MANAGEMENT OF SOCIO-ECONOMIC MUNICIPAL FORMATION DEVELOPMENT

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In the paper the methodology of the strategies of municipal formation (MF) development on the basis of Balance Scorecard (BSC) and results-oriented budgeting (ROB) is discussed. This method allows to combine strategic aims with tactical problems and the figures of activity and to measure the effectiveness of all the levels of process organization.

Currently, a municipal formation has the right to determine the priorities for its development, as a result of coming into effect of the Federal Law № 131 "About the general principles of local self-government in Russia" on January 1, 2006. It should be noted that the powers of local self-government for all types of MF is "the adoption and the organization of programs and plans for the integrated socio-economic development of the municipal formation". This means that local self-government has to make appropriate arrangements to develop and implement the programs of socio-economic development aimed at improving the quality of population life of the MF through the effective use of available resources.

The development and implementation of socio-economic development strategy, in this case, is the most appropriate tool to make operational decisions in the context of strategic objectives, as well as take into account the balance between the interests of the local people, the Local Government and the business community.

The process of forming and implementing the strategy is rather complicated, so it needs the technology that enables displaying the information about the socio-economic situation and the development strategy of the MF to the public, the municipal employees and the local business community and to measure the impact of the performance on all the levels of the government. Such technology can be developed on the basis of two currently popular concepts - Balance Scorecard and Result-Oriented Budgeting.

The proposed technology development strategy for the socio-economic development of the MF includes the following interrelated stages represented in fig. 1.
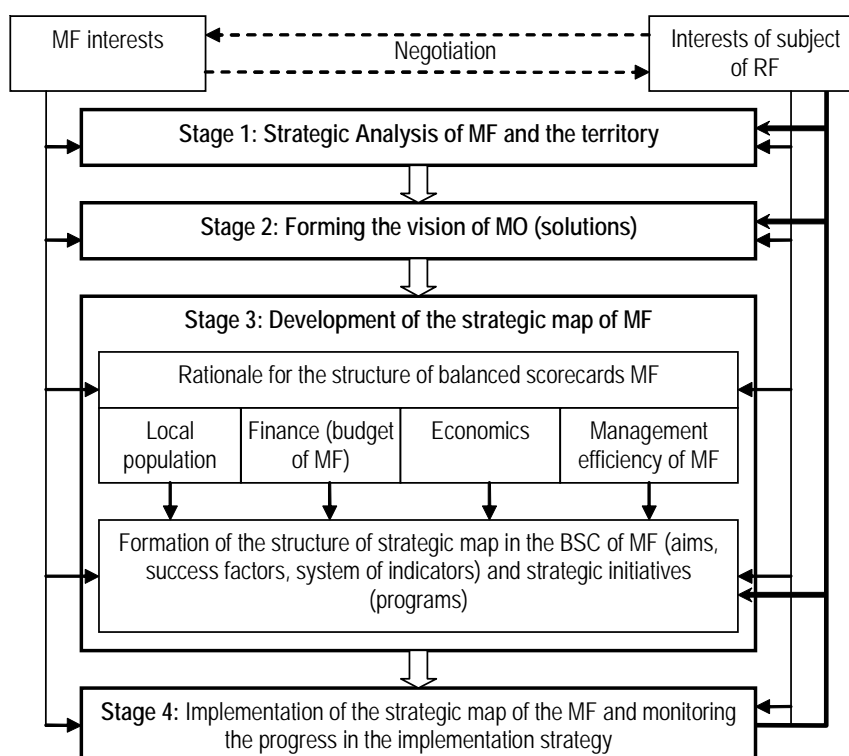

Fig. 1. **The strategy of the MF development on the basis of a Balanced Scorecard**

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Stages of implementation and monitoring the results are necessary to obtain timely and adequate information on the progress and results of the strategy, in which the municipal authorities may take management decisions to adjust the strategies needed to achieve the strategic objectives of the MF.

In the study, the possibility of applying the BSC to an MF identified the following weaknesses:

1) Failure to assess the impact (contribution) on the strategic purposes of the program areas in each of the projections.

2) The problem of defining the MF as a complex socio-economic object for the implementation of BSC.

3) The choice of targets and quantification of their interaction on the level of management to determine the final and intermediate results of the strategy.

The solution to these problems is combining the concepts of BSC and Result-Oriented Budgeting (ROB). To do this, we need to develop a mechanism of integration of ROB in the BSC.

The author suggests the mechanism of ROB integration in the BSC strategy as a two-level system. The BSC level reflects the final result, which characterizes the achievement of strategic objectives, and ROB combines the tactical and operational levels. The tactical level reflects the direct result, the volume of municipal services for the individuals (population) and legal persons within the strategic objectives and the corresponding success factors. The operational level represents intermediate results, the results of the implementation of program activities that provide budget services. The structure of the strategic map as a result of the integration of BSC-ROB is as follows:

1) At the strategic level it describes the effectiveness the process of providing municipal services to the citizens of the MF.

2) At the tactical level it is characterized by a set of factors ensuring its implementation and system performance.

3) The operational level describes the programs (activities and the program costs).

The formation of a hierarchical system of indicators for measuring achievement is essential for the practical implementation of this mechanism. At the strategic level performance indica-tors reflect the goal of the development strategy of the MF. The tactical level is described by the indicators of the municipal services provided to specific individuals and entities from the range of municipal services, which each MF establishes itself on the basis of the existing regulations. At the operational level the indicators for each strategic projection map reflect the interim results of the specific activities for any program.

Thus the hierarchical system of indicators for measuring achievement is a graph of causation (objectives tree), in which the top is the strategic goal (outcome), and the reason is the program of socio-economic development of the MF (interim results). The relationship of the indicators can be represented as a functional dependence of the consequences of the causes in which the realization of a goal (m-1)-th level is carried out while achieving m-th level

$$D^{m-1} = f_m(D^m_{(m-1),1}, D^m_{(m-1),2}, ...,$$
$$D^m_{(m-1),n}), \qquad (1)$$

here D^{m-1} is a specific indicator (consequence) of the previous level; f is the conditions change; $D^m_{(m-1),n}$ is the influencing factor (cause), n is the number of factors, (m-1) is the m level.

The hierarchy of objectives can be detailed for each level of management:

0 level: $\pm D^0 = (\pm \alpha_1 D^1_1, \pm \alpha_2 D^1_2, ..., \pm \alpha_m D^1_m)$

1 st level:

$\pm D^1_1 = (\pm \alpha_{11} D^2_{11}, \pm \alpha_{12} D^2_{12}, ..., \pm \alpha_{1n1} D^2_{1n1})$

$\pm D^1_2 = (\pm \alpha_{21} D^2_{21}, \pm \alpha_{22} D^2_{22}, ..., \pm \alpha_{2n2} D^2_{2n2})$

$\pm D^1_m = (\pm \alpha_{m1} D^2_{m1}, \pm \alpha_{m2} D^2_{m2}, ..., \pm \alpha_{mnn} D^2_{mnn}), (2)$

here $\pm D^j_i()$ is the the index that shows the top of the tree of goals (index j represents the level number, and index i shows the number of the element of the given level); δ_{ij} is the rate the relative importance of sub-goals; $\pm$ - in the desired direction of change of quantitatively characterizing the target.

Program results increase the values of the strategic objectives defined by the formula:

$$\Delta D^0 = D^0_\phi - D^0, \qquad (3)$$

here D^0 is the indicator of the strategic objective to implement the program; D^0_f is the

indicator of strategic objectives as a result of the program.

While selecting programs on the aspects of the MF program performance the indicators are determined by the formula

$$Э_l = \Delta D^0 / Z_i , \qquad (4)$$

here Z_i is the budget expenditure on the implementation of the i-th program.

Thus, we can assess the impact of the projects of socio-economic development of the municipality, compare their level of efficiency and make decisions on their implementation.

The simplest form of dependence is the following:

$$y_k = \sum_{\substack{j=1 \\ j \neq k}}^{m} a_{jk} y_j , \qquad (5)$$

here y_k is the consequence (dependent variable); y_j is the the causal factor (independent variable); a_{jk} is the coefficient of proportionality.

With the use of statistical information the calculation of numerical values of the coefficients of proportionality a_{jk} can be conducted on the basis of the known solutions to the optimization problem:
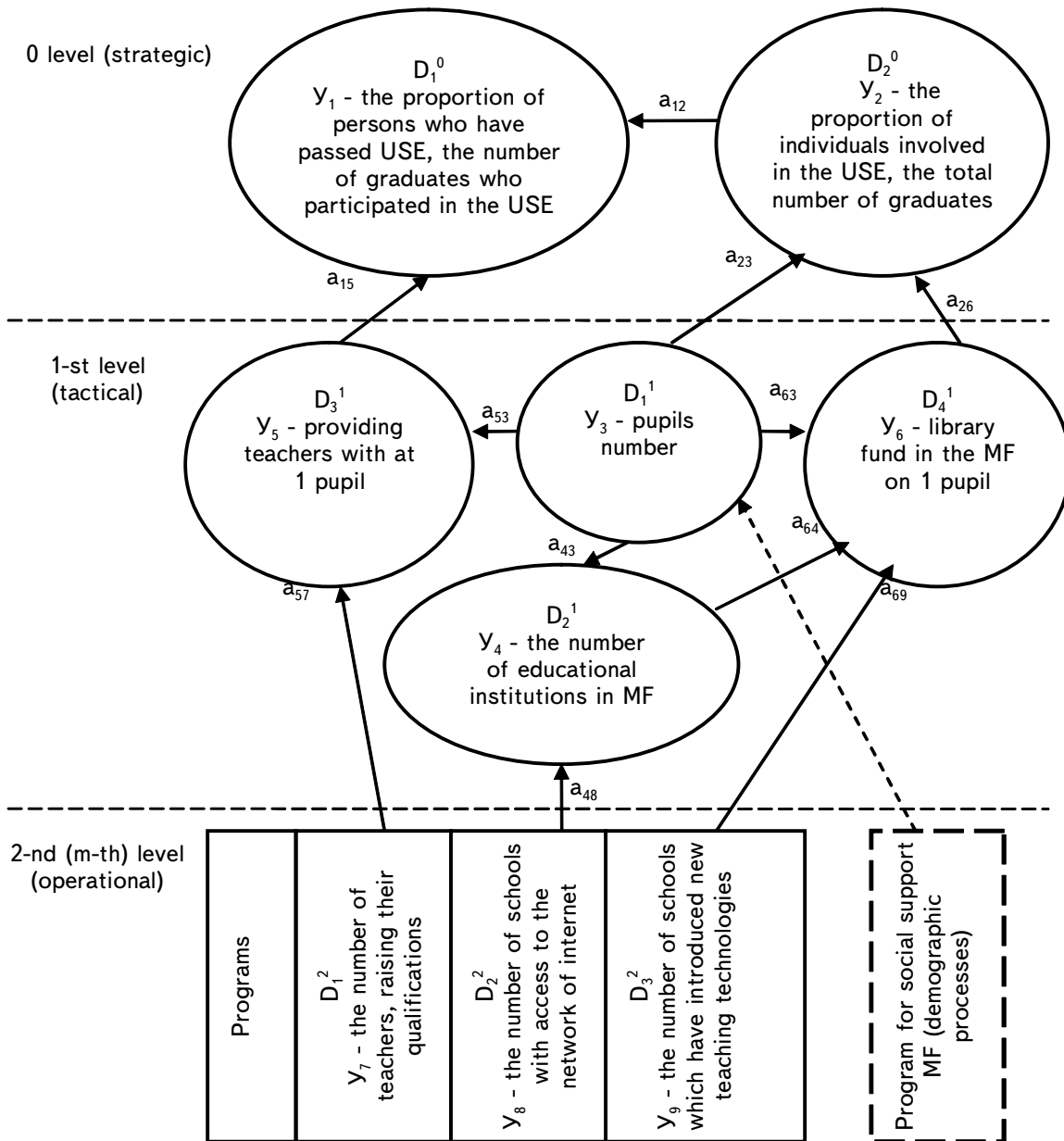

Fig. 2. **Fragment of the tree of goals model of MF**

$$f_{aj} = \sum_{i=1}^{N-1} (\Delta y_{kl} - \sum_{j=1}^{m} a_{jk} \Delta y_{jl})^2 \rightarrow \min, \quad (6)$$

here $\Delta y_{kl} = y_{k,l+1} + y_{kl}$, Δy_{kl} are the change

consequences; y_{kl} is the value of the index

in the investigation period l; $y_{k,l+1}$ is the

value of the index in the investigation peri-

od /+ 1; $\Delta y_{jl} = y_{j,l+1} + y_{jl}$, Δy_{jl} are the

change causes; y_{jl} is the value of the index

causes in the period j_l; $y_{j,l+1}$ is the value

of the index causes in the period j_{l+1}.

The knowledge of quantitative characteristics is used to determine the dynamics of changing the values for every simulation step t:

$$y_i(t) = \sum a_{ij} y_j(t-1) + a_{ii} y_i(t-1).$$

The modeling results are strongly influenced by the baseline values of the indicators. Thus, we can examine the trends in the logical chain of cause-effect relationships as a result of the changes (increase or decrease) of the values of an indicator, i.e. we can find the answer to the question "What happens with other indicators when you change one of them?"

On the basis of statistical data for the city district of Ufa we have calculated the numerical values of the coefficients of proportionality, and analyzed the degree of influence of each program on the final result (the number of people passing the Unified State Exam (USE) of the total number of members) in the direction of general education (fig. 2).

General mathematical model of the interdependence of performance and its image with the calculated coefficients is represented by formula (8):

$$Y_1 = a_{12}Y_2 + a_{15}Y_5,$$
$$Y_2 = a_{23}Y_3 + a_{26}Y_6,$$
$$Y_4 = a_{43}Y_3 + a_{48}Y_8,$$
$$Y_5 = a_{53}Y_3 + a_{57}Y_7,$$
$$Y_6 = a_{63}Y_3 + a_{64}Y_4 + a_{69}Y_9$$

or
$$Y_1 = 0{,}12 \cdot Y_2 + 12{,}9 \cdot Y_5,$$
$$Y_2 = -0{,}0003 \cdot Y_3 + 0{,}3 \cdot Y_6,$$
$$Y_4 = 0{,}001 Y_3 + 0{,}014 Y_8,$$

$$Y_5 = 0{,}000003 \cdot Y_3 + 0{,}000005 \cdot Y_7,$$
$$Y_6 = -0{,}001 \cdot Y_3 + 0{,}11 \cdot Y_4 + 0{,}013 \cdot Y_9,$$

here Y_1 is the proportion of persons who have passed the USE, the number of graduates who participated in the USE; Y_2 is the the the proportion of individuals involved in the USE, the total number of graduates; Y_3 is the number of pupils; Y_4 is the number of educational institutions in the MF; Y_5 is the number of teachers per 1 pupil; Y_6 is the library fund in the MF per 1 pupil; Y_7 is the number of teachers, raising their qualification; Y_8 is the number of schools with access to the network of internet; Y_9 is the number of schools which have introduced new teaching technologies.

The indicators of Y_7, Y_8 and Y_9, respectively, reflect the results of the Program 1 - "Implementation of the Resource Center to enhance the professionalism of teachers"; Program 2 - "The computerization of schools, free internet access", and Program 3 - "The introduction of new teaching technologies". As a result, the studies revealed that the greatest contribution to achieving the end result brings Program 3 - 46%, while the impact of the Program 1 is 15% and Program 2 is 39%. Consequently, the least effectively implemented is Program 1, and the amount of funds allocated for the financing of the Program 2 and 3 is justified and gives a greater increase in value of the result.

Thus, the formation and implementation of the strategy for socio-economic development of the municipal formation in the Balance Scorecard using the Result-Oriented Budgeting will bring the strategic objectives to tactical and operational levels of management and to assess the impact of program activities on the final result of the municipal formation.

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