$$F^3 = \sum_{i=1}^{n} \alpha_i \cdot x_i \to \min, \tag{7}$$

$$\sum_{i=1}^{n} \frac{e_i \cdot x_i}{q_r} \le Q_{q_r}, \qquad q_r = 1,..., \max_{i=1,...,n} \{e_i\}, \tag{8}$$

$$\sum_{i=1}^{n} a_i \cdot x_i \le S, \tag{9}$$

$$\sum_{i=1}^{n} d_i \cdot x_i \le D, \tag{10}$$

$$k_{low} \le \sum_{i=1}^{n} x_i \le k_{high}, \tag{11}$$

$$x_j \in \{0,1\}. \tag{12}$$

The task (5) – (12) belongs to the class of problems of linear multicriteria optimization [4]. The criterion (5) expresses maximizing usefulness of the choice of system of indicators of the pricing process; criterion (6) – minimization of the expenses connected with introduction of system of indicators in monitoring of the pricing process; criterion (7) – minimization of the risk connected with possible errors in measurement of indicators of the pricing process at the tourism enterprise. To the solution of a task (5) – (12) can be applied a method of weight coefficients, a method of priorities and other methods of vector programming.

After the system of key indicators of the pricing process is created, it is necessary to provide to each element of this system value of weight coefficient. Ranging of indicators on their influence on process is a necessary condition of obtaining values of target indicators in system of monitoring of activity processes of the tourist enterprise.

References:
1. Ogonowska M. Sustainable Tourism Products Distribution: Optimal Pricing and Branding Strategies / M. Ogonowska. – e-Review of Tourism Research (eRTR), Vol. 9, No. 3, 2011. – P. 96-106.
2. Kumar V. Fuzzy uncertainty analysis in system modelling / V. Kumar, M. Schuhmacher // Computer Aided Chemical Engineering, Volume 12, 2005. – P. 391-396.
3. Yemets O. A. Combinatorial optimization under uncertainty // O. A. Yemets, A. A. Roskladka // Cybernetics and Systems Analysis, Volume 44, Number 5, 655-663.
4. Ehrgott M. Multicriteria Optimization / M. Ehrgott. – Berlin: Springer Berlin-Heidelberg, 2005. – 328 p.

MODELING OF UNIT "FINANCE" IN FINANCIAL-INDUSTRIAL GROUP

ZERNOVA L.E.

Moscow state University of design and technology, Moscow, Russia

Abstract: when evaluating the performance and ranking of financial-industrial groups great importance is attached to the block "Finance". The simulation of this block is required in connection with the use in practice of a large number of financial indicators, wide range of their variation, and using fairly complex mathematical methods described in the economic literature.

In assessing the activities of financial-industrial groups (figs) great importance is attached to the block "Finance". The use of financial resources is characterized by a significant number of indicators: solvency, stability and profitability of the enterprises included in the group, and a wide range of their variation. In this regard, for the assessment of this unit it is proposed to use special rating tables. They are prepared on the basis of expert opinion, taking into account the real economic situation in the country and in the textile industry. Tables are encouraged to use the evaluation step of 0.25 in the interval of the evaluation score from 1 to 5, which gives 17 points for evaluation. After evaluating each indicator is weighted considering the importance. To simplify the modeling equations for correlation scoring. Next, you need to give a qualitative interpretation of each indicator. We then define a summary rating score on the block "Finance" for the individual enterprise (organization, firm). After the interpretation is determined by the summary rating score on the block "Finance" for all enterprises, firms and organizations included in Fig. It also is given a qualitative interpretation.

In the economic literature there are indicators to evaluate the creditworthiness of companies, their financial stability and the probability of bankruptcy. In the works of W. H. Beaver, the set of indicators includes five ratios: return on assets; the specific weight of borrowed funds in the liabilities; the current ratio; the share of pure working capital in assets; the ratio of beaver. Altman proposed an integrated indicator - the ratio of the probability of bankruptcy, calculated using five coefficients. Also known is widely implemented in software products "Analyst" group of companies "INEC" method of complex assessment of financial performance. Based on the analysis of all the presented methods were selected from the set of values of the solvency, sustainability and business activity. Within these groups of indicators, we chose those that can be compared with normative values. This facilitates the compilation of rating tables and the work of experts [1]. Solvency is determined by the ability of the company to repay debts in case of simultaneous claims on payment of all creditors of the company. To assess solvency, as a rule, we use 3 indicators: the absolute liquidity ratio, quick ratio and current ratio. Consider in more detail the rating table to assess the indicators of solvency (table.1).

In table 2 we present correlation equations to determine the rating scale points (x) depending on the liquidity indicators (Y) and calculated for them, the correlation coefficients.

Table 1 – Rating table for assessing the solvency of a company indicators absolute liquidity (AL), quick liquidity ratio (QLR) and current liquidity (CL)

Rating scale, score	AL, %	QLR, %	CL, %
1	2	3	4
1	≤ 5	≤ 10	≤ 8
1,25	> 5	> 10	> 20
1,5	> 8	> 16	> 32
1,75	> 11	> 22	> 44
2,0	> 14	> 28	> 56
2,25	> 17	> 34	> 68
2,5	> 20	> 40	> 80
2,75	> 23	> 46	> 92
3,0	> 26	> 52	> 104
3,25	> 29	> 58	> 116
3,5	> 32	> 64	> 128
3,75	> 35	> 70	> 140
4,0	> 38	> 76	> 152
4,25	> 41	> 82	> 164
4,5	> 44	> 88	> 176
4,75	> 47	> 94	> 188
5,0	≥ 50	≥ 100	≥ 200
Specific gravity indicator	0,45	0,25	0,3

Table 2 – Correlation Equation to determine the points on the liquidity indicators

Index	The equation of correlation	The correlation coefficient, R
AL	x = (y + 8,23529) / 11,76471	0,9995
QLR	x = (y + 17,3529) / 23,52941	0,9993
CL	x = (y + 39,1176) / 48	0,9999

Give the interpretation of the estimates: assessment 1 – liquidity worse than normative values, the company is not solvent; assessment 2 – liquidity indicators slightly better than the recommended values, the company has low solvency; assessment 3 – the company can pay off some current liabilities; valuation 4 – the company may pay most of the liabilities, solvency above average; rating 5 – the company can repay its obligations in due time. Liquidity measures meet the recommended values or better. The enterprise (firm) has a high solvency.

The stability of the enterprise is the degree of its independence from external sources of financing, or borrowed funds, and the stability of the income of the owners of the enterprise. Among the sustainability indicators that are widely presented in economic literature, we choose the coefficients: autonomy (concentration of equity); the ratio of borrowed and own funds; coverage of non-current assets own capital. The system of indicators characterizing the efficiency of the company, included product profitability, assets and turnover of different types of assets.

After determining the final rating in terms of solvency, sustainability and efficiency necessary to determine the final (summary) score for the unit "Finance" for each of the separate enterprise (firm, organization), a member of the group. This evaluation summary is defined as the weighted sum of ratings (without rounding) obtained by several groups of factors. This will allow to take into account the significance of a particular group of indicators and its impact on the final grade. Specific weight groups of indicators are defined based on the analysis of financial activity of enterprises and firms, conducted with the help of software "Analyst" group of companies "INEK": the proportion of the groups of indicators of solvency of 0.3; specific gravity of the group of sustainability indicators to 0.3; the proportion of the group's performance indicators to 0.4.

Next you need to define a summary rating of the unit "Finance" at all enterprises, firms and organizations within PPG. The weight of the individual enterprise (organization) in block "Finance" is defined by profit from sales. Particularize the values of the estimates. The composite rating of 1 (1÷1,4): financial system of the group is in deep crisis. Financial stability of group members is lost. The extent of the crisis is so deep that can not help even urgent reorganization of the whole financial and economic system. The composite rating of 2 (1,5÷2,4): the financial system is experiencing serious difficulties. Without serious measures cannot change the situation. Required financial support from the bank But this support is connected with serious risk. A summary rating of 3 (2,5÷3,4): there are still deficiencies in the financial system group. But these deficiencies affect only certain areas of financial activity. They should be liquidated in the short term, otherwise it will gradually lose stability, solvency and profitability. A summary rating of 4 (3,5÷4,4): financial system of the group is at a good level. Enterprises and companies mainly solvent and financially sustainable. But a separate indicator of the sustainability, solvency, and efficiency can be lower than standard values. But the stability of the financial system are sufficient to temporarily overcome the constraints. The consolidated rating of 5 (4,5÷5): the financial system is stable, contributes to the maintenance of economic security of the group. The solvency of companies included in the group, no doubt.

References:
1. Zernova, L. E., Erokhin, E. S. Organizational-economic mechanism of creation, functioning and evaluation of financial-industrial groups, Moscow, M. - MSTU – 2009 - 130 pp.