of steady development and help in a territorial management became actual. Perfection of mathematical models of the systems is needed, because we cannot use the only analytical system. Thus use primary and derivative (settling) indexes which a quantitative estimation is possible for. At these terms of one of major problems, which must be decided to Ukraine, there is determination of her positions and going near development informatively-analytical providing of effective policy.

Now for the estimation of world concord's development is worked out more than by 1 thousand indexes, after which it is difficult enough to make decision, judge constancies of territories about a degree. It is necessary to range the system of indicators after the levels of priority. The example of such approach is methodology of Commission of UNO on steady development (1996, 2001). Four areas of indicators were forming in 1996 by Commission: social, economic, ecological and institutional and it was recommended to use 134 indicators farther this list in 2001 was diminished to 57, and classification was added on themes [1].

Mathematical model such analyses are the basis of as: cross-correlation, cluster, multicolinear, regressive. A cluster analysis requires most attention.

Construction of mathematical model cluster depends on results which must be got as a result of analysis. There are many methods of cluster analysis, which on the sign of necessity of removal of influence of scale of classification signs on results it is possible to divide into two groups: 1) methods of cluster analysis at setting of norms of parameters; 2) methods of cluster analysis without setting of norms of parameters.

Distance between regions can be certain variously in the cluster analysis. Euclidean distance which settles accounts on a formula is mostly used:

$$d = \sqrt{\sum(x_i - x_j)^2},$$

where: x -value of corresponding parameters.

At the choice of method of cluster analysis, we can lean against a figure 1.
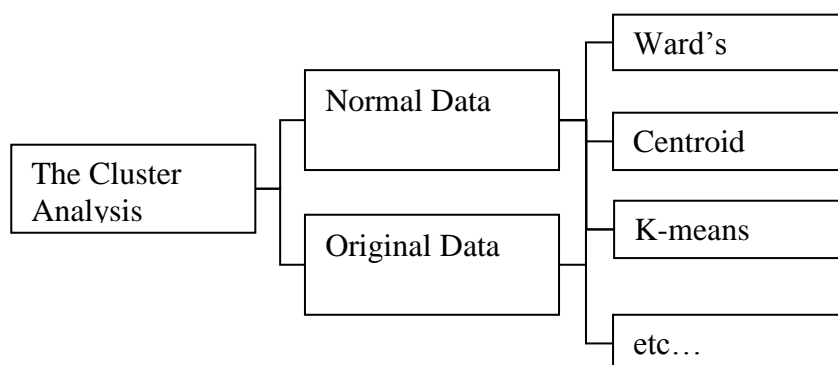

Fig. 1. Informatively-analytical model of cluster analysis

The result of territorial's grouping can depend or not depend on data normalizing. It is explained by the different mathematical models of methods.

Most methods of cluster analysis are contained by certain assumptions, those results in appearance of different variants of clusterization even within the framework of one method.

When we use Ward's method, for example, we get different results. That means that in this approach we can use only rationed data. At the use of such methods as: method of next-door neighbor, distant neighbor, centroid method results are almost identical. It enables us to use identifiers in any form.

In our informative system I used the method of counts and rationed data. The mathematical model of this method consists in the following:

1) expect Euclidean distance;
2) choose "r" - a variable for comparing to the values of Euclidean distance;
3) separating regions, between which $d > r$, determine belonging of region to the cluster.

The amount of clusters can be regulated, changing a value of r.

In a conclusion, for the groupment of territories after the signs of steady development, we can use the different mathematical models of the informative systems, taking into account that, what results we must get. Different approach in ecologically-economic policy needs for different territories.

References

1. Indicators of Sustainable Development: Guidelines and Methodologies. — New York: UN, 2001. — 319 p.