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Calculation of the Generalizing Indicator of Productivity of the Enterprises Activity Based on the Matrix-Rank Approach

Kavun Sergii[1,*], Zhosan Ganna[2]

[1]Department of Information Technologies, Kharkiv Institute of Banking University of Banking of the National Bank of Ukraine (Kyiv), Kharkiv, Ukraine
[2]Management and Marketing Department, Kherson National Technical University, Kherson, Ukraine
*Corresponding author: kavserg@gmail.com

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Abstract The method of calculation of a generalizing indicator of a productivity of the enterprise activity based on the matrix-rank approach is presented in this paper. The value of the generalizing indicator of productivity of any enterprise activity due to use of the geometrical interpretation can be defined based on the matrix-rank approach. Intermediate indicators of economic, ecological, social and legal components of productivity of the enterprise activity can be calculated with the help of the proposed method. Practical conclusions for rather real enterprises of the elected industry area can be formulated based on the calculated generalizing indicator of productivity of the enterprise activity.

Keywords: *Productivity, Enterprise Activity, Economic, Ecological, Social, Legal Components, Matrix-Rank Approach, Enterprise Purposes*

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1. Introduction

Productivity of activity of some enterprises as the primary subject of the market is important for a number of reasons. Productivity of a branch and all economy in general in this separated sector of functioning consists of results of activity of many industrial enterprises. Therefore, this question has the general social and economic meaning for all society. Information on the results of the enterprise activity is important for all participants of external and internal business processes for further understanding of some prospects of its development and the solution of a question about continuation of further collaboration in one or another form and obtaining the incomes adequate to the expenses, or a satisfaction of some requirements.

Adhvaryu and Nyshadham, 2014 [1]. They have studied the role of household enterprise as a coping mechanism after health shocks. Using variation in the cost of traveling to formal sector health facilities to predict recovery from acute illness in Tanzania, they have shown that individuals with prolonged illness switch from farm labor to enterprise activity. This response occurs along both the extensive (entry) and intensive (capital stock and labor supply) margins. Family members who are not ill exhibit exactly the same pattern of responses. Deriving a simple extension to the canonical agricultural household model, we show that our results suggest complementarities in household labor.

Serba, 2011 [22]. He has shown in their paper classification of kinds of enterprise activity is given, manufacture factors are considered, the variant of calculation of requirement of the enterprise in financial assets is offered and productivity of industrial activity with reference to the enterprise business plan is estimated. The business plan – the short, exact, accessible and clear description of prospective business, the major tool by consideration of a considerable quantity of the various situations, allowing to choose the most perspective desirable result and to define means for its achievement. The business plan is the document, allowing operating business, therefore it is possible to present as the integral element of strategic planning and as a management for execution and control. It is important to consider the business plan as process of planning and the tool of intra-companies management.

Levchenko and Rudychev, 2013 [20]. They have presented the article is devoted to business activity study and its assessment within the industrial enterprise. Qualitative and quantitative indices characterizing business activity of the enterprises are described and proved in it. The technique of the complex assessment of business activity by determination of its level and calculation of the made coefficients is offered and approved. The coefficient of business activity is grouped and compared with a hierarchical scale. Recommendations for practical application of the technique for the assessment of business activity at the industrial enterprises are offered.

Gornostaeva et al., 2014 [10]. These authors have develop the methodical aspects of analysis of efficiency of service enterprises activity, conducts analysis of efficiency of service enterprises activity in Russia and analysis of efficiency of service enterprises activity in the countries of Eastern Europe, and then makes out comparative analysis and provides recommendations upon development of service sector in Russia and the countries of Eastern Europe.

Grygorenko, 2001 [12]. Her paper investigates the impact of privatization on enterprises' financial and operating activity by conducting a comparative analysis between privatized and state-owned enterprises. Empirical research was based on a sample of 379 Ukrainian enterprises for the period of 1997-1999. Results of estimation have indicated that privatization positively influences labor productivity and profitability of enterprises. However, its results are not immediate they become evident over time. In order to tackle the problem of potential endogeneity, instrumental variables estimation technique is used. Instruments used are financial indicators of firms' activity, which, according to Ukrainian legislation, are the basis on which state authorities make decisions about the expediency of privatization.

Separated questions about studying and entity of the productivity of the enterprise activity were been shown in some publications by well-known authors (Korchevska, Zhosan and Kavun, 2013 [18]; Darmits, 2010 [4]; Druker, 2004 [7]; Davenport, 1913 [5]; Safin, 2009 [21], etc.). However, the problem of calculation of the generalizing indicator of productivity of an activity of any enterprises does not have any final solution; therefore, it requires the further improving.

Statement of the task. Will need to develop of the corresponded technique and calculation of the generalizing indicator of the productivity of enterprises activity in the elected branch on its basis.

2. Description of the Proposed Method

One of the main tasks of any enterprise is a productive activity, which sometimes interpreted as the functioning (but it is not an inconsistent question), which can be carried out only at coordinating the purposes and results with internal and external business processes and their participants. Productivity is defined not only by receiving a certain result at the achievement of some goals, and the rational using of the enterprise resources and the achievement of a specific goal. This pre-determines the using of the certain resources with certain their combination [7].

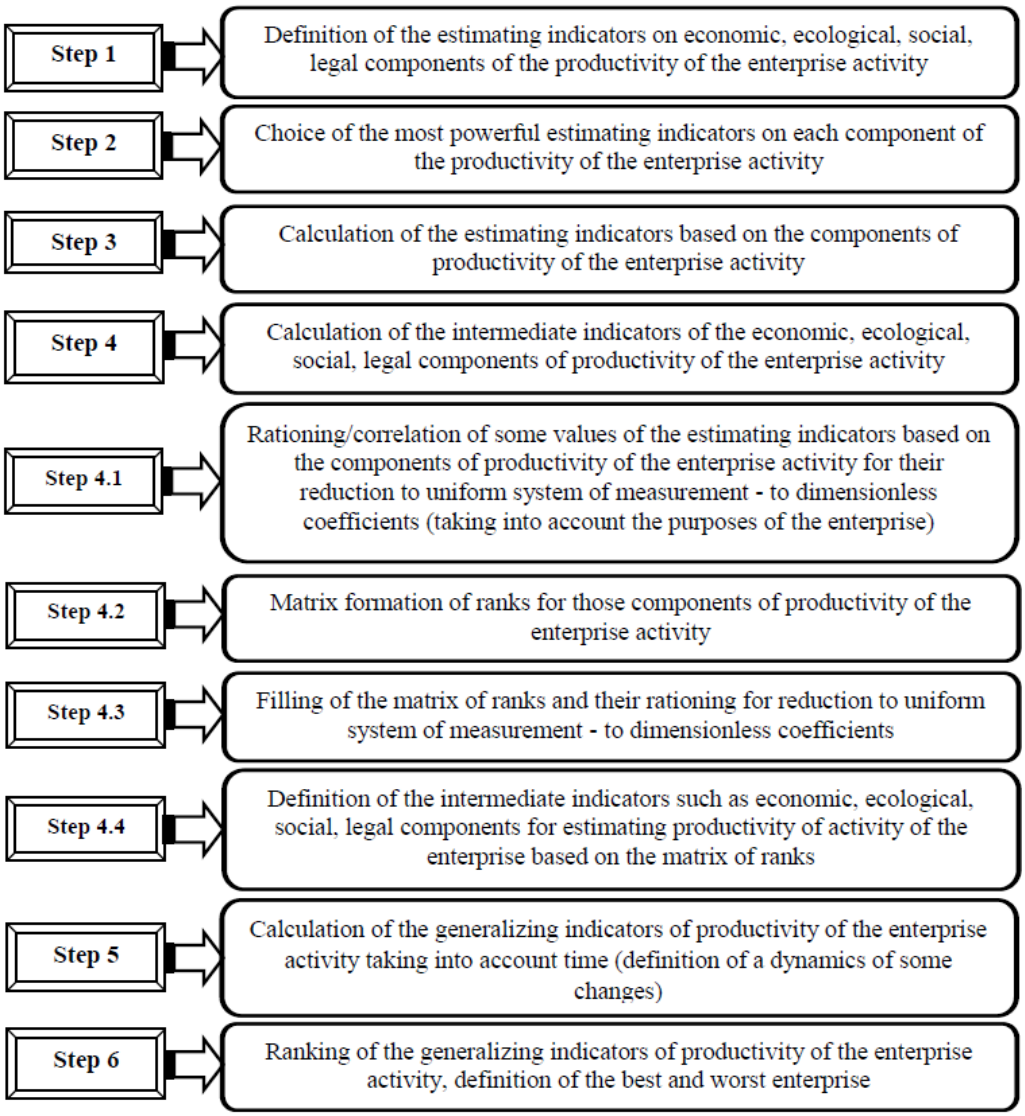

Figure 1. Scheme of the method of calculation of the generalizing indicators of productivity of the enterprise activity (author's development)

The level of achievement of the objectives of the enterprise activity, which corresponds to the calculated indicator, has been proposed for better understanding by the authors. This level was presented with the help of quantitative and quality indicators, which characterize a compliance of some results of economic, ecological, social, legal components (number of these components, Ks = 4) productivity of activity of the enterprise in relation to its purposes. In addition, this level can be saved up potential for further conducting and covering socially responsible business processes as the productivity of the industrial enterprise activity.

In this regard, the indicator of productivity of the industrial enterprise activity need to estimate for a satisfaction of multilateral interest in this problem. The corresponding technique (Figure 1) was proposed by the authors for solution of this question of an assessment of the productivity indicator of the industrial enterprise activity.

As a basis of this technique of an assessment of the productivity indicator of the industrial enterprise's activity there were used the following two approaches: the balanced scorecard for an assessment of the enterprise activity [2,13] and the matrix-rank approach [14,15,16,17].

The indicator of productivity of the enterprise activity is defined based on the general indicators of the following four components: economic, ecological, social and legal. It allows considering most fully all fields of the industrial enterprise activity and its purposes [2].

The proposed technique of an assessment of productivity indicator of the industrial enterprise activity consists of the following steps.

Step 1. Calculation of the basic indicators of the enterprise activity, which are a basis for the next calculation of some intermediate indicators of the following components of productivity of the enterprise activity – economic, ecological, social and legal. Number of these indicators based on the purposes groups of the industrial enterprise should be selected for their further calculation.

Step 2. Number of the estimated indicators according to the chosen purposes groups of the industrial enterprises (Table 1) should be selected for further calculation of the intermediate indicators of the already chosen economic, ecological, social and legal components. The method of an expert assessment, which will allow allocating the five most important estimated indicators for each component of the productivity of the enterprise activity (Table 2), was applied to calculation of the most powerful chosen earlier indicators.

Table 1. Enterprise purposes for the chosen components of the productivity of the enterprise activity

Components	Purposes
The economic component	Maximum use of fixed assets of the enterprise The maximum sale of the developed production Decrease in expenses Increase in net profit Financial independence
The ecological component	Decrease in volume of the rejected production Increase of innovation of the equipment Decrease in material expenses Improvement of quality of production Care of environment
The social component	Increase of labor productivity of workers Decrease in turnover of staff Motivation of workers Decrease in expenses on a salary Increase of return of a salary of workers
The legal component	Implementation of contractual obligations on quality of production Decrease in number of judicial claims on the enterprise Implementation of contractual obligations behind the product range Reduction of losses from penalties Implementation of all contractual obligations behind term

Table 2. List of the estimated indicators for a calculation of the generalizing indicator of the productivity of the enterprise activity

Symbol	Name of an indicator	Symbol	Name of an indicator
Economic component		*Ecological component*	
E1	Capital productivity	Ec1	Developed production rejected coefficient in a total amount
E2	Production profitability	Ec2	Innovativeness equipment coefficient
E3	Expenses profitability	Ec3	Part of the materials in the products cost
E4	Net profit growth coefficient	Ec4	Improvement coefficient of the quality products
E5	Financial independence coefficient	Ec5	Coefficient of decreasing in the penalties sum paid for the environmental pollution
Social component		*Legal component*	
S1	Labor productivity of workers	L1	Percent of an implementation of the contractual obligations on a quality
S2	Profitability of a salary	L2	Quality coefficient of the legal services
S3	Index of salary increase at the enterprise	L3	Percent of an implementation of the contractual obligations on an assortment
S4	Return of the salary	L4	Coefficient of the payment discipline
S5	Saving of the salary	L5	Percent of an implementation of the contractual obligations by maturity

Step 3. Calculation of the estimated indicators of productivity of the enterprise activity, which are a basis for the further calculation of the intermediate indicators of economic, ecological, social and legal components.

Step 4. Calculation of the intermediate indicators of economic, ecological, social and legal components of the productivity of the enterprise activity.

The matrix rank approach was used for a calculation of the intermediate indicators of some chosen earlier components of the productivity of an activity of the following enterprises: Enterprise 1; Enterprise 2; Enterprise 3; Enterprise 4; Enterprise 5; Enterprise 6 for 2009-2013. These enterprises were been depersonalized that those calculations will not influence to the real enterprises.

Step 4.1. We have carried out the rationing/correlation of the obtained values of the estimated indicators on some components of productivity of the enterprise activity to make them into uniform measurement system (for obtaining a possibility of the comparative analysis) as the dimensionless coefficients (taking into account the enterprise purposes).

Step 4.2-4.3. Formation of a matrix of the ranks for the chosen components of a productivity of the enterprise activity.

Considering the estimated indicators for a definition of the intermediate indicators for each component, the productivity of the enterprise activity was chosen proceeding from groups of the enterprise purposes. These purposes are equivalent within each component. Thus, the matrix of ranks can be proposed for calculation of the intermediate indicators of the introduced components.

The previous step 4.1 has allowed proposing the unified general range of values for each evaluated indicator in a range from 0 to 1. Thus, the matrix of ranks can be built with a certain differentiation step depending on a quantity of the purposes of the enterprise activity, beginning from two purposes (in the simplest case). The matrix of ranks has been offered to present as the two-dimensional matrix with certain quantity of the lines and columns. In that case, to each indicator can be appropriated respectively two possible values (S = 2) – 0,5 and 1. Then a dimension (*N*) of the matrix of ranks (*Sample)*, if a quantity of the purposes will be divided (in our case, the quantity of those purposes is K_p = 5) will equal to quantity of lines. For example, $S_{KPnumber}$ =2, and the quantity of columns is equal S_{KPcol} =3, then $N = S_{KPnumber} \times S_{KPcol} = S_{(KPnumber+ KPcol)} = 2_2 \times 2_3 = 32$. However, in this case, the accuracy of the calculation of the generalizing indicator of a productivity of the enterprise activity will be rather low, considering wide range of values of estimated indicators.

The matrix of ranks *Sample* (Table 3) with the determined earlier parameters (S = 2, $S_{KPnumber}$ =2, S_{KPcol} =3) has been presented for bigger convenience of an explanation of the matrix-rank approach using. However, the matrix of ranks with the differentiation step 0,1 (S = 10) and the obtained dimension $N = 10_5 = 10\ 000$ has been used for a calculation of the generalizing indicator of productivity of the real enterprises activity.

At first, the filling direction (growth or fall) of the ranks (i.e. their values) in this matrix is necessary to define for a formation of ranks in this matrix. This step is possible after titles formation (by vertical at S_{KPcol} =3 (in our case for an example), and by horizontal at $S_{KPnumber}$ =2). Then, it can be obtained in that case, when this value (minimum) corresponds by the left lower cell of a matrix having taken the minimum value (in our case it is 0,5) for all estimated indicators. We will be able to obtain the following case, when the maximum value (in our case it is 1) corresponds to the right top cell of a matrix by analogy. Thus, the direction of setting of ranks in a matrix can be defined. The matrix of ranks, which could be obtained in this case, is called the rectangular Toeplitz matrix or a diagonal-constant matrix [3,11]. In this matrix, the identical elements are located on all diagonals, which are parallel to the main diagonal (this is shown by gray color in Table 3).

Table 3. Matrix of ranks for calculation of the intermediate indicators of some components for a productivity of the enterprise activity (for S = 2, N = 32)

S^{KP}_{number} =2		0,5				1				S^{KP}_{col} =3
		0,5		1		0,5		1		
		0,5	1	0,5	1	0,5	1	0,5	1	
1	1	16	21	26	31	36	41	46	51	
	0,5	11	16	21	26	31	36	41	46	
0,5	1	6	11	16	21	26	31	36	41	
	0,5	1	6	11	16	21	26	31	36	

Thus, a formation of ranks in this matrix can be initiated. Let us establish the minimum rank is 1 (but for a convenience the minimum rank can be equal to any initial value). Then the step can be equal five (a difference of the adjacent ranks), the ranks can be calculated based on this step (according to Table 1) and proceeding from a quantity of the estimated indicators by each component of a productivity of the enterprise activity. The determination order of the ranks, which are placed in the matrix's cells and which can be determined by the importance coefficient of the estimated indicators according to the enterprise purposes (according to Table 1). However, because in our case, the importance coefficients of the purposes K_p = 5 by each component (their quantity equals 4, Table 1) are equivalent (i.e. they do not ranked). Therefore, the weights of the estimated indicators also are equivalent, i.e. the ranks in the matrix cells are distributed evenly by the direction of filling for the ranks (it will be a growth or fall of their values) in a matrix of ranks. In our case (Table 3), it will be from the left bottom corner (cell) to the right top corner (cell), i.e. by the directions of the main diagonal of a matrix (Table 3).

All values of the matrix of ranks should be normalized for bigger convenience of using of the intermediate indicators (from a point of view of an assessment of some economic indicators), as it is shown in Table 4.

Table 4. The normalized matrix of ranks calculation of the intermediate indicators of components of the productivity of the enterprise activity (it is also known as Toeplitz's matrix, according to property of a matrix; S = 2)

Estimated indicators		0,5				1			
		0,5		1		0,5		1	
		0,5	1	0,5	1	0,5	1	0,5	1
1	1	0,3137	0,4118	0,5098	0,6078	0,7059	0,8039	0,9020	1,0000
	0,5	0,2157	0,3137	0,4118	0,5098	0,6078	0,7059	0,8039	0,9020
0,5	1	0,1176	0,2157	0,3137	0,4118	0,5098	0,6078	0,7059	0,8039
	0,5	0,0196	0,1176	0,2157	0,3137	0,4118	0,5098	0,6078	0,7059

For example, let us a value of estimated indicators will be as the vector EI = { 0,5; 0,5; 1; 1; 0,5 }. Then the intermediate indicator of the component will equal 0,3137.

Step 4.4. Therefore, the matrix of ranks can be built by the principle described above with the differentiation step 0,1 (S = 10) for increasing of an determination accuracy of the intermediate indicators of some components of the productivity of the enterprise activity. The following intermediate indicators such as economic, ecological, social and legal components can be determined by the estimated indicators and with the help of the normalized matrix of ranks for the following enterprises: Enterprise 1, Enterprise 2, Enterprise 3, Enterprise 4, Enterprise 5 and Enterprise 6 for the time period 2009-2013 (Table 5). In this case, the real enterprises were been depersonalized that some damage has not been inflicted to these enterprises, for example, their image or reputation.

Table 5. Economic, ecological, social, legal intermediate indicators of the components of the productivity activity for the considered above enterprises

Components	Year	Enterprise 1	Enterprise 2	Enterprise 3	Enterprise 4	Enterprise 5	Enterprise 6
Economic	2009	0,1013	0,1932	0,1022	0,0093	0,1222	0,0211
	2010	0,2743	0,0202	0,1832	0,0566	0,0931	0,0111
	2011	0,2014	0,1304	0,0922	0,0020	0,0931	0,0193
	2012	0,3016	0,0020	0,0922	0,0111	0,1295	0,0120
	2013	0,5474	0,0931	0,0002	0,1249	0,0002	0,0002
Ecological	2009	0,0002	0,0038	0,1003	0,1013	0,1495	0,1095
	2010	0,1003	0,0193	0,1013	0,0220	0,1104	0,1013
	2011	0,0912	0,0093	0,0912	0,0721	0,1003	0,1823
	2012	0,1013	0,0220	0,1923	0,0184	0,1104	0,2023
	2013	0,0931	0,0202	0,1022	0,0648	0,1022	0,1013
Social	2009	0,0011	0,0002	0,0184	0,3107	0,1195	0,0284
	2010	0,0011	0,0202	0,0275	0,4746	0,0102	0,0266
	2011	0,0102	0,0020	0,0457	0,4655	0,0193	0,0357
	2012	0,0193	0,0002	0,0557	0,0011	0,4109	0,0093
	2013	0,1104	0,0922	0,1013	0,0922	0,0466	0,1104
Legal	2009	0,0931	0,1850	0,1113	0,0002	0,0011	0,1295
	2010	0,0931	0,0002	0,0931	0,0002	0,1859	0,2588
	2011	0,0931	0,0002	0,1941	0,0821	0,1104	0,1213
	2012	0,1850	0,0275	0,0002	0,2388	0,0366	0,2961
	2013	0,2861	0,0011	0,2032	0,0275	0,0931	0,0912

Therefore, the following conclusion can be made according to the Table 5, Enterprise 1 respectively became the best enterprise behind the level of the following economic (corresponding indicator is equal 0,5474) and legal (corresponding indicator is equal 0,2861) components of the productivity of the enterprise activity in 2013. Enterprise 3 has the best intermediate indicator of the following ecological (corresponding indicator is equal 0,1022) and social components. Enterprise 2 has the worst results on intermediate indicators of the ecological (corresponding indicator is equal 0,0202) and legal (corresponding indicator is equal 0,0011) components. The following Enterprise 3, Enterprise 5, Enterprise 6 have the lowest indicator of the economic component (corresponding indicator is equal 0,0002).

Step 5. The orthogonal reflection of some variants of the intermediate indicator's combinations of the economic, ecological, social, legal components of the productivity of the considered above enterprises activity can be executed in the plane in the set Rectangular System of Coordinates (RSC) for a calculation of the generalized indicator of the productivity of the enterprise activity. That is the geometrical interpretation of the obtained earlier results can be executed as some segments in the plane, where the coordinates of vertices can be determined by all pairs of the possible combinations of the productivity components (because RSC has been used). Because the quantity of the productivity components is equal $K^C = 4$, then a quantity of all possible pair combinations taking into account transpositions will equal 24 (that is 12^{th} segments). Then, a distance between the determined earlier points (paired combinations of the productivity components) in RSC can be calculated by the following formula [6]:

$$D = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}, \quad (1)$$

where D is the distance between the determined earlier points of all variants of the combinations for the intermediate indicators of the productivity components;

x_1, x_2, y_1, y_2 are the coordinates of some points (in our case, there are a value of the intermediate indicators of the productivity components).

For example, a calculation of those indicators for Enterprise 1 in 2013 is presented in Table 6.

Rule of a calculation of a median (because the geometrical interpretation has been used) can be used or applied to the obtained earlier set of segments (in our case, it is 12_{th} segments) based on their length that will allow obtaining the generalized indicator of the productivity of the enterprise activity.

Table 6. Calculation of the parameters of all variants of combinations for the intermediate indicators of some components for Enterprise 1 in 2013 (an example)

Coordinates / № segment's	x_1	y_1	Conditional coordinates	x_2	y_2	Conditional coordinates	(x_2-x_1)	(y_2-y_1)	$(x_2-x_1)+(y_2-y_1)$	D
1	0,5474	0,0931	1,2	0,1104	0,2861	3,4	0,1910	0,0373	0,2283	0,4778
2	0,0931	0,5474	2,1	0,1104	0,2861	3,4	0,0003	0,0683	0,0686	0,2619
3	0,0931	0,5474	2,1	0,2861	0,1104	4,3	0,0373	0,1910	0,2283	0,4778
4	0,5474	0,0931	1,2	0,2861	0,1104	4,3	0,0683	0,0003	0,0686	0,2619
5	0,0931	0,1104	2,3	0,5474	0,2861	1,4	0,2064	0,0309	0,2373	0,4871
6	0,0931	0,1104	2,3	0,2861	0,5474	4,1	0,0373	0,1910	0,2283	0,4778
7	0,1104	0,0931	3,2	0,2861	0,5474	4,1	0,0309	0,2064	0,2373	0,4871
8	0,1104	0,0931	3,2	0,5474	0,2861	1,4	0,1910	0,0373	0,2283	0,4778
9	0,5474	0,1104	1,3	0,0931	0,2861	2,4	0,2064	0,0309	0,2373	0,4871
10	0,1104	0,5474	3,1	0,0931	0,2861	2,4	0,0003	0,0683	0,0686	0,2619
11	0,5474	0,1104	1,3	0,2861	0,0931	4,2	0,0683	0,0003	0,0686	0,2619
12	0,1104	0,5474	3,1	0,2861	0,0931	4,2	0,0309	0,2064	0,2373	0,4871

3. Results of the Use of the Proposed Method

Graphical mapping of the parameters of all options of the combinations of the intermediate indicators of some components for Enterprise 1 in 2013 is presented in Figure 2.

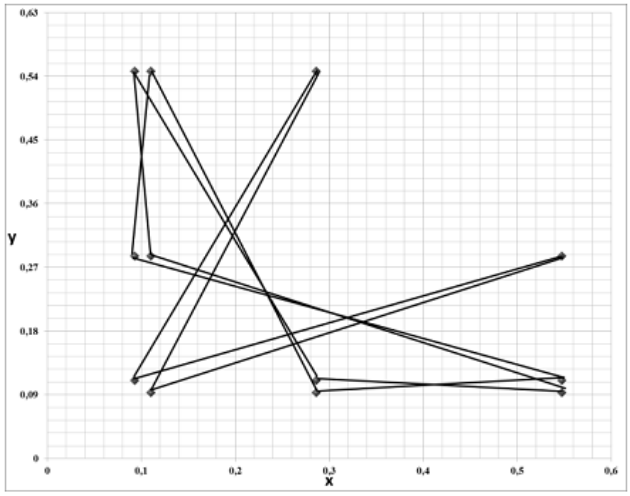

Figure 2. Graphical mapping of the parameters of all options of the combinations of the intermediate indicators of some components for Enterprise 1 in 2013

Median in the statistic is a set of values, which can be calculated as a mean of the ordered variation row. Thus, the median divides of this row on two equal parts: one part has a value variation attribute less, than an average value, and the second part has bigger value, than an average value. The median indicates to a value of a variation attribute, where a half of some units of a population has reached of this value of a variation attribute [5].

The median (unlike exponential average values) is the concrete characteristic of the variation row and it has certain values therefore it is still called as the descriptive characteristic. Median's such property is connected with that fact the individual deviations are repaid at the descriptive characteristic, as it can be for the averages values. Descriptive characteristics always match a certain variant [5]. This fact can be used for a median choice at definition of the generalizing indicator of the productivity of the enterprise activity. Dynamic changes of which is shown in Figure 3. The forecast for 2014 is shown in Fig. 4. The equation of some trend functions and value of a reliability of the approximation is shown in Table 7. The generalizing indicators of the productivity of the enterprise activity are shown in Table 8.

Table 7. Equation of the trend functions and value of a reliability of the approximation of the enterprises

Enterprise	Equation of a trend
Enterprise 1	$y = 0{,}0195x^3-117{,}81x^2+236850x-2E+08$; $R^2=0{,}9674$
Enterprise 2	$y = 0{,}0391x^4-314{,}74x^3+949460x^2-1E+09x+6E+11$; $R^2=0{,}99$
Enterprise 3	$y = -0{,}0091x^4+73{,}234x^3-220901x^2+3E+08x-1E+11$; $R^2=0{,}99$
Enterprise 4	$y = 0{,}0032x^4-25{,}921x^3+78132x^2-1E+08x+5E+10$; $R^2=0{,}99$
Enterprise 5	$y = -0{,}0448x^4+360{,}03x^3-1E+06x^2+1E+09x-7E+11$; $R^2=0{,}99$
Enterprise 6	$y = -0{,}0442x^4+355{,}81x^3-1E+06x^2+1E+09x-7E+11$; $R^2=0{,}99$

Table 8. Generalizing indicators of the productivity of the enterprise activity

Year	Enterprise 1	Enterprise 2	Enterprise 3	Enterprise 4	Enterprise 5	Enterprise 6
2009	0,1366	0,2647	0,0845	0,3179	0,1248	0,1342
2010	0,2066	0,0201	0,1165	0,4561	0,1366	0,2491
2011	0,1379	0,1287	0,1129	0,4014	0,0829	0,1786
2012	0,2600	0,0336	0,1647	0,2283	0,3145	0,3435
2013	0,4778	0,1166	0,1442	0,0883	0,1082	0,1029

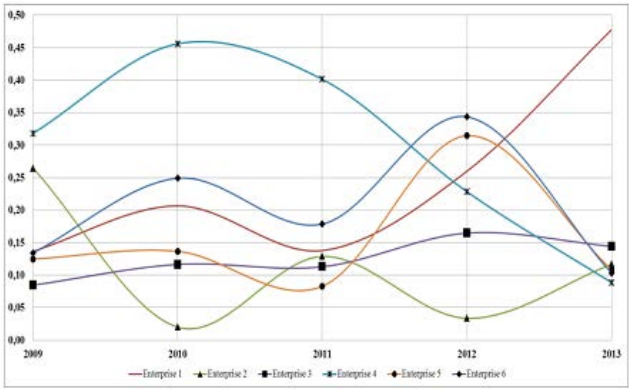

Figure 3. Dynamics of some changes (by years) for the generalizing indicator of the productivity of the enterprise activity

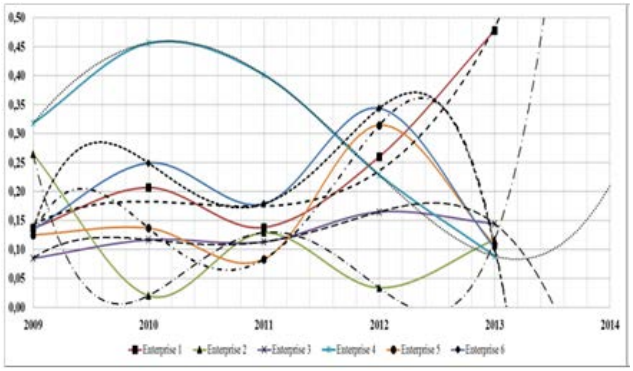

Figure 4. Forecast of the generalizing indicator of the productivity of the enterprise activity for 2014

4. Conclusions

Thus, the author's method of a calculation of the generalizing indicator of the productivity of the enterprise activity of the elected industry area was been developed based on the matrix-rank approach. The proposed technique allows receiving the numerical values of the generalizing indicator of the productivity of the enterprise activity due to use of the geometrical interpretation. In addition, use of this calculation method of the generalizing indicator of productivity of the enterprises activity for the elected industry area has approved on some indicators of the real enterprises (Table 5), which were been depersonalized that some damage has not been inflicted to these enterprises. Besides, the proposed technique has allowed creating practical conclusions of rather real enterprises of the elected industry area. Therefore, Enterprise 1 became the most productive enterprise in 2013 based on the generalizing indicator 0,4778 as it is shown in Figure 3 and Table 7. However, this result is rather mediocre, in view of that, the reference value of productivity of the enterprise activity is equal 1. Ranges of admissible values cannot be determined with a sufficient accuracy based on that fact the generalizing indicator of the productivity of activity of the following Enterprises 1-6 did not exceed value 0,5 during all studied period.

Thus, the general conclusion can be formulated that the productivity of an activity of the studied enterprises of the elected industry area has the mediocre character and needs the relevant activities concerning its improvement.

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