



Methodical approaches to the evaluation of economic rationality criteria in business design

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Abstract

This article is concerned with the justification of the developed methodological approaches to the evaluation of the economic rationality criterion in business design, which is applicable to any organization. An important aspect in the methodology under consideration is the formation of sound intersectoral relations. According to the authors, a complete, objective and reliable evaluation of the effectiveness of the establishment of the intersectoral relations occurring in any area of production activity is an option for solution of the problem under consideration. Not one, but a system of indicators ensuring the reliability of the conclusions drawn should be applied to evaluate production efficiency. The system of indicators makes it possible to specify the leading criterion of efficiency, to present a generalized quantitative and qualitative characteristic of the economic processes taking place in the industry. This justifies the choice of the economic rationality criterion, which is objective and universal in nature, can be easily interpreted and makes it possible to adequately assess the status of business design in an organization, not only at the current time, but also for the future.

Keywords: organization, production, business process, business design, economic rationality, criterion, performance evaluation, efficiency

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INTRODUCTION

An important factor in the profitability growth in terms of market relations transformation is the purposeful work of organizations in any industry to save resources, which naturally leads to a reduction in cost, and, consequently, to an increase in the final financial result – profit. The authors believe that the development of production through the introduction of criteria for economic rationality in business design is much more effective than the involvement of new resources in the production, as it saves the resources of the organization.

The authors propose the use of the "economic rationality" concept as a generalized qualitative efficiency assessment of the activities aimed at achieving the goal with the existing limitations and resources to assess the efficiency of the economic mechanism of intersectoral relations in any sector of the economy.

METHODOLOGY

It is proposed by the authors to use the following principles when assessing the quality of the business design process, as well as optimizing business processes in any industry using the economic rationality criterion:

- optimal allocation of resources;
- concentration on the main activity;
- business processes redesigning.

The proposed principles will allow achieving the maximum possible positive effect in meat and food subcomplex. In our opinion, the characteristic features of economic rationality can be distinguished such as: the uniqueness and clarity of the task of improving performance; purposefulness; awareness of the options

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Table 1. Financial performance indicators of Eco-Product OOO trading company, Krasnoyarsk

Indicator	4 quart. 2018	1 quart. 2019	2 quart. 2019	3 quart. 2019	4 quart. 2019	1 quart. 2020
<i>Liquidity ratios</i>						
Absolute liquidity ratio	0,26	0,25	0,18	0,21	0,15	0,13
Quick ratio	0,78	1,13	1,27	1,56	2,17	2,02
Current ratio	1,75	2,63	2,78	3,25	4,78	4,25
Net working capital	17216	18566	20142	22560	24322	26517
Self-financing period	2,16	1,56	1,49	2,03	1,85	1,03
<i>Capital structure indicators</i>						
Financial independence (autonomy) ratio	0,66	0,72	0,76	0,82	0,83	0,86
Financial leverage	0,26	0,16	0,13	0,09	0,12	0,15
Interest coverage ratio	1,56	2,06	3,15	3,02	-0,06	0,56
Total liabilities to total assets	0,18	0,12	0,13	0,09	0,03	0,11
Long-term liabilities to assets	0,005	0,006	0,0004	0,0003	0,0003	0,0003
<i>Profitability ratios</i>						
Return on sales	0,35	2,66	3,17	5,64	-2,66	0,006
Return on equity	0,85	6,65	9,36	12,25	-5,64	1,89
Return on assets	0,92	5,64	8,82	10,32	-4,25	0,096
Return on current assets	0,96	15,36	20,25	30,12	-9,35	2,17
Return on invested capital	0,96	6,68	9,32	11,13	-5,63	1,13
Return per employee (per year)	556,23	454,12	436,23	217,45	226,53	446,25
<i>Business ratios</i>						
Accounts receivable period	9,36	14,36	14,69	18,53	21,17	18,52
Accounts payable period	9,56	10,13	8,33	7,81	5,36	4,23
Inventory turnover period	18,63	25,63	27,44	39,52	31,13	25,63
Asset Turnover Period	88,52	111,23	118,54	156,63	145,23	111,88
Fixed assets turnover period	48,63	65,85	67,53	88,63	85,42	42,11

and possible choices for solving the problem; clarity of benefits, their constancy and stability.

The authors have identified several criteria for economic rationality evaluation:

- production potential of the industry and the region;
- economic criteria (stability, profitability, productivity);
- social criteria (increase in income, life expectancy, population development)
- productivity, introduction of additional areas into circulation, reduction of harmful substances in the soil.

Consider the main criteria for economic rationality.

1. Economic criteria.

According to the authors they include: financial indicators of the organization's activity, assessment of losses in the organization from the inefficiency of the interaction of business processes and business design, determination of profitability by business segments, indicators of the efficiency of using fixed assets, indicators of social efficiency.

Table 1 presents the financial performance of Eco-Product OOO trading company, Krasnoyarsk.

Low-performance indicators of Eco-Product OOO trading company are due to the shortcomings in the interaction of business processes, which are manifested in the form of losses in various areas: sales, supply, inventory management, financial and cost accounting, management (**Table 2**).

The largest losses from direct impact factors were noted by the authors in financial accounting (losses from the untimely reflection in financial accounting documents and low efficiency of financial liabilities control amount to

25-30%); in cost accounting (losses resulting from the inaccurate determination of the actual performance of specific units are 25–30%); in sales (losses from inefficient, multi-level scheme of organization of product sales business process also make up 25-30%).

Losses from indirect exposure factors are also significant. The most significant losses are 30-35% as a result of the loss of significant information. The irrational organization of the business process does not contribute to the timely provision of quality information, since its passing through many stages makes it obsolete and irrelevant (Klochko, & Brizhak, 2019; Prokhorova, et al. 2016; Akhmetshin, et al. 2020).

In the current economic conditions, the importance of the agro-industrial complex as ensuring the food security of the population should be noted. Meat products subcomplex is one of the main life-supporting sectors of domestic agricultural production, which have a decisive influence on the level of the food supply in the country and determine the health of the nation. A significant lag behind accepted scientifically-based medical standards for satisfying human physiological needs in animal protein negatively affects the quality and life expectancy of the population. It is this situation that occurs in the current economic conditions of 2020.

In the course of the study of the need to develop a methodology for introducing the criterion of economic rationality for business design, SWOT analysis of the organizations of meat products subcomplex was carried out, which made it possible to identify the key competitive advantages of the industry (**Table 3**) (Titova & Pyzhikova 2010; Gebre, 2015).

Thus, the advantages and opportunities for the development of meat products subcomplex as a

Table 2. Losses in Eco-Product OOO trading company are due to inefficiency of the interaction of business processes

The sphere in which the losses are revealed	Reasons for losses	Criterion, %
A	1	2
<i>Losses from direct exposure factors</i>		
Sales	Disruptions in meat raw materials supply, caused by a malfunction and errors in the production range nomenclature, product range	5-10
	Multi-level scheme of product sales organization business process	25-30
	Slow application flow for business process participants	10-15
	Irrational organization of business processes	15-20
Supply	Ineffective choice of raw materials suppliers	10-15
	Purchases at unfavorable prices for barter operations	15-20
	Irrational organization of supply business processes	15-20
	Errors in the volume of purchases of raw materials	10-15
Inventory management	Distorted information on the stock level of meat raw materials and supplies	15-20
	Errors in the rational organization of business processes between departments	15-20
Financial accounting	Untimely reflection in financial accounting documents	25-30
	Low efficiency of financial obligations control	25-30
Cost accounting	Inability to correlate costs with responsibility centers	20-25
	Inaccurate determination of the actual performance of specific units	25-30
	Incomplete accounting of overhead and other expenses and places of their occurrence	20-25
<i>Losses from indirect factors</i>		
Management	Mistakes in management decisions	25-30
	Loss of meaningful information	30-35
	Ineffective use of senior management time	25-30
Financial planning	Financial planning mistakes	25-30

Table 3. SWOT analysis of meat products subcomplex in the current economic conditions at the level of the Russian Federation

Advantages	Disadvantages
A	1
<ul style="list-style-type: none"> - Transition to a new stage of development as a result of overcoming the economic crisis in the industry; - Potential opportunity to increase incomes of the population; - Increase in expenses for the purchase of food products, including meat products; - The territorial location of meat processing enterprises of the region, taking into account their production capacities and resource base; - Potential high stable demand for meat and meat products; - The interaction of enterprises and organizations of the industry with scientific institutions for the qualitative development of the industry. 	<ul style="list-style-type: none"> - Crisis financial condition of meat products subcomplex; - Loss ratio of most agricultural organizations producing meat raw materials; - Weak and insufficient resource potential in the industry; - Lack of clear regulation and interaction between all three sectors of the agro-industrial complex in meat products subcomplex; - Low living standards in rural areas, which makes the industry unattractive to young professionals; - The lack of state support in the industry, or its focus does not allow to solve the problems that are ripe in meat products subcomplex.
Opportunities <ul style="list-style-type: none"> - Development of the material and technical base of meat products subcomplex; - Establishment of high-quality relationships between all three sectors of meat products subcomplex; - Increasing market capacity by improving the quality of products, as well as their consumer accessibility for the population; - Use of own resources of the Krasnoyarsk Territory to ensure sustainable and dynamic development of the industry; - Expanding the scope of markets for products in meat products subcomplex; - Improving industry performance by optimizing business processes; - reduction in production costs due to the exclusion of irrational costs for its production 	Threats <ul style="list-style-type: none"> - The inability to expand markets in other regions; - The potential for a deterioration in the material and technical as well as a resource base in the industry due to lack of funding; - Negative demographic and social changes in rural areas; - The inability to attract labor to the countryside; - The industry is unattractive for young professionals.

strategically important industry for the food security of the Russian Federation include (Dunets, et al. 2019; Loh, & Ang, 2020; Akhmetshin, et al. 2018; Frolova, et al. 2020; Kuzhaeva, Dzhevaga, & Berlinskii, 2019; Dunets, et al. 2018; Fedulova, et al. 2019).

- overcoming the economic downturn and the transition to dynamic development which contribute to the establishment of stronger competitive positions in the market of meat products in the region;

- the expansion of the capacity of the market for meat products contributes to the sustainable development of the meat industry;

- the growth of population income also contributes to the expansion of market capacity and increase the demand for meat products, not only for cheaper poultry, but also for beef, pork, lamb;

- intensive development of the industry expands the possibilities of improvement of the efficiency of meat production by optimizing business processes, which, in turn, entails a reduction in the cost of production by

Table 4. Determination of cost-effectiveness of the business segments of meat products subcomplex, %

Technological re-equipment of production	Feed production	Production and use of veterinary products	Raw meat production	Storage of raw meat	Sales of finished products
A	1	2	3	4	5
Eco-Product OOO (Krasnoyarsk)					
-4.7	-3.3			-6.3	-2.6
Glyadenskoye ZAO (Nazarovsky District)					
6.3	-9,5	-1.2	5.8	3.3	-1.5
Nazarovskoye ZAO (Nazarovsky District)					
8.9	4.7	2.5	-6.4	-2.6	15.3

Table 5. Indicators and criteria of social efficiency of organizations of meat products subcomplex

Performance indicator	Indicator characteristics	Indicator value	Reference criterion
Competitive advantages of the enterprise			
1. The coefficient of the level of profitability of sales to the average for the region (Clr)	It characterizes the degree of deviation of the profitability of each particular enterprise from the regional average	0.84	>
2. Price level index (Cp)	It characterizes the degree of deviation of the price level of each particular enterprise from the average prices in the region	0.78	> or = 1.0
3. Market Share(Cms)	It characterizes the market share of each specific enterprise in the total meat industry enterprise	0.65	> or = 1.0
Assessment of the competitiveness of an industry enterprise (Ec)		2.27	
The quality of the production activities of the enterprises of meat products subcomplex			
1. Product quality satisfaction index (Qc)	It characterizes the degree of consumer satisfaction with the quality of meat products.	0.67	1.0
2. Product range satisfaction index (PRc)	It characterizes the degree of consumer satisfaction with a width of meat products range	0.75	1.0
Evaluation of the quality of production activities of industry enterprises (QA)		1.42	
Integral social performance assessment		3.69	

eliminating wasteful costs for its production (Tsvetkova, et al. 2019).

Among the weaknesses and, accordingly, threats to the development of meat and food subcomplex, the following were defined by the authors:

- the underdevelopment of market and production infrastructures entails a deterioration in the resource base of the meat industry, as well as negative changes in the social situation;

- the growth of prices for meat products, aggravation of social problems also negatively affect the social and demographic situation not only in rural areas, but throughout the region;

- insufficient government support for meat industry entails an increase in prices for the production of meat and meat products, which, accordingly, will lead to a decrease in demand for this type of product, as well as a decrease in competitiveness;

- low profitability (and even unprofitability) of organizations in the meat industry does not contribute to the development of meat production in the Russian Federation;

- the lack of clear regulation of the interaction of business processes in the industry also entails a rise in the cost of meat products, and, accordingly, a decrease in the competitiveness of meat sub-complex organizations in the regional market.

Thus, among a number of identified factors of the competitiveness of meat products produced in the organizations of meat and food subcomplex of the Russian Federation, priority is given to the optimal business design of the production and sale of meat

products (Dunets, et al. 2020; Ibrahimova, et al. 2017; Magsumov, 2018; Voronkova, et al. 2020).

In connection with the results of the study, it is further necessary to consider the following component of the economic criterion of economic rationality – the profitability of production and business processes (**Table 4**).

As follows from the data presented in **Table 4**, production in most organizations of meat products subcomplex is unprofitable. The profitability of production and sales of products and cost-effectiveness are negative (Rogatchev, Sukhikh, & Kuznetsova, 2019; Jafarpour, et al. 2017; Krotkova, Mullakhmetov, & Akhmetshin, 2016; Rahman, & Novikova Freyre Shavier, 2018; Kuzmin, Bukharina, & Kuzmina, 2020; Petrov, & Movchan, 2017; Prokhorova, et al. 2016).

Consider the indicators of social efficiency in the structure of economic rationality. The following methodology is proposed by the authors for the calculation of the criteria for the social effectiveness of organizations of meat products subcomplex (**Table 5**).

The value of all the coefficients presented for the study is less than the normative value (more than 1), which indicates that the industry is experiencing a decrease in social efficiency: the price level of each particular enterprise is lower than the average prices in the region by 22.0%. Moreover, the analysis shows a decrease in the degree of customer satisfaction with product quality by 33.0%, as well as a degree of customer satisfaction with a wide range of products by 25.0%.

The next component of economic rationality that needs to be considered is the production potential of the

Table 6. Production potential of the Krasnoyarsk Territory for 2015-2019, thousand rubles

Year	Non-current assets	Current assets	Investments	Production potential, PPP
2015	56947195.2	37819594.4	9675553.8	104442343.4
2016	53507675.8	39879357.4	14615692.0	108002724.1
2017	53153121.8	47167924.1	11026400.0	111347445.0
2018	53662734.8	48484976.9	4775865.8	106923575.6
2019	45118862.7	42695958.2	4705423.1	92520243.0
Average	52477918.1	43209562.2	8959786.9	104647266.2

Table 7. Dynamics of the potential indices of the Krasnoyarsk Territory

Year	Index of non-current assets (Inca)	Index of fixed assets (Ifa)	Investment Index (Iinv)	Job Index (Ij)	Value Added Index (Iva)	Index of industry development (Id)	Innovation Index (In)	Market conditions index (Imc)	Quality Index of Production Potential (Ippp)
2015	1,06	1,15	0,94	0,98	1,02	0,99	0,93	1,09	1,02
2016	1,09	0,88	0,94	0,96	1,03	1,22	1,21	0,99	1,04
2017	1,02	0,92	0,94	0,96	0,97	1,09	1,31	0,87	1,01
2018	1,01	1,09	0,94	0,90	1,01	0,92	0,92	0,75	0,94
2019	1,02	1,12	0,94	0,89	1,01	0,93	0,94	0,81	0,96
Average	1,04	1,03	0,94	0,94	1,01	1,03	1,06	0,90	0,99

region (Klochko, Brizhak, 2019; Akhmetshin, et al. 2018; Movchan, & Yakovleva, 2017; Kuzmin, Bukharina, & Kuzmina, 2017; Gorovaya, et al. 2017; Krotkova, Mullakhmetov, & Akhmetshin, 2016; Kuzmin, Bukharina, & Kuzmina, 2018; Korsakova, et al. 2017).

Calculations of production potential were carried out based on statistical data. The calculation results are shown in **Table 6**.

As a result of the calculations, the production potential of the Krasnoyarsk Territory was determined in value terms during the period from 2015 to 2019.

PPP = 104647266.2 thousand rubles.

Following the statistics calculate the indices of the production potential of the Krasnoyarsk Territory for the period under consideration. The calculation results are shown in **Table 7**. The statistics data brought to comparative prices through the corresponding inflation rates are used for the calculations.

Non-current assets index for the period 2015-2019 had a general downward trend. This is due to the aging of fixed assets and the inability to update the production base in a crisis. According to conflicting statistics and expert estimates, today the level of production in the region is 60-80% of the 1990 level.

The working capital index for the period 2015-2019 had a drop in 2017-2018. This is due to the influence of global crises – financial and economic.

The investment index in this period was stable, which indicates the preservation of the existing investment potential of the Krasnoyarsk Territory.

The job index in the period 2015-2019 tended to a constant decrease, which is explained by a decrease in the level of employment and aggravation of socio-economic processes.

The value-added index failed in 2017, but then stabilized. High value-added goods produced in the Krasnoyarsk Territory turned out to be unclaimed in the market.

The industry development index in the period under review had a local maximum in 2017, after which it began to decline. This indicates an imbalance in the structure of production towards extractive industries.

The Innovation Index had a local maximum in 2017. Market conditions tended to decline. This indicates a decline in economic activity in the Krasnoyarsk Territory, which can be explained by the global economic crisis.

The quality index of production potential is the result of all the indices listed. It has a general downward trend. Index values less than 1.0 indicate stagnation of the regional economy, which requires urgent government regulation.

RESULTS

The results of the study make it possible to conclude that the economic rationality criterion and its components, as well as the determination methodology, are rather complex, a multifaceted mechanism that includes a combination of organizational, economic, technological relations and interconnections of industries, a complex system of indicators, their dynamics and mutual influence indicators on top of each other.

The basis of the methodological approach to the methodology for determining economic rationality in the business design are economic regulators, which are aimed at ensuring a combination of mutual interests of the state, producers, consumers and the formation of equivalent relations between them (Titova & Sergutkina 2015b; Titova & Pyzhikova 2010).

The structural elements of the economic rationality methodology are business processes that are actively involved in the business design process, which is especially important in the current conditions of the economic crisis. Business design is required for every stage of the life cycle of not only the project, the business process, but also the organization itself.

Thus, the methodology for use of the economic rationality criterion developed for business design is based on an informed choice of indicators for the evaluation of the resource use efficiency in terms of the transformation of market relations and the basic principles that take into account the three main blocks of indicators and criteria: economic, production and social. Only with full consideration and in the interaction of these blocks effective business design for a modern organization can be made, especially in times of crisis, when it is necessary to calculate every step and determine the result of each strategic and tactical decision. All this contributes to the effective development of an enterprise in the conditions of market relations transformation.

CONCLUSION

Thus, the methodology for use of the economic rationality criterion developed for business design is based on an informed choice of indicators for the evaluation of the resource use efficiency in terms of the transformation of market relations and the basic principles that take into account the three main blocks of indicators and criteria: economic, production and social. Only with full consideration and in the interaction of these blocks effective business design for a modern organization can be made, especially in times of crisis, when it is necessary to calculate every step and determine the result of each strategic and tactical decision. All this contributes to the effective development of an enterprise in the conditions of market relations transformation.

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