Strategic priorities of innovation and investment development of the Ukraine's economy industrial sector

Valentyna Stadnyk[0000-0002-2095-3517], Pavlo Izhevskiy[0000-0001-6457-399X],
Nila Khrushch[0000-0002-9930-7023], Sergii Lysenko[0000-0001-7243-8747],
Galyna Sokoliuk[0000-0003-2589-5376] and Tetjana Tomalja

Khmelnitskiy National University, 11 Instytutska Str. Khmelnitskiy, 29016, Ukraine
stadnyk_v_v@ukr.net, izhevskypavlo@gmail.com,
nila.ukr@gmail.com, sigoruk@ukr.net, sokoliukg@gmail.com,
sts8383@ukr.net

Abstract. The problem of determining the investment priorities of the national economy development has been actuated. It has been argued that the formation of institutional preferences for activation of industry investment processes should be carried out taking into account the potential ability of each sectoral group enterprises to increase the added value. The scientific and methodical approach for sub-sectors investment attractiveness assessment has been formed on the example of the Ukrainian food industry. It has been recommended to use for this substantiated set of relative performance indexes which are duplicated in aggregate statistical state surveys based on the enterprise's financial statements. It has been formed the recommendations for the investment priorities of food industry development in Ukraine which are based on the appropriate calculations made by the TOPSIS and CRITIC methods. Methods of economic-statistical and comparative analysis were used for structural and dynamic characteristics of the Ukraine industrial enterprises activities. Given that innovation processes should also cover small and medium-sized industrial enterprises, whose resource opportunities are mostly limited, it is proposed to expand them within the framework of a strategic partnership. Graphic modeling methods have been used to visualize the process of building the business structures resource potential on the basis of their strategic partnership. The influence of the motivational environment on the value of organizational relations within the partnership has been formalized.

Keywords: food industry, TOPSIS method, CRITIC method, cluster analysis, strategic partnership, innovative potential, value of partnerships.

1 Introduction

Ensuring sustainable and dynamic development of the country is a key task of the economic policy of each state. This policy is developed taking into account existing and future social (including global) needs and the ability of national economic entities to meet them, relying on their (specific for each) competitive advantages and

opportunities for their build-up. The presence of a significant number of such entities in certain industries determines the country's place in the world division of labor. Quite a lot of countries use their natural resources to create competitive advantages, which can be unique and have value in the world market, even with a minimal degree of their processing. However, history shows that such countries, which mostly offer raw materials for the exchange on the world markets, are increasingly lagging over time behind in the level of economic dynamics and quality of life of the population from other countries that develop their ability to create new consumer values.

This ability is especially necessary in the context of the global economic crisis, which is beginning now. The COVID-19 pandemic has become a trigger for this crisis, whose rapid deployment casts doubts on the globalization benefits and resuming discussions about its scale feasibility. And not only in the millions of people life-saving light, but also in the many businesses types inevitable economic losses context, this can disrupt the national economies established structures and threaten their economic security. This crisis pandemic nature has worsened consumer demand in many market segments. In addition, the quarantine restrictions that are taken by the most countries governments for slowing the COVID-19 proliferation pace have led to the numerous logistics chains disruption and this greatly complicated many business processes [20].

As a result, a significant decrease in industrial production is expected (depending on industry specialization). This will lead to the major job losses – especially on enterprises that manufacture products for production systems reproduction of other industries economic entities. Under crisis circumstances, such reproduction is usually complicated – both due to lack of investment resources and because of uncertainty of the future state of consumer markets. And businesses are increasingly unable to produce high value-added products and are focused mainly on natural resources intensive and predatory use, this forms the country's export structure. The presence of such disparities in the modern Ukraine's economy is extremely urgent to overcome them for enhancing the country's ability to withstand the threats of global challenges and maintain an economic security proper level.

The formation of such ability is of paramount importance to Ukraine, because the national economy in the world division of labor still occupies the position of raw material supplement to the economies of the developed countries. However, the current stage of its development is characterized by a change in the vectors and priorities of economic cooperation due to European integration processes. It is important that, in the course of these changes, the Ukrainian economy could take the best positions in the global market from the standpoint of macroeconomic perspectives. This requires a sound approach to determining the directions of structural changes and their implementation through appropriate investment processes, supported at the institutional level through the tools of state economic policy.

Many researchers deal with the problem of the formation and implementation of an effective state economic policy in different market contexts. In particular, in Ukraine, this problem was reflected in the works of Dmytro Lukianenko [12], Oleksandr Bavyko [3], Svitlana Radziyevska [19], Inesa Khvostina [7], Marharyta Sharko [21], Oleksandra Moskalenko [13] and many others. The authors express different views about the instruments and directions of institutional support for the development of the

national economy, but it is indisputable that it should ensure the growth of its international competitiveness.

A special interest in this problem arose in recent years, as the crisis phenomena were the reason for that in the socio-economic processes of many developed countries, whose governments supported the dominance of market mechanisms of macroeconomic regulation. Ideally, these mechanisms should ensure capital inflows (inflows of investments) into those sectors of the economy in which greater added value is created, that would ensure the conditions for sustainable socio-economic growth. In particular, this was referred to in the UN Recommendations for those countries (2013) for post-2015 development, which justified the need to transform economies in favor of employment and overall growth based on value added and productivity through industrialization as the central strategy for achieving this transformation [14].

However, Mancur Olson once emphasized that, with strong lobbying, "the choice of state support sectors can create preferences not to those who could use them most effectively from the point of view of the interests of the country" [15]. It can be confirmed by the fact that quite often unjustified preferences were received by individual economic entities in Ukraine at different periods of market transformation. Proceeding from the current political and economic realities in Ukraine, it is important to more reasonably approach the definition of the directions for the formation of such preferences from the point of view of improving the dynamics of overall economic growth.

Indicating the decisive role of the state in regulating economic processes, Justin Yifu Lin focuses on the strategic use of limited resources of the state for the targeted support of certain industries in which a comparative advantage is probable [11]. In this, his position coincides with the position of Michael E. Porter, who highlighted the directions for the formation of these comparative advantages in the context of the national economy (so-called "diamond of competitiveness") [16]. In its composition, the opportunities of the industrial sector, which in different countries have their structural completeness, take on the prominent place. But most of all it creates the largest number of jobs in it and accumulates the largest share of value added.

Supporting the necessity of developing the industrial sector in each country, Justin Yifu Lin noted that "specific political levers and the institutional framework for generating of optimal industrial policy results" should be defined in appropriate contexts [29, p. 9]. Depending on the tasks to be solved in the course of structural changes in the national economy, as well as on the institutional characteristics of the economic environment, different forces and vectors of leverage should be chosen that will form the economic basis of the regulatory mechanism. In our opinion, the vectors and levers of influence should deal primarily with investment processes and form from the standpoint of the value of investments in certain areas of economic activity for the national economy as a whole.

Despite the variety of such tools, in their totality a significant place is given to those that are aimed at intensifying entrepreneurial activity, especially in areas where large industrial corporations do not see the opportunity to expand mass production, competing with their own kind. It is obvious that in order to maintain the sustainable development of Ukraine's economy in the global economic crisis context, it is

important to prevent further degradation of those areas of economic activity that are potentially capable for increasing the country's production and economic potential. At the same time, the defining emphasis in the regulatory mechanism formation should be its tools and levers general focus on increasing the national economic system ability to compete in the global market.

It is obvious that this ability is formed through the results of the most productive and powerful businesses, able to choose the right strategy and tactics of behavior in the market segment, which they define as promising. And the activities are not so much disparate as integrated, when less powerful participants are involved in business processes.

This approach to development management for economic growth fits, on the one hand, into the concept of sustainable development (in the sense of continuity and complementarity of change processes), and on the other hand it relies on the resource concept (which is most fully formulated by Birger Wernerfelt [31]). and the theory of the firm (conceptually formulated by Ronald H. Coase [4], and expanded by Oliver E. Williamson [32], taking into account the specifics of integration processes between the owners of different types of resources).

Investigating the integration processes motives Tatiana Kolmykova, Olena Lukianykhina, Nataliia Baistriuchenko and Vadym Lukianykhin [8] emphasize that integration expands the participants' resource capabilities and it improves their ability to effective innovation activity and contributes to the national economy innovative development. At the same time, Viktoriia Dergachova and Tetiana Tryhlib [5] point to the necessity of a strategic analysis of the integration different vectors prospects based on the all participants competitive advantages in the integration formation. Similar positions are held by Vitalina Babenko et al [2], who used methods of economic and mathematical modeling to develop forecasts of the economic entities' integration effectiveness in different scenarios.

It is obvious that the greater number of market participants working in mutually beneficial cooperation for the result, the more important role the business processes integrator should play in their spatial and temporal structuring. After all, he will be the initiator of the innovation and investment project, taking on all its risks and rules of the relevant regulatory mechanism. Moreover, his interests will dominate in the "economic growth points" selection and the integrated partner network formation. However, to ensure overall economic growth, these interests should not run counter to the national, in particular, not to increase the scale of Ukraine's exports raw material specialization.

So, the expediency of state support for economic entities innovative development investment projects should be assessed both from a macroeconomic point of view (for these processes effective management in the intersectoral context and taking into account national interests in the implementation of the Association Agreement with the EU) and economic interests market participants (micro level) because this is what determines their strategic choice.

The purpose of the paper is to determine the investment priorities of structural and technological changes in the Ukrainian economy in the context of the implementation of the sustainable development concept.

2 Research methodology

By the methods of logical analysis it has been argued the need of investment priorities argumentation of the national economy development according to the industry-specific based on synthetic indexes which are characterize the financial and economic dynamics of the industry enterprises in terms of their components of liquidity, debt management, productivity, profitability and changes in sales volumes and added value.

The method TOPSIS (Technique for Order Preference by Similarity to an Ideal Solution) has been used for determination the relative deviation from the benchmark by the groups of synthetic indexes of food industry enterprises activity from different sub-sectors. The weighting coefficients of group indexes were determined using the CRITIC (Criteria Importance Through Intercriteria Correlation) method.

Methods of economic-statistical and comparative analysis were used for structural and dynamic characteristics of the Ukraine industrial enterprises activities. Graphic modeling methods have been used to visualize the process of building the business structures resource potential on the basis of their strategic partnership. The influence of the motivational environment on the value of organizational relations within the partnership has been formalized.

3 Results

3.1 Substantiation of priority directions of Ukraine`s economy industrial sector enterprises development investment

The great amount of losses of national economies from the permanent world financial and economic crises and the further aggravation of geo-economic contradictions between countries of the world economy for markets and resources forced to raise again the question of the effectiveness of market mechanisms for ensuring the competitiveness and sustainable development of the national economy as a coherent economic system. Unfortunately, the realities are that national interests are increasingly giving way to the interests of global economic players, which are powerful multinational companies. This confirms the thesis of I. Wallerstein that the development of the global economy is most likely to take place according to the scenario of "fake transformation, superficial transformation" of national economies, whose purpose is "the inviolability of the existing inequality" in the global economic space, because this is in line with interests of the world economy leaders [30, p. 45].

In Ukraine, structural processes in the economy also develop according to the scenario of "fake transformation" in the interests of global economic players. They are interested primarily in expanding its resource base and markets. The main scopes of direct foreign investment are directed in the relevant industries. According to our calculations (made on the basis of official statistics), in the last 5 years only 1.7–2.5 % of the total volume of capital investments is directed into the machine-building industry, which among other industrial sectors should be able to create the largest volumes of value added. In the food industry, which increases the degree of processing

of agricultural raw materials (creates value added within Ukraine) it is only 4.21–6.15 % ((table 1, built on data [27]).

Table 1. The structure of capital investment in the industrial sector of Ukraine's economy.

Indicator	Years					
	2014	2015	2016	2017	2018	2019
Total capital investment, UAH billion:	219.4	273.1	359.2	448.5	578.7	624.0
Investments in the processing industry in general: – volume, billion UAH	42.5	46.2	62.2	73.9	100.9	105.9
– part, %	19.37	16.92	17.32	16.48	17.44	16.97
to the machine-building industry; – volume, billion UAH.	5.5	6.3	7.6	10.3	12.5	11.0
– part in the total CI, %	2.50	2.30	2.13	2.30	2.16	1.76
to the food industry: – volume, billion UAH	13.5	13.5	21.3	18.9	30.2	31.9
– part in the total CI, %	6.15	4.94	5.93	4.21	5.22	5.11

As can be seen from the above data, the dynamics of investment processes in key sectors of the processing industry can not be called such that corresponds the requirements of the national economy sustainable development. Although in absolute terms the volume of capital investment during the study period was constantly growing, the part of investment to the manufacturing decreased from 19.37 % in 2014 to 16.97 % in 2019. And the most noticeable was the investment decrease to the machine-building industry, it was less than 2 % of the total their volume. In 2019 part of investments to the food industry also decreased – by 5.11 % against 5.22 % in the previous year. And compared to 2014 (6.15%) this decrease is even more significant.

At the same time, capital investments to the agricultural production for 5 years ranged from 8.6 to 14.3% of their total volume. That means that investors in Ukraine prefer the development of this industry, rather than processing enterprises. With such dynamics of investment processes, Ukraine loses the opportunity to move away from its raw material orientation. This is logical in terms of investment return – the profitability of agricultural production operating activities is much higher than in the food industry (fig. 1, built on data [28]).

However, while maintaining such dynamics of investment processes, Ukraine loses the opportunity to move away from its raw material orientation. E. Reinert, well-known expert on economic growth, stressed that all rich countries, without exception, became rich in the same way, based on a common strategy for all of them, which is to abandon the raw material orientation of production and exports in favor of manufacturing [18]. After all, this provides a significant increase part of value added in the gross domestic product structure.

It should be emphasized that the development of the food industry should be one of the priorities in Ukraine. Being equipped with the latest technology, it will be the leading link in the chain of creation of consumer values, increasing the value added in the processing of agricultural raw materials of domestic origin. Processing enterprises of the food industry can combine the economic entities of the national economy involved in the whole process of food production in the interval "from raw materials to

the final consumer". As the main integrators of the promotion of products to the foreign market, they will contribute to an increase in domestic commodity circulation in Ukrainian agriculture and an increase in external demand for high-quality food products.
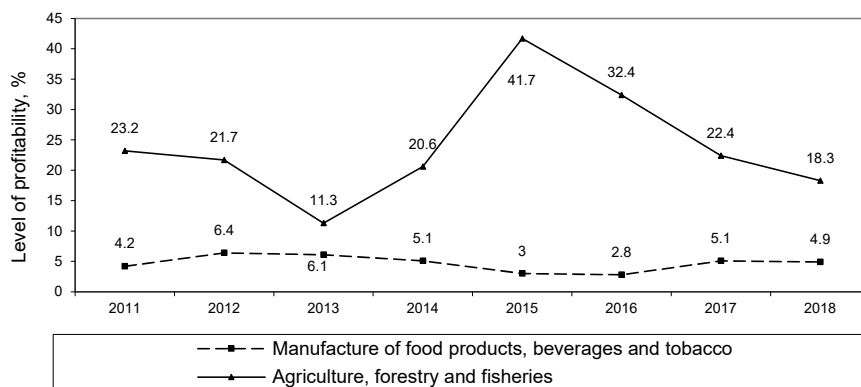

Fig. 1. Comparative dynamics of Ukraine's enterprises operating activity profitability in the spheres of agricultural products production and processing.

Obviously, in order to ensure sustainable economic dynamism, Ukraine must develop its industrial sector by creating new jobs with attractive working conditions. However, the formation of institutional preferences for activating investment processes in industry should be made taking into account the potential ability of enterprises of each branch group to increase the value added, and also to be competitive in the strategic perspective.

Therefore, the determination of the priority and investment attractiveness of the national economy sectors is possible only with the determination of their dynamics and developmental capacity, which is determined by a number of relative performance indicators in international business practice and is duplicated in aggregate statistical state surveys based on the financial statements of enterprises grouped according to sectoral characteristics and value added. The grouping and the procedure for calculating these indicators are given in table 2 [22].

On the basis of grouped indicators, first of all, it is necessary to determine the synthetic indicator of economic and financial efficiency of the national economy of Ukraine in terms of the opportunities for the development of a particular industry that can be ensured by the TOPSIS (Technique for Order Preference by Similarity to an Ideal Solution) method [17; 10] taking into account the following steps:

— definition of the hierarchical structure of the multicriteria problem of the levels of the national economy development;
— normalization of the values of economic and financial indicators;
— substantiation of criteria and features of financial and economic indicators on the basis of assigning weighting coefficients to them using the CRITIC (Criterion Importance Through Intercriteria Correlation) method [1];

- determination of the synthetic measures for economic and financial efficiency using the TOPSIS method.
- linear ordering of the national economy branches.

Table 2. Indicators of evaluation of economic and financial situation.

Indicator	Calculation procedure
Group of financial liquidity	
Current liquidity	Current assets / current liabilities
Instant liquidity	[Current assets – stocks – accrual] / current liabilities
Cash flow	Short-term investments / Current liabilities
Debt burden and the ability to service it	
Total debt obligation	Commitments and provisions for liabilities / assets
Commitment by tangible assets	Fixed assets / long-term liabilities
Coverage of liabilities with financial surplus	[Operating profit + depreciation] / total liabilities
Coverage of interest with operating profit	Operating profit / interest
Productivity	
Total turnover of assets	Revenue / asset summary
Productivity of operating assets	Gross value added / operational assets
Productivity of fixed assets	Gross value added / fixed assets
Labor efficiency	Gross value added / number of employees
Cost Index	Operating expenses / operating income
Profitability	
Operational	Operating profit $\times$ 100 / operating income
Operating assets	[Operating profit + depreciation] $\times$ 100 / operating assets
Invested capital	Operating profit $\times$ 100 / invested capital
ROA (Return on Assets)	(Net profit / average assets) 100
ROE (Return on Equity)	(Net profit / average annual amount of equity) 100
The dynamics of change	
Revenue from sales	$(Revenue_t – Revenue_{t-1})100/ Revenue_{t-1}$
Gross value added	$(Value\ added_t – Value\ added_{t-1})100/ Value\ added\ a_{t-1}$

At the stage of formation of the hierarchical structure of the evaluation multicriteria task, the following elements are considered: the main criterion of evaluation, the subcriteria, features and objects of evaluation. The main criterion is positioned at the highest level of the hierarchy and contains several subcriteria (individual criteria contain features that describe the objects of evaluation) [10]. Peculiarities create features of development levels of objects, that is, branches of the national economy.

The choice of characteristics of the economic and financial state of the industries is based on objective and statistical analysis, and in order to exclude highly correlated features, the matrix analysis of the inverse correlation R^{-1} is provided (in the case of excessive correlation of certain features relative to other features, the diagonal elements of the matrix R^{-1} will exceed the unit that will be detected in bad numerical conditionality of the matrix R [10].

The value K of economic-financial characteristics for N of statistical units (branches of economy), established on the basis of objective and statistical analysis, are summarized in the matrix of dimensional data $(N \times K)$:

$$X = \begin{pmatrix} x_{11} & x_{11} & \dots & x_{1K} \\ x_{21} & x_{22} & \dots & x_{2K} \\ \dots & \dots & \dots & \dots \\ x_{N1} & x_{N2} & \dots & x_{NK} \end{pmatrix}, \tag{1}$$

where x_{ij} $(i = 1, ..., N)$, $(j = 1, ..., K)$ indicates the value of the jth feature in the ith statistical unit.

At the second stage, the normalization of functions is ensured in order to combine them into numeric ranges, and different approaches are used for that [10]. In our case, it is expedient to use the linear normalization approach – zeroed unitarization – by means of which one can compare the stimulator and the disintegrator on the basis of a single dimensionality using transformation formulas:

$$z_{ij} = \frac{x_{ij} - min\{x_{ij}\}}{max\{x_{ij}\} - min\{x_{ij}\}} \text{ (stimulator);} \tag{2}$$

$$z_{ij} = \frac{max\{x_{ij}\} - x_{ij}}{max\{x_{ij}\} - min\{x_{ij}\}} \text{ (destimulator);} \tag{3}$$

Nominals:

$$z_{ij} = \frac{x_{ij} - min\{x_{ij}\}}{nom\{x_{ij}\} - min\{x_{ij}\}}, x_{ij} \leq nom\{x_{ij}\} \tag{4}$$

or

$$z_{ij} = \frac{max\{x_{ij}\} - x_{ij}}{max\{x_{ij}\} - nom\{x_{ij}\}}, x_{ij} \leq nom\{x_{ij}\} \tag{5}$$

Converted values of z_{ij} features are normalized in the interval $\langle 0,1 \rangle$.

The third stage is devoted to the formation of weighting coefficients for economic and financial indicators using the CRITIC method [1], presented in the form of $W = W_1, W_2, \dots W_K$.

Weighting factors in this specified method are determined taking into account the standard deviation of each of the characteristics and coefficients of correlation between the features, and their vectority is as

$$W_j = C_j / \sum_{k=1}^{K} C_k = 1, j = 1,2,\dots,K \tag{6}$$

follows:

$$C_j = s_{j(z)} \sum_{k=1}^{K} (1 - r_{jk}), j = 1,2,\dots,K \tag{7}$$

where: $s_{j(z)}$ – standard deviation, calculated for the normalized values of the jth feature; r_{jk} – correlation coefficient between jth and kth features, for which $\sum_{j=1}^{K} w_j = 1$.

In the future, the product of the normalized values of the features is determined by weight coefficients:

$$z_{ij}^* = z_{ij}w_{ij}, i = 1,2,\dots,N, j = 1,2,\dots,K. \tag{8}$$

At the fourth stage, we use a reference method for determining the value of the synthetic feature using the classical TOPSIS method for calculating the Euclidean distance to each object of the model:
- development

$$z^+ : z^+ = (\max_i(z_{i1}^*), \max_i(z_{i2}^*),\dots,\max_i(z_{iK}^*)) = (z_1^+, z_1^+,\dots,z_K^+); \tag{9}$$

- antidevelopment

$$z^- : z^- = (\min_i(z_{i1}^*), \min_i(z_{i2}^*),\dots,\min_i(z_{iK}^*)) = (z_1^-, z_1^-,\dots,z_K^-) \tag{10}$$

In the case of zeroed unitarization we will receive:

$$z^+ = \left(\underbrace{1,1,\dots,1}_{K}\right) \text{ or } z^- = \left(\underbrace{0,0,\dots,0}_{K}\right) \tag{11}$$

After defining an example of development and anti-development, the Euclidean distances of each unit of evaluation will be calculated as follows:
- development

$$z^+ : d_i^+ = \sqrt{\sum_{j=1}^K (z_{ij} - z_j^+)^2} \tag{12}$$

- antidevelopment

$$z^+ : d_i^- = \sqrt{\sum_{j=1}^K (z_{ij} - z_j^-)^2} \tag{13}$$

The next step is to calculate the synthetic function value S_i:

$$S_i = \frac{d_i^-}{d_i^+ + d_i^-}, 0 \le S_i \le 1, (i = 1,2,\dots,N). \tag{14}$$

The smaller the distance of the desired unit from the developmental standard and, accordingly, farther from anti-development, the closer to 1 will be the significance of the synthetic function.

At the final stage, it is proposed to rank the branches of the national economy in accordance with the calculated synthetic values of economic and financial efficiency.

The multidimensional analysis of sub-sectors of the food industry sectors of Ukraine was carried out in accordance with the described methodology. In the State Classifier of Products and Services SC 016-2010 [25], the food industry is included in the section C (processing industry) and includes enterprises producing goods under codes 10 and 11.

Based on the data of the State Statistics Committee [26], the interim calculation of TOPSIS synthetic indicators for the food industry of Ukraine by the formed five groups (see table 1) was carried out for 2 sub-periods: years of 2013-2015 and 2016-2018. Output results made it possible to specify seven groups of food producers that differ in terms of financial liquidity, debt load and maintenance, productivity, profitability, and dynamics of changes determined by intervals. The results of synthetic TOPSIS values and real values form separate clusters that are subject to cluster analysis. It was conducted taking into account individual concentrations (clusters) during the indicated periods. The results of cluster analysis are presented in tables 3 and 4 [22].

Table 3. Ukrainian food industry clusters according to the resalts of calculation synthetic indexes.

Indicator	Clusters							Medium
	1	*2*	*3*	*4*	*5*	*6*	*7*	
Current liquidity	1.15	1.41	1.44	1.16	1.31	1.2	2.5	1.36
Instant liquidity	0.84	0.95	0.91	0.64	0.72	0.87	1.68	0.88
Cash flow	0.19	0.25	0.17	0.07	0.13	0.16	0.83	0.2
Synthetic, S_1	**0.39**	**0.39**	**0.34**	**0.31**	**0.29**	**0.39**	**0.51**	**0.36**
Total debt obligation	0.54	0.43	0.43	0.63	0.57	0.47	0.29	0.49
Commitment by tangible assets	4.07	6.25	5.67	4.39	3.88	5.94	14.79	5.56
Coverage of liabilities with financial surplus	5.62	10.59	6.29	3.68	2.73	15.11	70.17	10.46
Coverage of interest with operating profit	0.22	0.38	0.27	0.15	0.14	0.48	0.38	0.28
Synthetic, S_2	**0.31**	**0.45**	**0.40**	**0.23**	**0.26**	**0.47**	**0.56**	**0.36**
Total turnover of assets	2.51	1.6	1.43	1.68	1.48	1.86	1.38	1.75
Productivity of operating assets	0.45	0.53	0.4	0.31	0.28	0.73	0.53	0.44
Productivity of fixed assets	0.81	0.9	0.81	0.70	0.71	1.26	1.08	0.87
Labor efficiency	88.98	120.43	119.26	110.97	117.45	219.16	139.98	124.04
Synthetic, S_3	**0.34**	**0.35**	**0.27**	**0.24**	**0.21**	**0.51**	**0.34**	**0.31**
Operational	3.25	7.90	5.52	3.99	3.39	9.67	5.84	5.47
Operating assets	11.91	18.40	11.46	7.16	6.22	31	10.13	13.53
Invested capital	5.16	9.79	6.21	3.66	2.59	15.08	6.8	6.79
ROA (Return on Assets)	15.77	21.79	15.1	11.82	10.72	29.63	17.11	17.06
ROE (Return on Equity)	12.88	18.99	11.8	10.47	7.25	30.68	13.68	14.61
Synthetic, S_4	**0.38**	**0.54**	**0.44**	**0.34**	**0.31**	**0.7**	**0.43**	**0.43**
Revenue from sales	5.93	4.53	2.2	16.61	- 2.5	7.7	-9.9	5.04
Gross value added	6.94	4.27	6.5	14.9	-3.23	6.25	-9.6	4.94
Synthetic, S_5	**0.42**	**0.42**	**0.42**	**0.5**	**0.36**	**0.42**	**0.3**	**0.42**
The general synthetic indicator of the food industry	**0.37**	**0.42**	**0.36**	**0.32**	**0.29**	**0.49**	**0.42**	**0.36**

With the change of the time period of research for 2013-2018 compared to the time period of 2012-2017, the distribution of food industries by clusters did not change, but the overall synthetic indicators in each of the clusters deteriorated slightly. First of all, the situation is explained by the unfavorable situation with the export of traditional finished products of the food industry and its compliance with international quality systems, as well as - high interest rates on enterprise lending.

Table 4. Cluster positioning of the Ukrainian foods industry subsectors.

Years/clusters		2015-2017							
		1	*2*	*3*	*4*	*5*	*6*	*7*	**Together**
2012-2014	*1*	10.1; 10.12 10.13; 10.51	11.07			11.01			6
	2	10.91	10.72	10.89			10.52; 10.71		5
	3		10.86; 10.73	10.61; 10.82; 10.83				10.42	6
	4				10.20; 10.41; 10.85	10.39			4
	5		10.81	11.02		10.32; 11.03			4
	6						10.84; 11.05		2
	7							10.31	1
	Together	5	5	5	3	4	4	2	28

Sub-sectors of the food industry belonging to the first cluster (10.11–10.13 – canned meat and meat products, 10.51 – dairy and cheese products, 11.07 – soft drinks, bottled mineral water, 11.01 – alcoholic beverages, distilled, 10.91 – feed products for farm animals) have an average level of efficiency, which is confirmed by a general synthetic index with a value of 0.38. In general, the indicators influencing its final value were characterized by higher (compared with the average in the industry) levels of liquidity and debt, but lower than the average industry profitability and yield. In general, the sub-sector of this cluster needs external sources of investment more than other enterprises of the food industry of Ukraine.

The cluster's fullness varied across different time segments by enterprises of various sub-sectors (during 2013-2015: 10.11–10.13, 10.51, 11.07 and 11.01, during 2016-2018: 10.11–10.13, 10.51, 10.91). The cluster 2 unites enterprises of sub-sectors with a high level of synthetic index – 0.42, which is affected by low debt levels and high profitability. Sub-sectors of this segment have a high level of return and are attractive both for domestic and foreign investment.

However, the subfield format has changed somewhat during the study period. In 2013-2015 it consisted of: 10.91 – food products for livestock, 10.71 and 10.72 – low-moisture bakery products and flour confectionery products, of long-term and short-term storage, 10.89 – other foodstuffs, 10.52 – ice cream. During the years of 2016-2018: 11.07 – soft drinks, bottled mineral water, 10.72 – bakery products, low humidity, confectionery, flour, long-term storage, 10.73 – macaroni, noodles, couscous and similar flour products, 10.81 – sugar.

The cluster group 3 is coherent in its overall level of synthetic indicator of financial and economic efficiency to cluster number 1 (0.37), but the components of such a result differ by the lower level of indicators of liquidity and debt servicing. At the same time, this cluster is characterized by an average level of profitability and a high level of growth in sales and value added, which forms attractive prospects for long-term investment in this direction of food production. The unchanging core of the group consists of the following enterprises: 10.61 – products of the milling industry, 10.82 –

cocoa products, chocolate and sugar confectionery, 10.89 – tea and coffee, processed. During the period of 2013-2015, the group 10.86 was updated with ready-made food products homogenized for children's and dietary foods, 10.73 – macaroni, noodles, couscous and similar flour products, 10.42 – margarine and similar edible fats, and in 2016–2018 they were changed in the sub-sector 10.89 with other food products, 11.02 – grape wines.

The cluster group number 4 combines enterprises with a low level of total synthetic index (0.32) – low liquidity, profitability and high level of indebtedness compared to other branches of the food industry. However, these sub-sectors show a high positive dynamics of sales volumes and value added. This points to their investment attractiveness but not only in increasing their production capacity, but also in their technological upgrading, which will increase their operating profitability or cost-competitiveness. Invariably the group during 2013–2018 includes: 10.20 – fish, crustaceans and shellfish products, processed and preserved, 10.41 – oils and fats, 10.85 – food sets and prepared meals.

The cluster number 5 is characterized by the lowest level of synthetic indicator in the food industry (0.29), which is determined by the lowest rates of practically all components of financial and economic efficiency. To this group in 2013–2015 enterprises included 4 sub-sectors: 10.81 – sugar, 11.02 – grape wines, 10.32 – fruit and vegetable juices, 11.03 – cider and other fruit wines. In 2016–2018, positions 10.32 and 11.03 remained. The listed sub-sectors require significant investments, and in their economic nature they are complex and unattractive for both domestic and foreign investors.

The highest level of efficiency, as well as investment attractiveness is characterized by the sixth group, to which during the years of 2013–2018 the following sub-sectors of the food industry were included: 10.84 – condiments and spices, 11.05 – beer. The total synthetic rate in the group is 0.49.

The cluster number 7 during the analyzed period was characterized by a general synthetic efficiency indicator of 0.42, which in general exceeds the average in the food industry as a whole. However, despite the rather high financial liquidity and low level of indebtedness of the enterprise, the sub-sectors of this cluster practically did not show a positive dynamics in the scopes of sales of goods and value added, that is, they were not attractive for investment. During 2013–2018, this group included a sub-sector of 10.31 – potatoes, processed and preserved, and also in the years of 2016–2018 there was included a sub-sector 10.42 – margarine and similar edible fats.

The obtained results allowed differentiating the food industry into groups with wide possibilities for analysis, on the basis of which their attractiveness for investment was determined. According to the calculations of synthetic indicators and cluster analysis, it was determined that the most priority investment plans for the period include meat processing, oil fat, fish processing, confectionery, milling branch and cereals, a subsector for the production of food sets and ready-made dishes. The development of these sub-sectors is economically profitable both from the standpoint of the owners of capital and from the point of view of the public interest, since it will ensure the growth of the value added within the national economy.

It is obvious that investment processes in the processing industry should provide not only expanded reproduction (or simple scaling) of production systems, but above all their radical renewal. After all, only such production technologies can provide domestic processing enterprises with competitive advantages in the global market, where the parity of major economic players has been established long time ago. In addition, access to the global market is possible only if the production systems correspond to the international quality standards, which requires the introduction of resource-saving and environmentally friendly technologies. Therefore, certain investment priorities in the food industry should be supported by the state if their technological component correspond the requirements of consumer and environmental safety (HACCP standards).

Similar calculations can be performed to identify priority areas of innovation and investment processes in other areas of industrial activity. In addition, the key argument in favor of choosing priority projects, which should provide investment support from the state, should be their ability to increase not only added value but also the consumer value of the final product. Moreover, for a long period, which will form a stable competitive advantage for industrial producers in target market segments. Therefore, advanced production technologies should be a mandatory component of all investment projects in the processing industry.

Their implementation, among other things, should open wider opportunities in the product innovations development. For the food industry, among the latest technologies characteristics, which are preferred for inclusion in the innovation and investment project, is waste-free (increases the product range due to the deep level of raw materials processing). In machine-building complex this characteristic is flexibility, which in combination with standardization provides not only the necessary conditions for modification of prototypes and product line development for target consumers within the selected business strategies, but also reducing the cost of readjustment if necessary to diversify production.

Unfortunately, recent years the Ukraine`s machine-building complex enterprises are increasingly losing markets. Not only their export potential decreases, but also their ability to meet the needs of domestic consumers. As a result, own revenues are not enough for the needs of modernization and technological renewal. Such conditions do not contribute to the innovative activity of the enterprise and cause further technological degradation and loss of competitiveness. The solution to this problem is possible through the involvement of a strategic investor.

But the problem is that in Ukraine investment support for innovative development projects by economic activity state regulation tools is carried out mainly for large enterprises. However, from the standpoint of social security / stability of the state, it is important to create favorable conditions for the development of productive economic activities not only in the format of large-scale, but also using the advantages of small industrial enterprises.

3.2 Development of innovation and investment opportunities for industrial enterprises on the basis of strategic partnership

Small and medium-sized businesses make a significant contribution to the creation of public goods in any country. Its main advantages are high mobility and sensitivity to market changes. However, turnover (market share) and productivity are highest in large enterprises. To assess the contribution of small and medium-sized businesses to the overall results of Ukrainian enterprises economic activity (table 5, is constructed by [9, pp. 153–157 and p. 231]; the data are given without taking into account the temporarily occupied territories of the Crimea, and parts of Donetsk and Luhansk regions).

Table 5. Structural and dynamic indicators of Ukrainian enterprises activity.

Indicators	Values of indicators by years					Changes, 2018-2014
	2014	2015	2016	2017	2018	
The total number of enterprises engaged in economic activity, thousands of units						
In total	341.0	343.4	306.4	338.3	356.0	15.0
of them: large	0.497	0.423	0.383	0.399	0.446	-0.051
medium	15.906	15.203	14.832	14.937	16.057	0.151
small	324.598	327.814	291.15	322.92	339.37	14.772
Part of enterprises engaged in economic activity, % of the total						
Large	0.1	0.1	0.1	0.1	0.1	0
Medium	4.7	4.4	4.9	4.4	4.5	-0.2
Small	95.2	95.5	95.0	95.5	95.4	0.2
The total number of operating industrial enterprises, thousands of units						
In total	42.2	42.6	39.1	42.0	44.4	2.2
of them: large	0.289	0.233	0.208	0.215	0.237	-0.052
medium	4.791	4.691	4.652	4.745	4.866	0.075
small	37.107	37.640	33.695	37.066	39.322	2.215
Part of operating industrial enterprises, % of total						
Large	0.7	0.6	0.5	0.5	0.5	-0.2
Medium	11.3	11.0	12.1	11.3	11.0	-0.3
Small	88.0	88.4	87.4	88.2	88.5	0.5
The total volume of products sold by enterprises, UAH billion						
In total,	4170.7	5159.1	6237.5	7707.9	9206.1	5035.4
of them: by large	1742.5	2053.2	2391.4	2929.5	3515.8	1773.3
by medium	1723.1	2168.8	2668.7	3296.4	3924.1	2201
by small	705.0	937.1	1177.4	1482.0	1766.2	1061.2
Part of products sold by enterprises by their sizes, %						
By large	41.8	39.8	38.3	38.0	38.2	-3.6
By medium	41.3	42.0	42.8	42.8	42.6	1.3
By small	16.9	18.2	18.9	19.2	19.2	2.3
Total volume of sold industrial products, UAH billion						
In total	1546.6	1887.5	2343.0	2862.3	3302.5	1755.9
of them: by large	932.9	1078.2	1232.2	1537.3	1790.4	857.5
by medium	531.5	691.1	921.1	1092.1	1230.3	698.8
by small	82.16	118.1	152.4	188.4	227.6	145.44
Part of industrial products sold by enterprises by their sizes, %						

Indicators	Values of indicators by years					Changes, 2018-2014
	2014	2015	2016	2017	2018	
By large	60.3	57.1	53.4	54.6	55.1	-5.2
By medium	34.4	36.6	40.0	38.7	37.9	3.5
By small	5.3	6.3	6.6	6.7	7.0	1.7
Part of sold industrial products in the total sales of economic activity different types enterprises, %						
In total	37.1	36.6	37.6	37.1	35.9	-1.21
of them: by large	53.5	52.5	51.5	52.5	50.9	-2.61
by medium	30.8	31.9	33.4	34.4	35.4	4.55
by small	11.7	12.6	12.0	13.0	14.0	2.35

From the data given in table 5 it is seen that in the economy of Ukraine there is a steady trend of reducing the efficiency of large industrial enterprises (if the efficiency is understood as the sales of products and services). Thus, the part of products of medium-sized enterprises in 2018 increased to 37.9% compared 34.4% in 2014, and small enterprises – respectively to 7% against 5.3%. The share of industrial output of large enterprises decreased during this period from 60.3% to 55.1%. At the same time, the quantitative structure of enterprises of all types of economic activity of these sizes has changed in the direction of some increase in the share of small enterprises.

In the industrial sector, the structural ratio of industrial sales changed mainly in favor of medium-sized enterprises, while in large enterprises the dynamics of sales was negative. Thus, in 2014, 53.5% of the total sales of products (works, services) were sold at large enterprises, and in 2016 - only 50.9%. Conversely, in medium-sized enterprises this part increased from 30.8% in 2014 to 35.4% in 2018. In small enterprises, the same trend is observed – in 2014-2018, the part of industrial sales increased by 2.35 % – from 11.7 % to 14.0%.

These trends can be explained if the comparison in the same period to analyze the dynamics of the structural relationship of enterprises of different sizes. As can be seen from the table 1 data, the most significant changes affected large enterprises - their total number decreased from 497 in 2014 to 383 in 2016. However, in subsequent years, their number began to grow and in 2018 economic activity was carried out by 447 large enterprises. This is slightly less than in 2014, but positive trends have emerged. A similar trend can be observed in the industrial sector of the national economy – in 2018, large industrial enterprises became 52 units less than in 2014, although in the worst, in 2016, this difference was 81 enterprises.

In small and medium-sized businesses, the number of industrial enterprises has grown significantly in five years, although by 2016 there was a decrease in their number – more than 3.4 thousand small industrial enterprises ceased operations this year. In the following years, their number began to grow and in 2018 even exceeded the number of those operating in 2014 – by 2.2 thousand units. In 2018 middle industrial enterprises were functioned on 75 units more than in 2014.

Thus, these data indicate growth in Ukraine's contribution of small and medium-sized businesses in the overall performance of industrial enterprises. Using a niche strategy, they can provide many consumer needs and create add value to a much greater extent than large enterprises, which often function as raw materials for international

corporations. However, the financial results of enterprises in this sector are only 20.8% of the total financial results of all operating enterprises [9, p. 156]. And this indicates a much lower efficiency of small businesses than large enterprises.

Obviously, one of the classic factors of higher efficiency of large enterprises is the larger scale of their activities, which gives economies of scale, as well as the opportunity to choose the best competitive strategies. For small and medium-sized enterprises, higher business efficiency can be achieved only when they do not just copy the existing business, but choose for themselves an innovative development scenario.

However, small industrial enterprises have limited resources to implement business development projects that could ensure its quantitative growth. These opportunities can grow through strategic partnerships. In our opinion, such a partnership will be strategic in the case of the formation of organizational heterarchy – a form of cooperation that provides growth of adaptive properties of participants through a variety of forms and methods of organizational integration. Including, due to cross-sectoral integration processes, as shown by us in previous researches [23].

The term "heterarchy" was introduced into scientific usage by David Stark – as an organization with horizontal or distributed power, which allows it to self-organize. He emphasized that the ability to adapt is stimulated by the organization of diversity within the enterprise – when different organizational principles coexist in a state of active competition within one enterprise. This ensures the development of constructive organizational reflectivity and allows for recombination of resources, recombination of old organizational forms of economic interaction into a new organizational structure with high adaptive properties [24, p. 119].

Describing the features of organizational interaction in the hierarchy, Stark emphasized that this is a new way of organization, which is neither market nor hierarchical. If hierarchies are based on relations of dependence, and the market is based on relations of independence, then hierarchy is based on relations of interdependence. These relations are characterized by a minimum degree of hierarchy and organizational heterogeneity [24, p. 120–121]. Michael T. Hannan also argued that "the ability to adapt is stimulated by the diversity of organizations: a system that has a greater variety of organizational forms is more likely to find a satisfactory solution in the event of changes in external conditions [6].

Strategic partnership is now increasingly recognized as a successful alternative to market competition of small businesses. The organizational development of such partnership is carried out on the principle of competence and resource complementarity in order to maximize the objective function. Through the development of partnerships, it is possible to enhance mutually the resource potential of all participants in the partnership, expanding the ability of competitive business strategies choice.

The key role in determining the direction of enhancing the participants' innovative potential in such a partnership should be played by the producer of the final products – in fact it is in direct contact with the market and it develop the concept of new products in line with the trends of scientific and technological progress.

The solution to these problems belongs to the sphere of marketing and requires adequate information and analytical support. It is advisable to justify and make appropriate decisions by actively interacting with existing/potential partners, involving

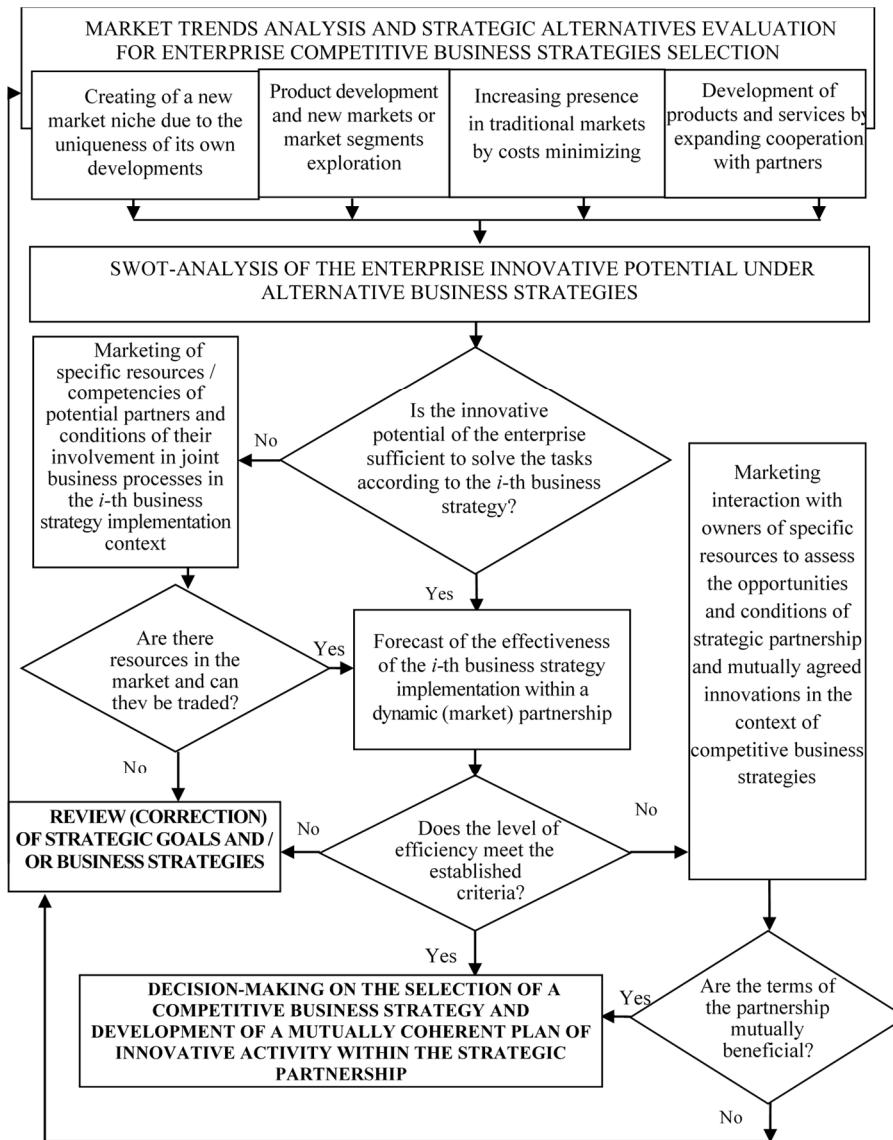them in mutually agreed organizational or technological changes. This is shown schematically in fig. 2.

MARKET TRENDS ANALYSIS AND STRATEGIC ALTERNATIVES EVALUATION FOR ENTERPRISE COMPETITIVE BUSINESS STRATEGIES SELECTION

| Creating of a new market niche due to the uniqueness of its own developments | Product development and new markets or market segments exploration | Increasing presence in traditional markets by costs minimizing | Development of products and services by expanding cooperation with partners |

SWOT-ANALYSIS OF THE ENTERPRISE INNOVATIVE POTENTIAL UNDER ALTERNATIVE BUSINESS STRATEGIES

Marketing of specific resources / competencies of potential partners and conditions of their involvement in joint business processes in the i-th business strategy implementation context

Is the innovative potential of the enterprise sufficient to solve the tasks according to the i-th business strategy? — No — Yes

Marketing interaction with owners of specific resources to assess the opportunities and conditions of strategic partnership and mutually agreed innovations in the context of competitive business strategies

Are there resources in the market and can they be traded? — Yes / No

Forecast of the effectiveness of the i-th business strategy implementation within a dynamic (market) partnership

REVIEW (CORRECTION) OF STRATEGIC GOALS AND / OR BUSINESS STRATEGIES

Does the level of efficiency meet the established criteria? — No / No — Yes

DECISION-MAKING ON THE SELECTION OF A COMPETITIVE BUSINESS STRATEGY AND DEVELOPMENT OF A MUTUALLY COHERENT PLAN OF INNOVATIVE ACTIVITY WITHIN THE STRATEGIC PARTNERSHIP

Are the terms of the partnership mutually beneficial? — Yes / No

Fig. 2. The model of the enterprise competitive business strategy selection considering the resource potential increasing possibility on the basis of strategic partnership.

Integrated business structures incentives-preferences in the field of innovation need should be formed not only in the organizational space of an individual enterprise, but also in the context of innovative development of all partners – if such a partnership is

considered as strategic. To do this, we recommend to developed the motivational potential of engagement marketing, which is based on maintaining the partnerships value.

Communication marketing interaction system will ensure the rapid exchange of information between the participants of the strategic partnership in relation with common goals and strategies, which may also be related to various aspects of innovative potential realizing. It will create favorable conditions for active and effective innovation activity and achievement of the goals set in each strategic period. This also applies to the structural and functional development of the innovation potential of the enterprise – the filling of structural elements with new competences, taking into account the specifics of the selected business strategies.

In the strategic partnership of business structures, it is necessary to cultivate such relationships that form a system of trust. In this case, the partners evaluate positively each other's actions in the process of choosing the directions and scale of organizational change, without looking for threats to their own security. This will eliminate the causes of opportunistic behavior of partners, develop cooperation and mutual support in identifying and solving new problems.

It is extremely important that the integrated business structures participants clearly understand the common benefits, so the value of the strategic partnership. It is advisable to determine the expected value from the development of partnerships by means of the integral efficiency index in cases of interval uncertainty based on the criterion of optimism-pessimism of Leonid Hurwicz – provided that the value of managing these relations is to obtain the potential benefit from increasing the resource potential.

$$E_{ik} = max\{d_{si} \times max\, \mu_{ri}\,(u_i) + (1 - d_{si}) \times min\, \mu_{ri}\,(u_i)\}, \qquad (15)$$

where E_{ik} – expected integral efficiency of one enterprise relative to others, which determines the value of relationships in the affiliate network; $\{max\, \mu_{ri}\,(u_i)\}$, $\{min\, \mu_{ri}\,(u_i)\}$ – the maximum and minimum value of the function belonging to the ith set of a linguistic variable values; u_i – is a generalized value of the individual dynamics index of each partner in the affiliate network, taking into account the ith set of the linguistic variable values; d_{si} – is the average interval value of the E. Harrington scale of dominance estimation, taking into account the ith set of the linguistic variable values.

In the organizational space of strategic partnership forms an organizational heterarchy, it expands the possibilities of generating innovative ideas that can give a new impulse to business development. Due to the production of new knowledge, creation of new products and technologies that develop social needs, integrated into the partnership business structures move from a predominantly adaptive scenario of behavior in the market to proactive, maintaining and increasing their competitiveness.

4   Conclusions

Defining strategic priorities for the national economy development is an important element in the formation of state economic policy, the regulatory instruments of which (institutions) should create a motivational environment for overall economic growth. In

the set of such tools, an important role is played by those that regulate innovation and investment processes in terms of economic activities and sectoral specialization of economic entities. The paper substantiates that for the national economy sustainable development it is advisable to provide institutional support for investment in those sectors that can provide a high level of added value in the creation of consumer values in strategic perspective. It is also substantiated that it is expedient to use TOPSIS and CRITIC methods to assess investment priorities.

Substantiation of innovation and investment support strategic priorities for the Ukraine's economy industrial sector development was carried out on the example of the food industry, which can significantly increase the total value added, using the agricultural production potential. It covers different sub-sectoral groups in terms of consumer purpose and technological equipment, which determines their different financial and economic performance, and hence different investment prospects.

According to the calculations of synthetic indicators and cluster analysis, it was determined that the most priority investment plans for the period include meat processing, oil fat, fish processing, confectionery, milling branch and cereals, a subsector for the production of food sets and ready-made dishes. The development of these sub-sectors is economically profitable both from the standpoint of the owners of capital and from the public interest point of view, since it will ensure the growth of the value added within the national economy.

It has been noted that in the formation of state economic policy it is advisable to differentiate approaches to the creation of investment preferences for attraction of strategic investors. In particular, such preferences should be defined for the development of the food industry in the context of those sub-sectors that correspond to the dynamics of food markets in Ukraine and increase the opportunities for entry into the European Union market.

Given that innovation processes should also cover small and medium-sized industrial enterprises, whose resource opportunities are mostly limited, it is proposed to expand them within the framework of a strategic partnership. It has been defined the organizational features of such partnership, which is characterized by a blurred hierarchy (heterarchy) and rivalry of organizational principles, which forms the motivational basis for improving the processes of creating consumer values. A graphic model of choosing a competitive business strategy has been built, taking into account the possibility of resource potential building on the basis of strategic partnership. It has been formulated and formalized the author's position on improving the motivational environment of participants in innovation processes in a strategic partnership through monitoring the value of partnerships.

The developed recommendations can be used to expand the directions and methods of the national economy industrial sectors business structures organizational interaction within the plans of strategic partnerships building for the competitive business strategies implementation.

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