

## The Analysis of Financial of Condition: the Features of the Application of Concentric Matric Modeless

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### Abstract

**Purpose** – The article views the theoretical basis of adaptation concentric matrix models in the analysis of the financial condition of the organization. Presented the elements counting procedures in the assessment of economic stability.

**Research design, data, and Methodology** – Used the economic indicators in the concentric matrix models. The article views the specific using the concentric matrix models in the analysis of the financial condition of the organization.

**Results** – The concentric matrix models can be adaptation to the analysis of financial conditions of organizations and to the comparative analysis. In the process of analysis of economic stability can be used “a field of efficiency”. The classical variant of methods is transformed. The detailed assessment of influence of individual factors defined the additional methods.

**Conclusions** – In the article the methods are demonstrated on the material of organization (Hyundai Elevator Co, China Communications Construction Company).

**Keywords:** the economic analysis, the concentric matrix modeling, "field effectiveness", the analysis of the financial condition of the organization.

### 1. Introduction.

One of the areas of financial analysis is to assess the financial condition of the organization, which includes the study of liquidity, solvency, sustainability, business and other aspects. Using traditional methods, based on the coefficient method does not always give the system, the logical representation of a generalized assessment of ongoing processes. The most interesting, in our opinion, is the "field of efficiency," which is defined in the classical form of vector research "expenses - resources - the result" and has a different adaptation options. The basis of this method are laid concentric matrix models that adequately adapt to the research subject.

Fundamental research in the field of concentric matrix models were made by scholars such as: U.I. Mereste, H.A. Luur, V. Vensel, J. Room, A. Root, M. Orvet, M.S. Fleydervish, M. I. Saarepera and others. However, as the researchers note, it is based on principles not only full-system analysis, and the transition from elementary to complex analysis, and then to full-system. Concentric matrix models are universal association of multivariate factor analysis and matrix modeling. Thus, taking into account the tasks can use a matrix levels, different types of indexes.

The index method is most prevalent. The first indexes Duto and Carly appeared in the middle XII century and belonged to the class of so-called unweighted indexes. It should be noted that the theory of the index has gained the particular importance at a time when the price of level is changing rapidly. Rising prices in Europe, following the discovery of America, brought to the fore the measurement of changes in the purchasing value of money.

The turning point in the use of the index was the appeal of the German economist, professor Derpscki university E. Laspeyres to the aggregate index in the 1871 year. This is marking the transition from a purely intuitive of applications of index, which bore the "preparatory" character, to their widespread use and the conscious development of the index theory.

I=L1B1/L0B0

(1)

where L - the quality factor, the quality-volume (lat.-gualitas- are qualitative),  
B – the quantitative factor, the quality-checking (lat.-guantitas - quantitative).

Without claiming the completeness, we note some of the work scientists, whose work was the basis of the index theory: M.V. Drobish, H. Paasche, K. Gini, F. Edgewort and others. The index method can not be attributed to the fully formed. He continues to develop multifaceted.

In particular, P. Kevesh at deepening I. Fisher's theory, making a review of existing approaches in the literature, notes that, in contrast to the english-american school, develop various european concepts. He notes, referring to the conceptual system Menges, that the swedish scientist A. Fost tries to combine the generalized concept of volume and the price indexes with the indexes derived from the demographic indexes obtained the under static relations. The polish scientist W. Welfe approached the analysis of the theory of indexes based on the indifference curves. The multilateral research of index method and its use in the combination with other, increases the accuracy of economic research. In particular, the use of index matrices in the economic analysis allows you to turn the study of individual aspects of economic activity in a coherent whole in which the individual areas in the economic analysis will be inextricably linked.

The substrate methodology of concentric matrix models are working according to statistics, economic analysis, mathematical modeling such as: E. Vilkas, S.E. Martinus, U.I. Mereste, M. Orvet, Y.R. Reljan, M. I. Saarepera. Then the general concept is formed: to determine the impact of individual factors on the resultant level; economic analysis on the basis of the matrices of efficiency, based on a study of costs, resources, results. This is were made by scholars such as: U.I. Mereste, M. Orvet, E.N. Vyborova, Y.R. Reljan, A.K. Root, M. I. Saarepera, M.S. Fleydervish. In the works is possible to trace the process of regulating the index of systems of matrix of different levels, where a detailed analysis of the homogeneous nature of the performance units, quadrants. Here much attention is paid to the technology of calculation of general performance indicators of the intensity on the basis of matrix elements. This is interesting in the work: E. Calle, U.I. Mereste, M. Orvet, U. Room, A.K. Root. The following peculiarity of the development of the methodology, which can be seen at the present stage of development of economic analysis, can be defined in the adaptation of the application of concentric matrix models in comparative analysis of institutions and to implement individual administrative decisions. This is you can see in the work such as: Vock, Vambola, E.N. Vyborova, E. Calle, M. I. Saarepera.

## **2. The results of the analysis.**

### **2.1. The features of the application of concentric matrix models in the analysis of the economic sustainability of the organization.**

Using concentric matrix models in the analysis of the economic sustainability of the organization has its own specific\*. Consider the features of counting procedures. At the first stage is preparing an information basis for analysis, defined system parameters (Appendix A).

In general, the approach we propose to use the following indicators: non-current assets (BA), current assets (OC), debtor indebtedness ( $\Delta_3$ ), total assets (total balance) (BБ), own capital (CK), short-term liabilities (KO), creditor debt (K3).

At this stage it is important to decide on the interpretation of the indicators used and adjust the original database. In this case presents the main indicators, the economic content of which can be represented in appendix A.

At the second stage, the formation of the matrix, held counting procedures, their interpretation, some preliminary analytical conclusions. In the third phase, if necessary, corrected information base and formed the final analytical conclusion.

Staying on the interpretation of the indicators should be noted that, for example, in column 2, line 4 (X41) presents the proportion of non-current assets in the balance sheet (that is, the division of non-current assets is made on the balance sheet total - total assets).

Digital 0,7066 indicates that 70.66% was the share of non-current assets in the total assets in the previous year.

Digital 0,6663 - 66.63% was the share of non-current assets in the total assets during the year.

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\* In the work of author.

**Table 1:** The matrix model 7 \* 7 integrated assessment of economic condition of the organization.

indicators	BA	OC	Дз	ББ	СК	КО	Кз
	1	2	3	4	5	6	7
1.BA	1,0000	0,4151	0,1286	1,4151	1,1480	0,2671	0,0257
	1,0000	0,5009	0,1250	1,5009	1,2659	0,2350	0,0250
	1,0000	1,2065	0,9722	1,0606	1,1027	0,8797	0,9722
2.OC	2,4088	1,0000	0,3097	3,4088	2,7653	0,6435	0,0619
	1,9965	1,0000	0,2496	2,9965	2,5273	0,4692	0,0499
	0,8288	1,0000	0,8058	0,8790	0,9139	0,7291	0,8058
3.Дз	7,7778	3,2289	1,0000	11,0067	8,9289	2,0778	0,2000
	8,0000	4,0070	1,0000	12,0070	10,1270	1,8800	0,2000
	1,0286	1,2410	1,0000	1,0909	1,1342	0,9048	1,0000
4.ББ	0,7066	0,2934	0,0909	1,0000	0,8112	0,1888	0,0182
	0,6663	0,3337	0,0833	1,0000	0,8434	0,1566	0,0167
	0,9429	1,1376	0,9167	1,0000	1,0397	0,8294	0,9167
5.СК	0,8711	0,3616	0,1120	1,2327	1,0000	0,2327	0,0224
	0,7900	0,3957	0,0987	1,1856	1,0000	0,1856	0,0197
	0,9069	1,0942	0,8817	0,9618	1,0000	0,7978	0,8817
6.КО	3,7433	1,5540	0,4813	5,2973	4,2973	1,0000	0,0963
	4,2553	2,1314	0,5319	6,3867	5,3867	1,0000	0,1064
	1,1368	1,3715	1,1052	1,2056	1,2535	1,0000	1,1052
7.Кз	38,8889	16,1444	5,0000	55,0333	44,6444	10,3889	1,0000
	40,0000	20,0350	5,0000	60,0350	50,6350	9,4000	1,0000
	1,0286	1,2410	1,0000	1,0909	1,1342	0,9048	1,0000

Digital 0,9429 indicates that the period to be diagnosed in the proportion of non-current assets to total assets decreased by 5.71%. Similarly, all other variables are calculated. In column 2, line 6 (X62) shows the ratio of current assets to short-term liabilities. Digital 1,554 shows that short-term liabilities on the ruble falls 1 ruble 55 kopecks current assets in the previous year.

Digital 2,1314 - ruble short-term liabilities accounted for 2 rubles 13 kopecks current assets during the year.

Digital 1,3715 indicates that to be diagnosed in the period saw an increase in the coverage ratio at 37,15%.

Thus, all indicators on the economic content can be divided into four main groups:

- placed in the first quadrant indicators characterizing the structure of assets (asset balance),
- in the second and third quadrant – the indicators to assess the economic condition of the organization,
- in the fourth – the liabilities and sources of (passive) organization.

Indicators linked matrix. The coefficients above the diagonal (the arrow in the table), are technology calculation indices inverse to those located below the diagonal.

After the implementation of counting procedures and analytical processing development index calculated generalizing organization (L). Technology index calculation is different. In the simplest case, it is defined as the authors note, the arithmetic average of the indicators considered in the table.

In particular, it can be calculated as the ratio of the indices under one of the diagonals (the third digit in each cell) to their number.

$$L = (0,8288 + 1,0286 + 1,241 + 0,9429 + 1,1376 + 0,9167 + 0,9069 + 1,0942 + 0,8817 + 0,9618 + 1,1368 + 1,3715 + 1,1052 + 1,2056 + 1,2535 + 1,0286 + 1,241 + 1,0 + 1,0909 + 1,1342 + 0,9048) / 21 = 1,067$$

Another, more correct version of the calculation involves the use of the arithmetic mean is not based on relative performance during the economic diagnostics, and the geometric mean.

$$L = \sqrt[21]{0,8288 * 1,0286 * 1,241 * 0,9429 * 1,1376 * 0,9167 * 0,9069 * 1,0942 * 0,8817 * 0,9618 * 1,1368 * 1,3715 * 1,1052 * 1,2056 * 1,2535 * 1,0286 * 1,241 * 1,0 * 1,0909 * 1,1342 * 0,9048} = 1,05785$$

If generalizing development index greater than unity, then we may conclude that the positive trend in the development of the organization to change its potential economic sustainability.

If generalizing development index is less than unity, then we can conclude about the negative trends in the development of the organization, that the organization has seen the crisis.

If generalizing development index is equal to one, then we can make an assumption about the stagnation in the development of the organization, that the subject preconditions are observed economic development crisis.

Dynamics of change summary measure allows the analyst to make a more detailed opinion on the development of the organization.

Hence the change in the potential object of study is a positive trend, as evidenced by the synthesis development index - 1,058 (more than one).

Further study generalizes economic condition of the organization relative to the equilibrium (standard) can be carried out by the method of the square<sup>†</sup>, the method of triangles (Appendix B).

Consider the use of concentric matrix models in classical form on the data from China Communications Construction Company in the 2015-2016 y.y. The traditional version of this method was used in the study "Cost-Resources-Result". The comprehensive matrix (the system of matrix) was sometimes built. May be the matrix: "resource-result", "cost-result", "production efficiency", and "labor" and so on. Evaluation the growth of corporation on the main indicators on the vector's "Cost-Resources-Result": the revenue (R), the profit (P), the costs of sale (Cs), property, plant, equipment (PPE), intangible assets (IA), inventory (I). Consider the standard matrix (Appendix C: table 1,2).

The first quadrant (1'Q) is the quadrant of income and the costs, where profitability measures are concentrated. For example, X12 - the profitability of sales.

The second quadrant (2'Q), the third quadrant (3'Q) are the quadrants of indicators of resource profitability, the estimates of structure. For example, X53 - represents the cost per the 1 yuan of intangible assets, X34 - reflects the level of cost coverage of the assets.

The fourth quadrant (4'Q) is the quadrant where the ratios of resource proportions are concentrated. For example, X65 - reflects how many the intangible assets are on the 1 yuan inventory.

The total development index of company was the 1,0913 - more than one, indicating a positive trends in the development, its potential.

Consider the use of concentric matrix models in classical form on the data from Hyundai Elevator CO. in South Korea in the 2013-2014 y.y. (Appendix C: table 3,4). The total development index of company was the 1,3853 (arithmetic mean), 0,4886 (geometric mean). This is indicating that in the development of corporation has the risk of change of financial sustainability.

## 2.2. The features of transformation the "field efficiency".

Analysis of economic stability can be based on various transformations of the field of effectiveness<sup>‡</sup>. For example, forming a field efficiency, determine the economic equilibrium condition in the Cartesian plane, posting growth of current assets, the current liabilities. With the transformation can be used a variety of economic indicators.

The total field is divided into quadrants, which in turn - on the field (Fig.1). Briefly reveal the economic sense of the field elements. The terminology used is relative, since the decisive factor is the initial economic situation.

We consider the overall situation, when the starting point is taken the equilibrium of economic condition, that is, the economic condition of the organization, for which there are no the distortions in the economic structure. Then we make an analogy with the economic state of the object being analyzed. According to the coordinate axes postpone the economic indicators of interest to us.

In our example, we take the tempo of current assets and tempo of the current liabilities. The choice of indicators defined by the analyst alone, taking into the account the earlier conducted a simple economic analysis and the factors that have been used in the process of building a concentric matrix models.

At the same time distinguish the four quadrant areas:

Quadrant 1 – the field performance,

The quadrants 2, 3 – the transformational field characterizing the transition in the organization, and the possibility of changing economic stability or the radical transformational restructuring, including a decrease in the volume of activity,

The quadrant 4 – the non performance field.

The point O - the equilibrium state,

CA, DB – the mutual settlement curves.

In the area 1 the economic condition is characterized mainly the dominant growth of short-term liabilities. The increase the current assets is negligible. The contact in this area will to indicate to the reduce operating capital. At this stage it is necessary to pay the attention to the management of working capital, the definition of the minimum necessary the quantities of borrowed funds in their preparation.

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<sup>†</sup> In the work of author.

<sup>‡</sup> It is necessary to see in the work of author.

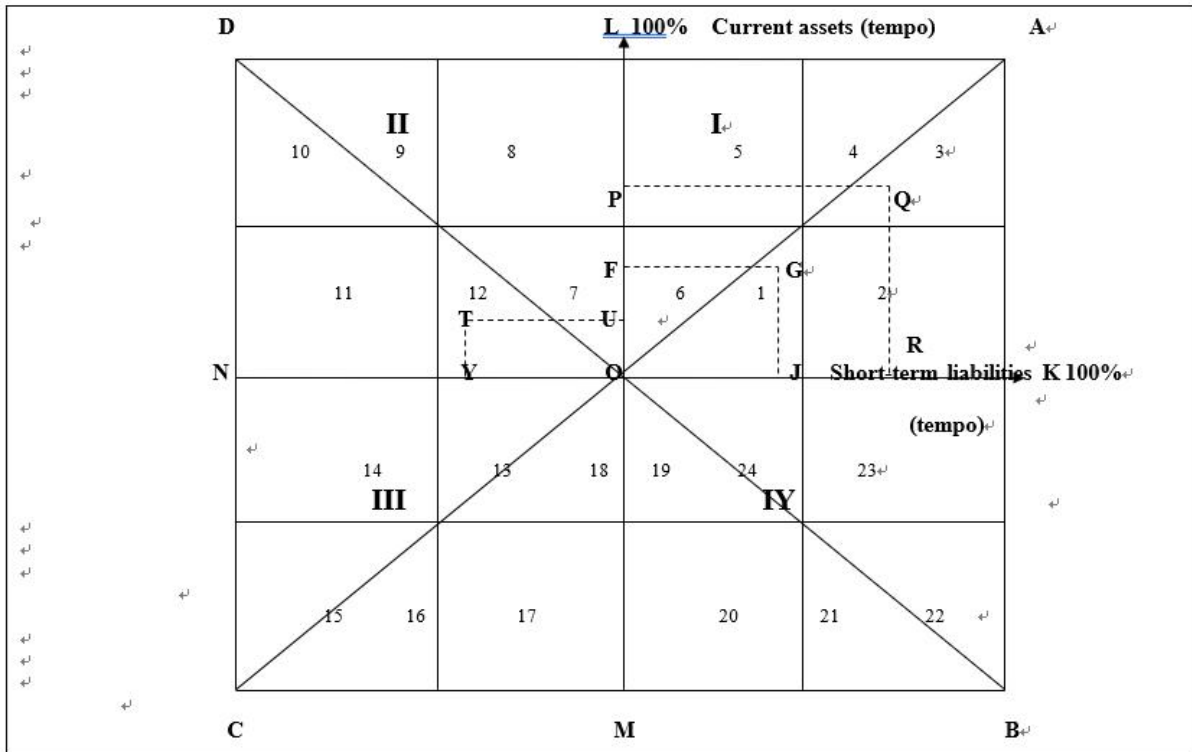


Figure 1: The field efficiency (the transformation).

The area 2 is characterized mainly obtaining a high degree of lack of the functioning capital. Therefore, the priorities in the economic situation is to reduce the liabilities and accrued the current assets.

The area 3, 4 – the absolutely effective area. The economic condition of the organization can be characterized as economically sustainable. Thus it can be concluded that the company is in a stage of development, compounding the volumes of activity, provided that there is no shortage of funds.

This suggests that, in general, for the analyzed period the organization is at the stage of slow pursuit of economic stability. At the same time there is a tendency to increase the volume of activity.

The area 5 can be attributed to less effective, provided that the high turnover of the enterprise and the amount of funds raised corresponds to organization the resource requirements. In this area, the organization should pay the attention to the turnover of funds, the amount of own funds, to evaluate the existing proportion between the involved and the working capital.

The area 6 is characterized by the need to control the structure of the working capital and the development of tactical tasks for the organization of management. There is also a shortage of funds raised that can not affect the implementation of both tactical and the strategic objectives.

The quadrant II – the field transformation, characterizes the transition phase in the organization, that is, the possibility of changing the economic sustainability. Being in this field, the organization runs the risk of reducing the degree of their stability.

The area 7 is characterized by the disparity between the proportion of current assets and borrowed funds. At the same time, the formation of a lack of the latter, as well as slowing the turnover of circulating assets.

In the area 8 is the difficult situation with respect to borrowed funds is retained. At the same time there are the positive trends in the working capital. However, the increase of current assets can be preserved and at reducing their turnover, there is a need to develop a tactical priority measures for their control.

The area 9 is characterized by similar changes in respect of current assets and an increase in the deficit of funds raised. At this stage, we need to concentrate the efforts on the development of protective of measures, since there is a high probability of falling into the area 10, 11.

In the area 12 observed the same trend as in the area 7. At the same time there is a significant shortfall in funds raised, the main "politic" of working capital is not available. Thus, there is a high probability of deterioration in the economic stability of the organization.

The quadrant III is also the transformational of field, but in this case characterizes the degree of decrease in the volume of activity, the reduction of borrowed funds or negotiable, that is, a radical transformational restructuring. In this area, there are the tendencies to absolute loss of stability.

The 1Y quadrant – is not the effective field. Being in this field, the economic status of organizations is a crisis, on the brink of bankruptcy.

After that to postpone the actual data – on the figure is a dotted line. Then we perform elementary calculation, and make out a table (Appendix D). The first, the individual area of each region (S1, S2, S3) are calculated. The next, the summary measure of the ratio of the total area under the consideration quadrant.

### 3. Results and Conclusions.

The following peculiarity of the development of the methodology, which can be seen at the present stage of development of economic analysis, can be defined in the adaptation of the application of concentric matrix models in comparative analysis of institutions and to implement individual administrative decisions.

If it is a prospective economic analysis, the use of concentric matrix models has it's the own characteristics. The some of the benchmarks in the matrix it is advisable to adjust the factor of inflation and the taxation. In this case the calculate of indicators in matrix on such us form:

$$j = (i + if + i*if + h)/(1-r), \quad (2)$$

where j - the nominal interest rate,

i - the real interest rate,

h – the "premium" for risk,

r - the rate of the taxation

if - the certain rate of inflation.

In the short term period the sum calculate:

$$S = P * [1 + n * (1-r) * i], \quad (3)$$

where n - the term of operation,

P – the initial sum,

S – the corrected sum.

In the short term of operations the sum calculate:

$$S = P * [(1+i) * (1+if)]^n \quad (4)$$

The tax is charged for all term at once (for all sum of percent):

$$S = P * (1+i)^n - [P * (1+i)^n * r - P * r] = P * (1+i)^n - P * (1+i)^n * r + P * r = P * (1+i)^n * (1-r) + P * r = P * [(1-r) * (1+i)^n + r]$$

$$S = P * [(1-r) * (1+i)^n + r], \quad (5)$$

$$G = P * (1+i)^n - P = P * [(1+i)^n - 1] * r, \quad (6)$$

where G – the sum of tax.

The tax is charged consistently (for example, in the end of everyone year).

$$G = I_t * r = (S_t - S_{t-1}) * r = P * [(1+i)^t - (1+i)^{t-1}] * r$$

The sum of tax:

$$G = P * [(1+i)^t - (1+i)^{t-1}] * r \quad (7)$$

It is applied in the Great Britain. The sum is indexed:

$$S = P * I_p * (1+i)^n \quad (8)$$

In an another case the percent is indexed.

The tempo of inflation and price index are connected

$$H = (I_p - 1) * 100 \%, \quad (9)$$

where H – the tempo of inflation.

$$I_p = (1 + H/100) \quad (10)$$

Average annual tempo of rise in a prices:

$$i_p = \sqrt[n]{I_p} \quad (11)$$

The tempo of inflation:

$$H = 100 (\sqrt[n]{I_p} - 1) \quad (12)$$

Inflation is a chain process (the prices in the current period raise on  $h_t$  percent concerning the level which has developed in the previous period)

$$I_p = P * \prod_1^t (1 + h_t) \quad (13)$$

where  $\Pi$  - from 1 up to  $t$ .

In the predicted or expected period with  $h$  - constant expectation rate of inflation.

$$I_p = (1 + h/100)^n \quad (14)$$

Forecasting of annual rate of inflation =  $(1 + \text{expected average month rate of inflation})^{12} - 1$

$$H_{if} = (1 + h_m)^{12} - 1 \quad (15)$$

$H_{if}$  – the forecasting of annual rate of inflation,

$h_m$  - expected average month rate of inflation.

$$I_{pc}^f = 1 + H_{if} \quad (16)$$

$I_{pc}^f$  - the forecasting index of inflation.

In the short term of operations the sum calculate:

$$S = P * [(1 + n*i)/(1 + h/100)^n] \quad (17)$$

In the long term of operations the sum calculate:

$$S = P * ((1 + i)^n / I_p) = P * [(1 + i)/(1 + h/100)]^n \quad (18)$$

The "field of efficiency," which is defined in the classical form of vector research "expenses - resources - the result" and has a different adaptation options. As you can see, the original method "the field efficiency" substantially transformed (four instead of the one quadrant appears the four quadrant in calculate).

Application matrix modeling allows not only to see the detailed structure of the organization, but also disparities, but also the organization's ability to meet their obligations, the ratio of own and borrowed resources and other parameters of the economic condition.

Synthesis index of development allows you to instantly make an assessment of trends in the capacity of the organization, which is very important when evaluating management decisions.

With the transformation of the field of efficiency can be applied generalizing indicators after detailed assessment of the economic condition of the organization on the basis of a system of indicators.

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## Appendix A

**Table 1:** The system of indicators used in the analysis of the economic sustainability of the organization.

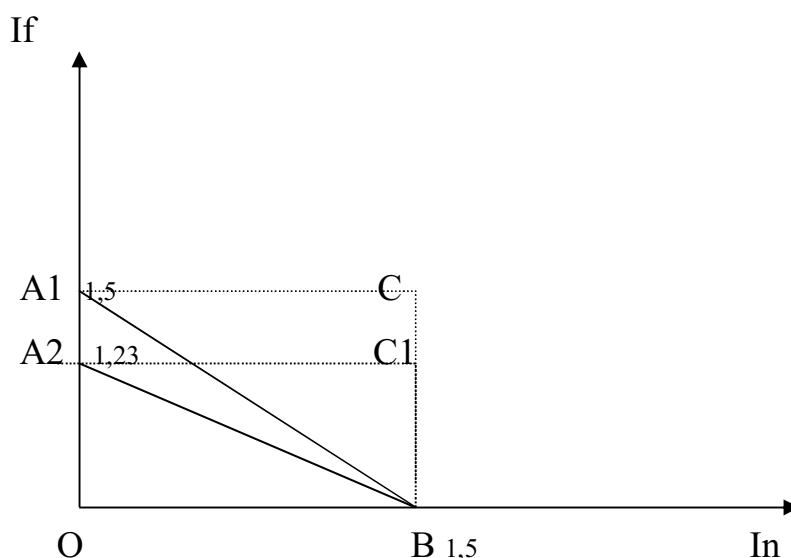
indicators	BA	OC	Д3	ББ	СК	КО	К3
	1	2	3	4	5	6	7
1. BA	X <sub>11</sub>	X <sub>12</sub>	X <sub>13</sub>	X <sub>14</sub>	X <sub>15</sub>	X <sub>16</sub>	X <sub>17</sub>
2. OC	X <sub>21</sub>	X <sub>22</sub>	X <sub>23</sub>	X <sub>24</sub>	X <sub>25</sub>	X <sub>26</sub>	X <sub>27</sub>
3. Д3	X <sub>31</sub>	X <sub>32</sub>	X <sub>33</sub>	X <sub>34</sub>	X <sub>35</sub>	X <sub>36</sub>	X <sub>37</sub>
4. ББ	X <sub>41</sub>	X <sub>42</sub>	X <sub>43</sub>	X <sub>44</sub>	X <sub>45</sub>	X <sub>46</sub>	X <sub>47</sub>
5. СК	X <sub>51</sub>	X <sub>52</sub>	X <sub>53</sub>	X <sub>54</sub>	X <sub>55</sub>	X <sub>56</sub>	X <sub>57</sub>
6. КО	X <sub>61</sub>	X <sub>62</sub>	X <sub>63</sub>	X <sub>64</sub>	X <sub>65</sub>	X <sub>66</sub>	X <sub>67</sub>
7. К3	X <sub>71</sub>	X <sub>72</sub>	X <sub>73</sub>	X <sub>74</sub>	X <sub>75</sub>	X <sub>76</sub>	X <sub>77</sub>

- X12 - the proportion of current assets and non-current assets of the organization;
- X13 - the proportion of debtor indebtedness and non-current assets of the organization;
- X14 - the proportion of total assets and non-current assets of the organization;
- X15 - the proportion of own capital and non-current assets of the organization;
- X16 - the ratio of current short-term liabilities and non-current assets of the organization;
- X17 - the proportion of creditor debt and non-current assets of the organization;
- X21 - the proportion of non-current assets and current assets of the organization;
- X23 - the relative weight debtor indebtedness in current assets of the organization;
- X24 - the proportion of the total assets total and current assets of the organization;
- X25 - the proportion own capital and current assets of the organization;
- X26 - the proportion of short-term liabilities and current assets of the organization;
- X27 - the proportion of creditor debt and current assets of the organization;
- X31 - the proportion of non-current assets and debtor indebtedness organization;
- X32 - the proportion of current assets and debtor indebtedness organization;
- X34 - the proportion of the total assets and debtor indebtedness organization;
- X35 - the proportion of own capital and debtor indebtedness organization;
- X36 - the proportion of short-term liabilities and debtor indebtedness organization;
- X37 - the proportion of creditor debt and debtor indebtedness organization;
- X41 - the specific weight of non-current assets in the total assets of the organization;
- X42 - the specific weight of current assets in the total assets of the organization;
- X43 - the specific weight of debtor indebtedness in the total assets of the organization;
- X45 - the specific weight of own capital in the total assets of the organization;
- X46 - the specific weight of short-term liabilities in the total assets of the organization;
- X47 - the specific weight of creditor debt in the total assets of the organization;
- X51 - the proportion of non-current assets and own capital organization;
- X52 - the proportion of current assets and own capital organization;
- X53 - the proportion of debtor indebtedness and own capital organization;
- X54 - the ratio of total assets total and own capital organization;
- X56 - the proportion of short-term debt and own capital organization;
- X57 - the proportion of creditor debt and own capital organization;
- X61 - the coverage of short-term liabilities non-current assets of the organization;
- X62 - the coverage of short-term liabilities current assets of the organization;
- X63 - the coverage of short-term liabilities debtor indebtedness organization;
- X64 - the degree of coverage of short-term total assets obligations of the organization;
- X65 - the coverage of short-term liabilities own capital of the organization;
- X67 - the specific weight of creditor debt in short-term liabilities of the organization;

- X71 - the proportion of non-current assets and creditor debt of the organization;
- X72 - the coverage of creditor debt current assets debtor indebtedness of the organization;
- X73 - the proportion of debtor indebtedness and creditor debt of the organization;
- X74 - the coverage of creditor debt total assets payable organization;
- X75 - the proportion of own capital and of creditor debt organizations;
- X76 - the proportion of short-term liabilities and of creditor debt organization.

## Appendix B

Consider an example in more detail. As a result of the preliminary analysis of concentric matrix models the summarizing index of the organization was 1.23. In view of the existing potential of this figure should be at the level of 1.5. Hence we produce construction (Fig.2).



The legend:

In – the normative, theoretical synthesis index of development of the organization;

If - the actual value of generalizing index of the organization;

A1B – the direct, characterizing the possible economic position of the organization in view of a decision and the capacity;

A2B – the direct, characterizing the actual economic situation of the organization.

Figure.1: The assessment of the economic status of organization by the method of triangles.

Thus, in our example, we can talk about the lack of effective distribution of resources involved. The economic opportunities of organization used not in its entirety, only 82%. That is, the effectiveness of management decision-making is 82%. This indicator is calculated as the ratio of the area of a triangle OA2B to the area of a triangle OA1B:

$$[(1/2 * 1.5 * 1.5) / (1/2 * 1.5 * 1.23) = 0.82].$$

The calculation can be carried out not only by manipulating the areas of triangles, and the rectangle. In this case, the point B made the additional constructions. The square OA1CB - an area that characterizes the best of economic situation of organization with regard to make the management decisions and the economic potential. The rectangle OA2C1B – the region, characterizing the actual economic situation of the organization.

The method triangles of can be used in the process of comparative economic diagnosis, when there are the several alternative decision-making or as an object of research are the multiple entities.

In this case, the coordinate system will be no direct A2B, but the several directs. And obtaining the greatest value would indicate that the situation of the organization or the described the embodiment of an operation is evaluated as the best.

The article views of methods of analysis in their automation the simple and the versatile to use. The evaluation of a large number of "various orders" factors such as a limited the source database, and no such the limitation can be carried out very quickly.

The advantages of the method of triangles are:

1. Its allows to make the comparative of conclusions about the effectiveness of the adoption of the alternative management of decisions.

2. This method can be applied to multiple of objects of studies.
  3. Its allows you to make comparative conclusions about the economic state of the research object.
  4. Its allows to do the evaluate the economic state of the object of study, taking into account its potential.
- This method also is advisable to apply in the process of formation of generalizing conclusions on the evaluation stage building of stability, the equilibrium economic situation.

### Appendix C

**Table 2:** The matrix of China Communications Construction Company in the 2016 y.

	R	P	Cs	PPE	IA	I	
1.R	1	0,04114	0,865342	0,155301	0,333464	0,105946	
2.P	24,30731	1	21,03415	3,774945	8,105602	2,575273	
3.Cs	1,155612	0,047542	1	0,179467	0,179467	0,122433	
4.PPE	6,439116	0,264905	5,57204	1	2,147211	0,682201	
5.IA	2,998828	0,123371	2,595013	0,46572	1	0,317715	
6.I	9,438732	0,388308	8,167735	1,465843	3,147473	1	The matrix

of assessment China Communications Construction Company

	R	P	Cs	PPE	IA	I	
1'Q	1.R	1	0,0394	0,8767	0,1684	0,3502	0,1286
		0,0411	0,8653	0,1553	0,3335	0,1059	
		1,043147	0,986997	0,922209	0,952313	0,823484	
	2.P	25,3639	1	22,2373	4,2715	8,8824	3,2617
		24,3073		21,0342	7,7749	8,1056	2,5752
		0,958342		0,945897	1,82018	0,912546	0,789527
3.Cs	1,1406	0,0449	1	0,1921	0,3994	0,1467	
	1,1556	0,0475		0,1795	0,1795	0,1224	
	1,013151	1,057906		0,934409	0,449424	0,834356	
2'Q	4.PPE	5,9379	0,2341	5,2059	1	2,0794	0,7636
		6,4391	0,2649	5,572		2,1472	0,6822
	5.IA	1,084407	1,131568	1,070324		1,032606	0,8934
		2,8555	0,1126	2,5035	0,4809	1	0,3672
		2,9988	0,1233	2,595	0,4657		0,3177
		1,050184	1,095027	1,036549	0,968393		0,865196
6.I	7,7762	0,3066	6,8176	1,3096	2,7232	1	
	9,4387	0,3883	8,1677	1,4658	3,1474		
	1,213793	1,266471	1,198032	1,119273	1,155773		
L=	3,710037	L=	16,41919				
	1,091336		1,094613				

The legend:

- 2,7232– 2015 y.
- 3,1474 - 2016 y.
- 1,155773 - index

**Table 4:** The matrix of Hyundai Elevator CO. in the 2013 – 2014 y.y.

	R	P	Cs	PPE	IA	I
R	1	0,025357	0,802159	0,092565	0,005024	0,022835
P	39,43709	1	31,63482	3,650498	0,198146	0,900539
Cs	1,246635	0,031611	1	0,115395	0,115395	0,028467
PPE	10,80321	0,273935	8,665892	1	0,054279	0,246689
IA	199,0306	5,046786	159,6542	18,42328	1	4,544827
I	43,79277	1,110446	35,12877	4,053682	0,22003	1

**Table 5:** The gross matrix of assessment Hyundai Elevator CO.

	R	P	Cs	PPE	IA	I
R	1	0,313	0,8245	0,0938	0,0053	0,0117
		0,0253	0,8022	0,0926	0,005	0,0228
		0,080831	0,972953	0,987207	0,943396	1,948718
P	3,1952	1	2,6343	0,2996	0,0169	0,0374
	39,4371		31,6348	3,6505	0,1981	0,0901
	12,34261		12,00881	12,18458	11,72189	2,409091
Cs	1,2129	0,3796	1	0,1137	0,0064	0,0142
	1,2466	0,0316		0,1154	0,1154	0,0285
	1,027785	0,083246		1,014952	18,03125	2,007042
PPE	10,6665	3,3383	8,794	1	0,0563	0,1249
	10,8032	0,2739	8,6659		0,0543	0,2467
	1,012816	0,082048	0,985433		0,964476	1,97518
IA	189,3302	59,2548	156,0929	17,75	1	2,2173
	199,0306	5,0468	159,6542	18,4233		4,5448
	1,051235	0,085171	1,022815	1,037932		2,0497
I	85,3892	26,7243	70,399	8,0054	0,451	1
	43,7928	1,1104	35,1288	4,0537	0,22	
	0,512861	0,04155	0,498996	0,506371	0,487805	
L	2,16E-05	L	20,77867			
	0,488595		1,385245			

## Appendix D

**Table 6:** The clearing of the table layout.

The indicators \ The areas	The areas 1	The areas 3	The areas 12
1. The areas OFGJ	S1		
2. The areas OPQR		S2	
3. The areas OUTY			S3
The generalized indicator	H1	H2	H3

$$H1 = [S1/ S_{OLAK}] * 100 \%$$

$$H2 = [S2/ S_{OLAK}] * 100 \%$$

$$H3 = [S3/ S_{OLDN}] * 100 \%$$