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Workforce Planning as An Element of Control System.

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ABSTRACT

Total workforce management challenge in the region is the development and application of management tools. There is a necessity of scheduling to develop a constructive approach for solving the problem of human resource management. In accordance with objectives of social and economic development, human resources management should systematically combine the subject and object of management, reflecting the integrity of their movement.

Keywords: planning, management, human resources, Stavropol Territory

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INTRODUCTION

The current controversy in the field of labor and employment of labor resources, arise from the imperfection of the economic mechanism and labor management system as a whole. There is receive a number of new challenges in the field of formation and use of labor resources. These contradictions and possible solutions require global reorganization of the management system, formation and use of labor resources, matching them in line with the objectives of social and economic development the enterprise, region and state as a whole. To manage human resources, it is necessary to identify the main components of managed process and its laws, which will significantly reduce costs.

MATERIAL AND METHODS

The proposed model can use for development strategy of enterprise, region and state as a whole in the field of employment. It will properly balance the costs associated with hiring and firing workers, and maintenance costs of people without a job for a short period.

For further discussion, should define concept of "workforce" and "labour resources" [11, 15]. The distinction of these concepts is that "labour" is the property of the person in relation to a person's ability to work, and "human resources" are have considered as the working-age population.

It is have assumed that the demand for labor is deterministic, but are not constant over a specified planning period.

Assume that for each period j known minimum demand D_j forlabor. Supposing x_{ij}-the number of people employed by the beginning i period and fired at the end of$(j-1)$period, ac_{ij} -cost per worker x_{ij}.Then the number of people working in i period equal $\sum_{r \leq j} \sum_{t>j} x_{rt}$, or $\sum_{r=1}^{j} \sum_{t=j+1}^{n} x_{rt}$.If surplus labor for the period$j$bes_j,then task of planning calendar period of labor resources$(n-1)$periods is to find non-negative integersx_{ij}ands_j, minimizing the functional

$$\sum_{r=1}^{n-1} \sum_{t=r+1}^{n} c_{rt} x_{rt} \qquad (1)$$

Provided that

$$\sum_{r=1}^{j} \sum_{t=j+1}^{n} x_{rt} - s_j = D_j, j = 1, \dots, n-1, \qquad (2)$$

$$s_j \geq 0, \qquad (3)$$

$$x_{ij} \geq 0, \qquad (4)$$

This formulation does not allow for a relatively simple interpretation of the network [14, 17]. This is possible only after some transformations.

Using the model (1) - (4) for planned distribution of labor resources of the Stavropol Territory on 4 main branches of its economy. According to statistics in the region the following main sectors: agriculture, industry, wholesale and retail trade, transport. Thus, n = 4.

Restrictions (2) are have given by equations

$$x_{12} + x_{13} + x_{14} - s_1 = D_1, \qquad (5)$$

$$x_{13} + x_{14} + x_{23} + x_{24} - s_2 = D_2, \qquad (6)$$

$$x_{14} + x_{24} + x_{34} - s_3 = D_3, \qquad (7)$$

Subtracting (5) (6) (6) (7) and adding an excess condition is have obtained by multiplying both sides of equation (7) -1 to obtain the following system of equations:

$$x_{12} + x_{13} + x_{14} - s_1 = D_1, \qquad (8)$$

$$-x_{12} + x_{23} + x_{24} + s_1 - s_2 = D_2 - D_1, \qquad (9)$$

$$-x_{13} - x_{23} + x_{34} + s_2 - s_3 = D_3 - D_2, \qquad (10)$$

$$-x_{14} - x_{24} - x_{34} + s_3 = -D_3. \qquad (10)$$

It can see that each variable is included in the equations obtained twice - once by a factor of one and once with coefficient -1.

This structure coefficient has a special meaning. Figure 1 shows the network for this example. Variables are have assigned to arcs, and the value of offers - nodes. The numbers assigned arcs represent numbers of the corresponding transitions from one industry to another. The offered options for the transition of labor from the source (1) into the drain (4) minimize the demand for labor. Each oriented arc characterizes planning calendar period of labor.
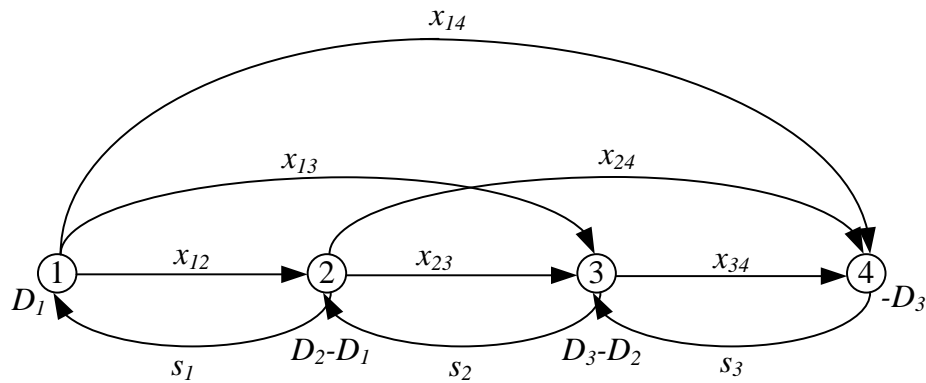

Figure 1: Network of problem calendar workforce planning

If the difference between the minimum demand values D_j labor is positive, the demand exceeds supply. Otherwise, on the contrary.

The information obtained will allow calculating the value of costs for the purchase of new labor force at the beginning of the period 1 and the costs at the end of period 4.

The totality of the network chain is a set of plans for a calendar period of the labor force, shown in Figure 1. Each node corresponds to the beginning of the planning period; unit 4 corresponds to the end of the planning period. Each directed path from node 1 to node 4 is a replacement plan. The shortest circuit from the node 1 to node 4, the network will meet the plan with a minimum of four considered by industry in the region.

To complete the picture, can specify: the conditions of emergence and existence phenomenon, existence in this condition additional or related moments; relationship goals with this phenomenon and with the data moments, whether the purpose of changing the process or not; What negative and positive effects are characterized by change, and that they may strengthen or weaken. Only after a detailed study of the process, it is possible to talk about management.

RESULTS AND DISCUSSION

Thus, relevance of study the key problems of planning labor resources of regions Russia forget stability and balance positive territorial transformations is cause of need to study the regional socio-economic factors in the development of labor resources in the current economic conditions, as well as the poor drafting of the theoretical and practical aspects for sustainable development Russian economic and its regions.

The problems addressed in this article attracted the attention of many researchers [12, 13, 15]. The

study of the state of social and labor sphere of the Stavropol Territory papers [3, 6]. In [7, 8, 16] proposed methods of economic analysis, labor resource assessment and forecasting of the region. The management of the employment potential of the region on the basis of studies of its structure, identifying the main principles of formation of management, as well as the use of mathematical modeling techniques discussed in detail in [9, 10].

The authors studied in detail the essence of the process and the functioning of the labor force. In particular, in [11] discussed in detail the development of the concept of "human resources" as a socio-economic category, evaluations and qualitative state.

Currently, acute issue of human resource management. If the essence of the human resources management process is clear, then its basic laws should will be have examined and identified.

To study and the subsequent human resource management must be developed and used several models of change of work [1, 2, 4, 5]. At the same time the basis for the base model should will be have taken, which is characterized by the possibility of obtaining the qualification growth, intellectual development of direct labor resources directly in the process of work in its growing complexity. Human intellect in this process is the leading component of that will solve more complex problems in the workplace.

CONCLUSION

In view of the foregoing, it becomes relevant study patterns of change in the labor force, assessment of the impact of work force planning at the economic development of the region, the development and justification of methods and techniques of human resource management in the Stavropol Territory. The result may be the concept of development of the region based on the analysis, taking into account the assessment and forecast of the state of labor resources in the region.

The solution of complex problems related to the management of human resources related to the development of new theoretical and methodological approaches to building management systems. This requires the creation of an appropriate economic and mathematical modeling system, management procedures and optimization, with the definition of quality criteria for transients, promising control laws.

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