

Substantiation of the Choice Diversification Strategy for Ensuring the Safety of the Enterprise Activity



Anzhela Ignatyuk, Nina Khumarova, Andrii Vitrenko, Oksana Kuzmenko, Hanna Koptieva, Andrii Doroshenko

Abstract: The development of diversification enables the enterprise to provide economic security, achieve competitive advantages and minimise the risks of its activities. The research in the article is divided into three main blocks:

In the first, the theoretical foundations for substantiating the choice of strategy for diversification of the production enterprise were summarized.

The second proposes a methodology of technology of choice of production strategies for ensuring the safety of the enterprise activity.

The third block contains the development of recommendations to justify the choice of diversification strategy: the mechanism of formation and realization of diversification policy of the enterprise is offered; the use of the peer review method to justify the choice of diversification strategy is clearly presented (possible directions of strategy of diversification of activity are identified and the most promising directions of strategy of diversification of activity of investigated enterprise are selected by the method of a priori ranking); developed the methodological foundations for managing the diversification strategies of an industrial enterprise, which is a necessary element of the systematic support of the strategy of diversification of the enterprise activity (proposed an integrated algorithm for managing the diversification strategies of industrial enterprises; a fragment of the matrix of the choice of the type of diversification was developed, based on the goals and motivational reasons; the hierarchical structure of the decision-making system for the choice of rational diversification strategy is proposed and the scale of values of confidence coefficients is developed.

Keywords : Enterprise Activity, Diversification, Safety, Strategy.

Manuscript published on November 30, 2019.

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I. INTRODUCTION

The vital need to change the strategy of the enterprise is caused by the development of market relations, positive changes in the country's economy, growing competition in the world market. Diversification of activity of enterprises is caused by exhaustion of internal reserves of reduction of production costs, falling demand for manufactured products and complication of marketing methods to stimulate sales of these products, the difficulty of adaptation in the event of changing economic conditions, as well as tendencies to the general deterioration of business activity of industrial enterprises. The development of diversification enables the enterprise to achieve competitive advantages and minimise the risks of its activities. This is what confirms the relevance of the chosen topic.

This research aims to study the theoretical foundations of justification of the choice strategy of diversification of production company and to develop recommendations on the rationale for the choice of industrial diversification strategy.

II. THEORETICAL BASIS OF THE JUSTIFICATION OF THE CHOICE OF THE DIVERSIFICATION STRATEGY

A. Economic diversification as an effective mechanism for ensuring enterprise development

A key component of the long-term success of enterprises is the development and effective implementation of strategic plans of activity that comprehensively take into account the influence of factors of the external and internal environment of the enterprise functioning, features of economic processes and their tendencies, etc. Strategic planning helps businesses get out of the hopeless situations that have arisen outside and inside the enterprise. The prerequisites for applying strategic planning include: the need to respond to changes in the conditions of operation of the enterprise; the need to combine different areas of activity of the enterprise in the conditions of development of processes of decentralization and diversification; internationalization of business, development of relations with enterprises using strategic planning system; the availability of highly qualified managers capable of solving complex issues using a strategic planning system; the presence of pronounced competitive advantages and the need to support them in the enterprises that have them; increased competition;

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the development of strategic planning theory and practice that help move from trial and error to scientific methods of predicting and preparing the future; availability of available information to study the strengths and weaknesses of the enterprise environment and competition conditions; enhancement of innovation processes, generation and rapid development of new ideas by enterprises; the need to introduce a high management culture focused on preventing resistance to change and stimulating enterprise development.

The main essence of the diversification of economic activity is to diversify its activities. It should be noted that the term multi-species was used to refer to this process until

2009, along with the term “diversification”. However, the defined research methodology made it possible to distinguish between these two concepts. Therefore, diversification is understood as a process that occurs during the operation of agricultural enterprises and can cover all its parties.

Based on the basic principles of the theory of diversification and taking into account the peculiarities of a market economy, the theoretical principles of diversification of the activity of industrial enterprises are summarised. This makes it possible to systematise the necessary information diversification in the context of promising types to form an enterprise development strategy (Fig. 1).

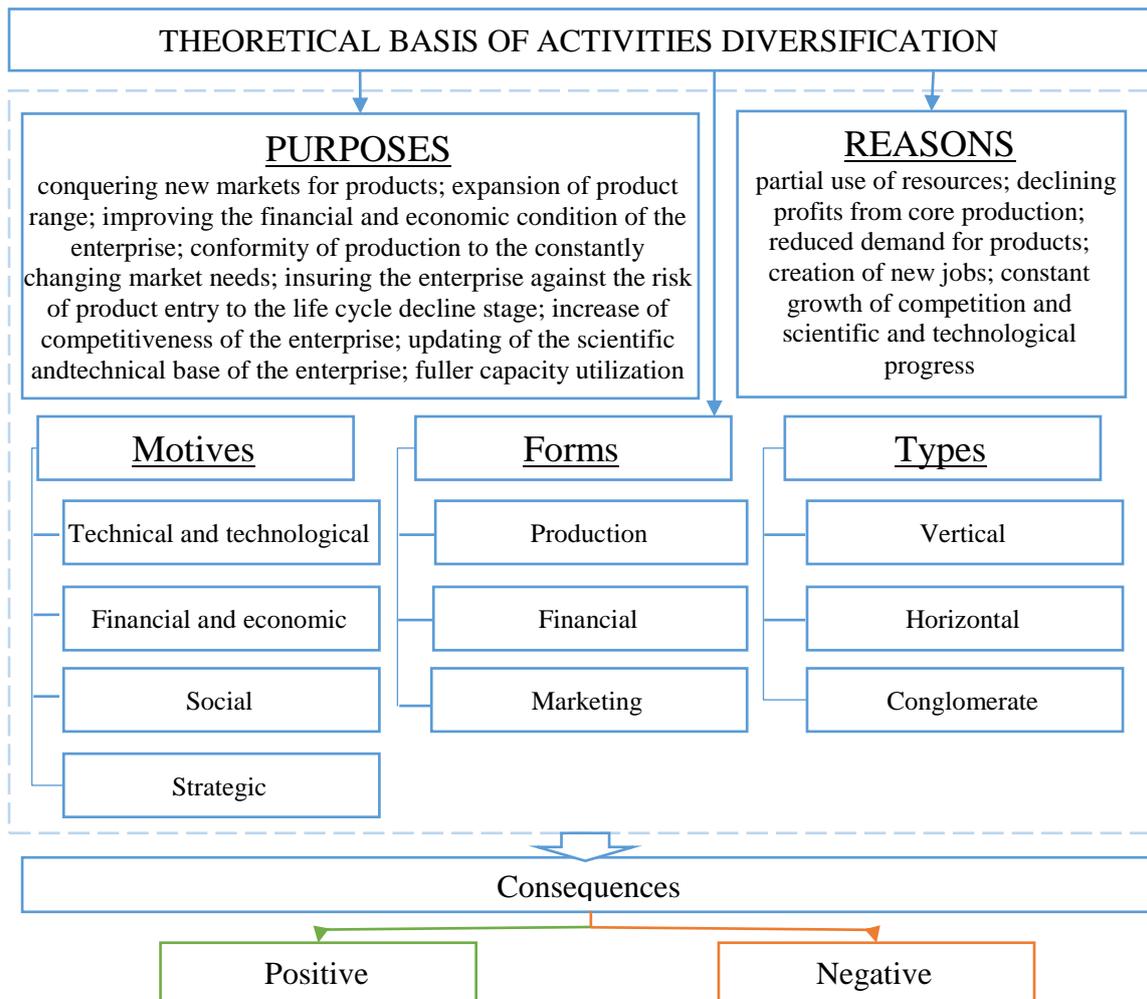


Fig. 1. Theoretical bases of enterprise diversification

The main motives that stimulate the deepening of the diversification of activities are technical, technological, financial and economic, social and environmental. The basis of technical and technological motives is the optimal use of production facilities and the development of innovation policy. The basis of financial and economic - risk reduction, financial stability, synergistic effect. The basis of social motives is the optimisation of the personnel composition and the change of the system of motivation of management personnel. The essence of strategic motives lies in adaptation to changes in the market conditions in the long term, diversification of production activity.

The main forms of diversification of activity of the enterprise are production, financial and marketing. The production form of diversification involves the expansion of

types of production (the presence of several industries), which expand the range of products produced. An important role in deepening diversification is the expansion of non-productive activities, including the provision of services to cooperative cooperatives, and more. The financial form of diversification implies an increase in various types of internal and external investments, search for new directions of financial activity. The marketing form of diversification involves, first and foremost, the expansion of sales channels, the creation of a system of own trade, the creation of brands and their advertising. The main types of diversification are vertical, horizontal and conglomerate.

Thus, vertical diversification is realized through deepening of relations in production and processing of products.

In technological and marketing terms, this is about seeking development opportunities by optimising resource utilisation and improving marketing policies. In the case of vertical diversification, the company develops products that is part of the technological chain of production of the main products (Fig. 2).

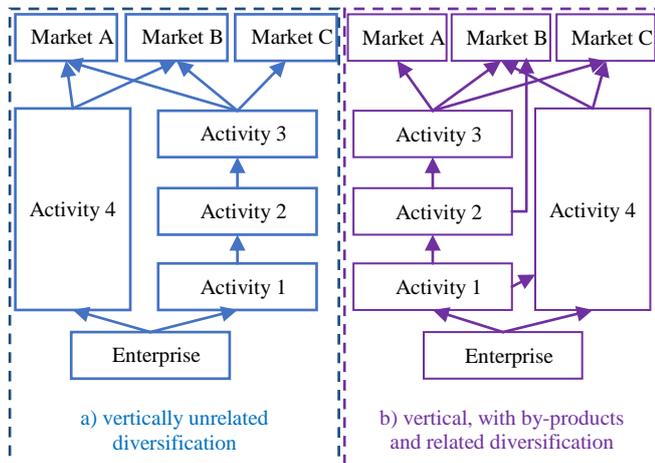


Fig. 2. Schemes of combined directions of vertical diversification of the enterprise

The contents of the figure below indicate that in the case of vertical diversification, the nomenclature of final products may consist of one or several names. Although it may be implemented in part, namely, some of the areas of activity may be absent in the production process.

Vertical diversification of business activities involves deepening the relationship between producers, marketing structures, processors, in our case, industrial raw materials, and the retail system. However, much of the function is performed outside the operational activities of the raw material manufacturer. Such a system, in our opinion, is vertically integrated. The diversification of activities of enterprises not related to industrial production is not vertically integrated. Such activities include the production and sale of building materials, the provision of social services (tailoring and repair of clothing and footwear, the production and sale of souvenirs, etc.).

Horizontal diversification is related, first of all, to the expansion of the presence of enterprises in the markets through the updating of the product range and its quality, which requires a significant expansion of their innovative activity. Both related and unrelated diversification can be developed simultaneously, which involves the development of related and non-core activities. In the economic literature, as an example, the fact is that in the early 1990s, among the 500 largest US corporations, 90% existed in the form of multi-industry concerns, the vast majority of which had an average of 11 industries, and the most powerful – 30-50 branches.

The main economic content of this process is manifested in the formation of profits, and lost profits in some industries can be offset by greater profits from the sale of products in other industries. In the absence of such changes in the profit structure, the overall financial position of the enterprise will

not change significantly due to the smaller share of the industry in its structure. Besides, diversified enterprises are more resilient to market challenges, including crisis processes accompanied by inflation, low solvency of market participants, and capable of ensuring the security of their activity.

B. Organisational and economic mechanism of diversification and its functioning. The impact of the industry factor.

The fundamental methodological principles for the construction and formation of modern diversification processes have emerged from the practice of the last decades of industrial reform, which has taken place both in Ukraine and throughout the European continent (Fig. 3). The principles considered taking into account the level of socio-economic development of rural regions, the economic status of business structures, the efficiency of agricultural enterprises, their functioning in changing market conditions. They take into account the achieved level of diversification and its further development using the existing organisational and economic conditions of functioning of industrial enterprises. Naturally, these principles are conditioned by the peculiarities of socio-economic, political, cultural and psychological, national development and developed, above all, not only from the standpoint of their declarative nature but also effectiveness in a particular situation.

In our opinion, the main principles of diversification include the principle of alternative, which provides for the possibility of developing conditions for professional activity, taking into account and use (if necessary) practical experience, available capital and other industrial resources of industrial enterprise, use of services of advisory and other advisory organizations and experts, capital diversification. Also, this principle is based on the development of new investment projects to ensure a diversification strategy.

The principle of accumulation is to optimise the use of available resources and build new business relationships when organising the production of new products. The essence of the principle of integration lies in the optimisation of production systems of agricultural enterprises and the improvement of the system of mechanism of their activity. The principle of evolution means the dynamism of industrial business development, the continuity of transformation processes and the obligatory consideration of internal and external factors of development, conditions and stages of evolution, as well as directions and goals of diversification. The principle of commerciality is based on the stability of cash flows; development of the most profitable industries and sub-sectors of agriculture; access to new types of resources and raw materials, taking into account social and environmental performance. The principle of synergy is ensured by combining all the positive results from diversification.

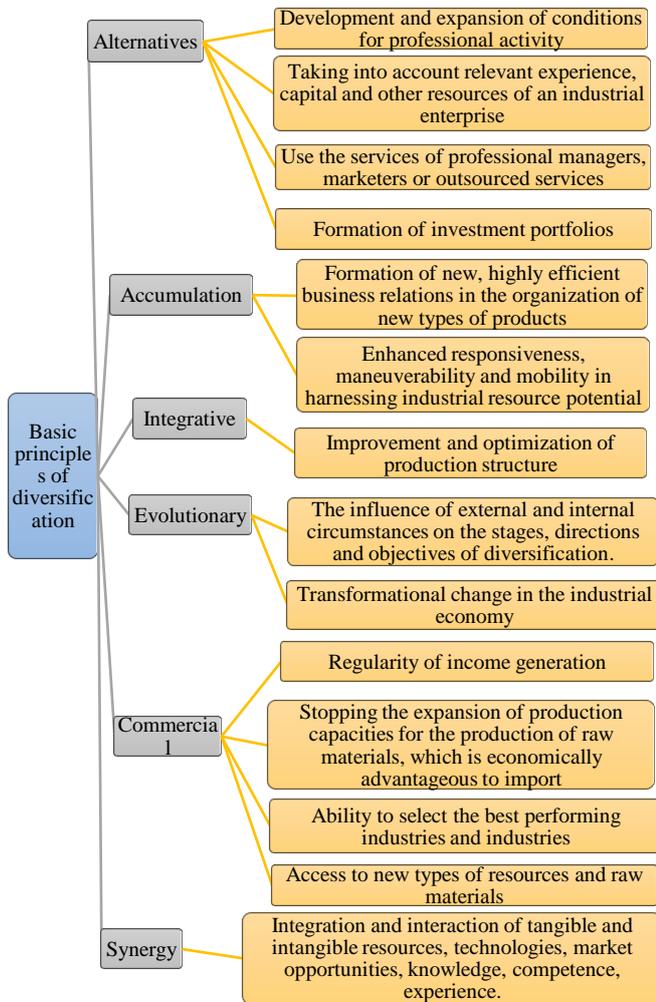


Fig. 3. Basic principles of diversification of activity of industrial enterprises

The principles of diversification under consideration are at the heart of improving the organisational and economic mechanism of diversification and its successful functioning. They are based on the interaction of all components of this mechanism. This system of principles reveals the potential for deepening diversification and improving the system of mechanism of activity of industrial enterprises.

The impact of the industry factor. Considering the industrial enterprise from systems theory, we note that they belong to the production systems of open type. It is known that the system of production activity of the enterprise consists of three functional subsystems: maintenance, processing and planning and control. The main of these subsystems is the processing subsystem, which performs the function of converting resources to finished products.

The supply subsystem performs research and development of new competitive products. Its functional responsibility is to carry out routine repairs, equipment upgrades and other ancillary operations. In addition, this subsystem supports at the required level the production process with information, workforce, energy and other materials. It is directly interconnected with the processing subsystem and the planning and control subsystem. The latter, in turn, plays a key role in the mechanism of enterprise management, because it receives information about the state of the system, analyses it and transforms it into specific decisions and

orders. It is the subsystem of planning and control that shapes the strategy of the enterprise, defines its purpose and objectives. The organisational and economic structure of the mechanism of activity of enterprises is determined.

III. METHODOLOGY: TECHNOLOGY OF CHOICE OF PRODUCTION STRATEGIES FOR ENSURING THE SAFETY OF THE ENTERPRISE ACTIVITY

At present, there is no consensus among scientists regarding a unified system for assessing the level of diversification of activity, both in general and for a specific indicator that could comprehensively determine the level of diversification of an enterprise. Here are two of them that are most relevant in the context of this study. The first is based on the use of the Herfindel-Hirschman formula and is defined by the expression:

$$H_j = \left[\sqrt{\sum_{i=1}^n \left(\frac{x_i}{x}\right)^2} - \sqrt{\frac{1}{n}} \right] / n - \sqrt{\frac{1}{n}} \quad (1)$$

where H – the enterprise index;

n – the number of products by industry classification;

i – the commodity index (from $i = 1-n$) and x is the value of the i -commodity produced by enterprise j ;

x – total value of commodity products of the enterprise

$$K_D = 1 - \sum_{i=1}^n x^2 i \quad (2)$$

$K_D > 0.7975$ characterises the high level of diversification of activity;

$0.7975 < K_D < 0.4375$ characterizes the average level of diversification of activity;

$K_D < 0.4375$ characterises the low level of diversification of activity.

The definition of another indicator is based on the calculation method used to determine the concentration of industries.

The diversification factor for this approach is calculated from the expression:

$$K_{dv} = 1 - \frac{100\%}{\sum_{i=1}^n IP_i(2N_i-1)} \quad (3)$$

where K_{dv} is the coefficient of diversification,

IP_i is the share of the i -th commodity industry in the structure of an industrial enterprise;

N_i is the industry ordinal number in the sorted order, which is constructed by the descending principle.

According to the results of the research, we have developed and proposed a mechanism for forming and implementing a diversification policy of the enterprise.

This mechanism includes three main blocks:

a) justification for the need for diversification;

b) substantiation of the possibility of diversification;

c) justification of the means of implementation of diversification (Fig. 4).



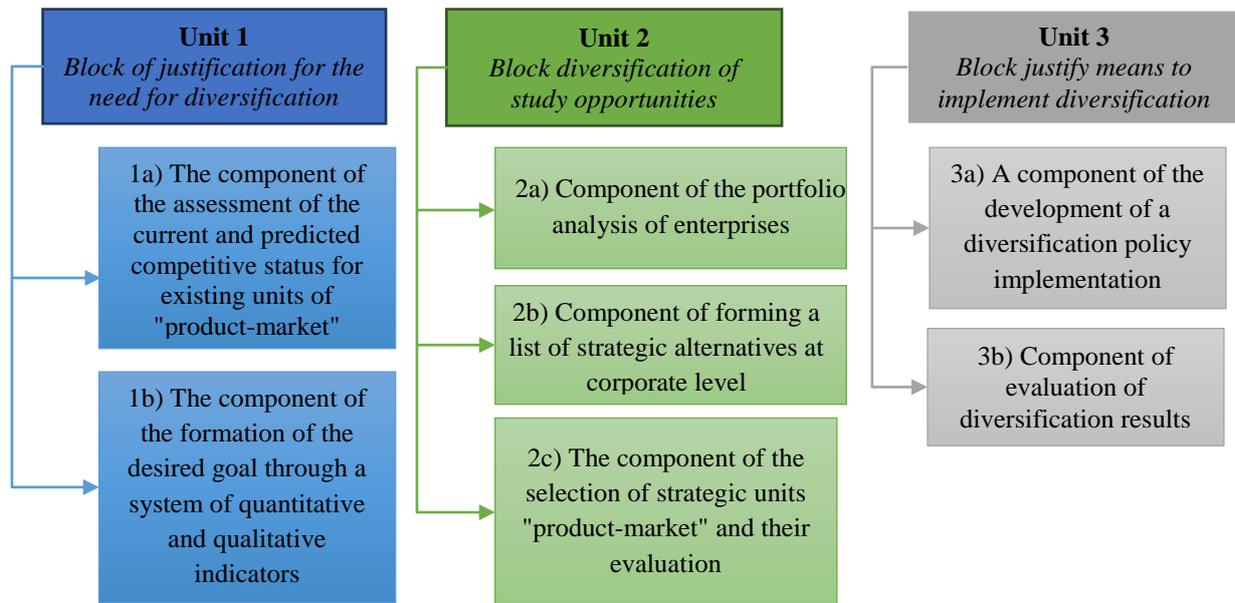


Fig. 4. Theoretical bases of enterprise diversification

The second block - Diversification justification unit - justifies the possibility of diversification through the functioning of the following components: analysis of the enterprise investment portfolio, formation of a list of strategic alternatives at the corporate level, selection and evaluation of strategic units "product-market". The basis for the functioning of the component of the analysis of the investment portfolio of the enterprise is the use of models of portfolio analysis, the most common of which is the BCG matrix and the matrix "attractiveness-competitiveness". However, their use is most appropriate for the mass type of processing subsystem and products with a long life cycle. The component of forming the list of strategic alternatives of the corporate level is formed based on portfolio analysis and provides the following options for development:

- development strategy;
- strategy of maintaining existing positions in the market;
- strategy of lost position recovery and exit strategy from a low attractive market.

The strategy chosen determines the type (horizontal or vertical) and generates potential opportunities for diversification of activities. The component of selection and evaluation of strategic units of the product-market involves the choice of diversification development, namely:

- demand reduction requires horizontal or conglomerate diversification;
- the industry at the stage of development determines the feasibility of vertical diversification;
- introduce conglomerate diversification to reduce risk;
- insufficient technological base leads to vertical diversification.

The rationale behind the diversification implementation is to combine the development of a diversification policy program and the assessment of diversification results. The component of the diversification policy program development is before the final stage in the mechanism under consideration. It is a logical generalisation of the previous work performed and its reflection. The program defines the organisation of production, the methods of implementation of

the tasks set out, the planned key indicators of development. This should be based on the evaluation of the results of diversification and implemented through a system of information gathering to fully achieve the set goals of enterprise development.

The objective and accurate activity of the indicated component enables to react promptly to changes in the development of the enterprise and respond accordingly to them, which ultimately ensures the achievement of the set goal of diversification of activity.

An important condition for the implementation of a diversification project is the allocation of available resources among the elements of the enterprise potential. This concept is implemented on the basis of the analysis of the efficiency of the distribution of production resources between the main elements of the operating system of the enterprise through the use of an optimisation model.

It should be noted that in the analysis of diversification of activities it is important to take into account the element of risk, because in the expansion of production, its level increases, because the costs associated with the expansion of activities, increase the share of fixed costs for the acquisition of assets, loss of flexibility in the choice of strategic partners, the nature of strategic partners. methodological basis for the development of enterprise diversification policy. The consequence may be a decrease in the quality of products, an increase in the level of its cost, a lower level of sales than planned. A separate component is the political risks that an agricultural enterprise cannot influence. At the same time, it is important not to evaluate the risk itself, but its consequences, and, most importantly, the causes that cause it, to reduce their impact on future activities.

An important parameter influencing the decision on the choice of diversification development is the magnitude of the socio-economic effect of diversification of activities and synergistic effect. The latter is related to the costs of diversification and the level of expected benefits that diversified production will bring.

These benefits include:

- reduction of fixed costs due to the unified management system;
- stability and security of supply of raw materials;
- increase of the organizational and technological level of production;
- product differentiation;
- risk reduction.

Generally, these benefits are manifested at two levels - corporate and domestic. Corporate synergism is manifested in:

- stabilisation of operating income;
- market research;
- reduction of the tax burden;
- penetration of technologies of other industries into agricultural production;
- savings from their implementation.

Intra-functional synergism is manifested in reaping the benefits of the scale of production, reducing transaction costs.

IV. RESULT AND DISCUSSION

Consider the diversification of production on the example of an enterprise - Ltd. "GAMBIT" - one of the oldest enterprises in the chemical industry. The plant was founded in 1815 to produce mineral salts and acids. Already in 1890, the production of the plant was exported abroad. Currently, the main product produced by the plant is copper sulfate. The production of copper sulfate was mastered in 1826. Copper sulfate is used in agriculture, industry and livestock.

In 2003 the company developed and commissioned a new line for packaging copper sulfate in polypropylene bags of box type European sample.

Today, the company is developing technology for the production of fine crystalline copper sulfate with antifreeze for animal husbandry.

In 2008, the plant received a certificate of implementation of the quality system following the requirements of ISO 9001-2001. The production capacity is 12,400 tons of copper sulfate per year.

The company provides services for renting warehouse and office premises.

A. Analysis of prerequisites for diversification of GAMBIT Ltd. activity.

To analyse the prerequisites for diversification of the activity of Ltd. "GAMBIT", we will use some of the presented matrices, which, in our opinion, are the most suitable (Table 1, Fig. 5-7).

The analysis showed that enterprises have much more strengths and opportunities to improve their foreign economic activity. This analysis shows that the strengths of the enterprise are the versatility of production and new equipment, i.e. the ability to significantly expand the product range using existing technical equipment.

An important strong point for Ltd. "GAMBIT" is that the company sets flexible prices for its products. Prices are negotiable and are negotiated individually with each buyer in sales contracts.

Weaknesses highlight the lack of required financial resources and weak advertising, as activity information is not displayed on television and the Internet. The promotion of the

product is done to a greater extent by attracting private clients.

Table- I: The matrix of SWOT-analysis of activity of Ltd. "GAMBIT"

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ versatility of technical equipment; ▪ new equipment; ▪ quality control; ▪ qualified specialists; ▪ flexible pricing policy. 	<ul style="list-style-type: none"> ▪ lack of necessary financial resources; ▪ weak advertising; ▪ imperfect production process control system
Opportunities	Threats
<ul style="list-style-type: none"> ▪ signing contracts with new contractors; ▪ utilization of available resources for processing bulk orders; ▪ quality products that meet international standards. 	<ul style="list-style-type: none"> ▪ unstable political situation in the country; ▪ increasing competition; ▪ exchange rate fluctuations that cause problems with the delivery of products.

Let's analyse the business portfolio of the company.

The diagrams (Fig. 5 - 6) show the shares of business units in sales and profit.

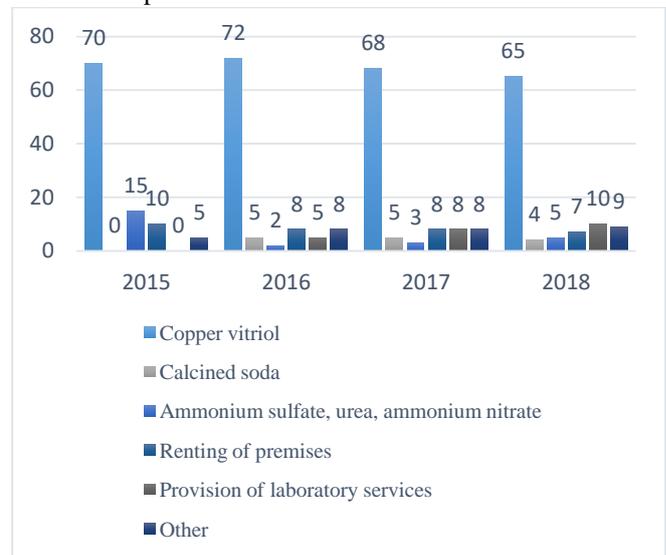


Fig. 5. Share of business units in sales of GAMBIT Ltd.

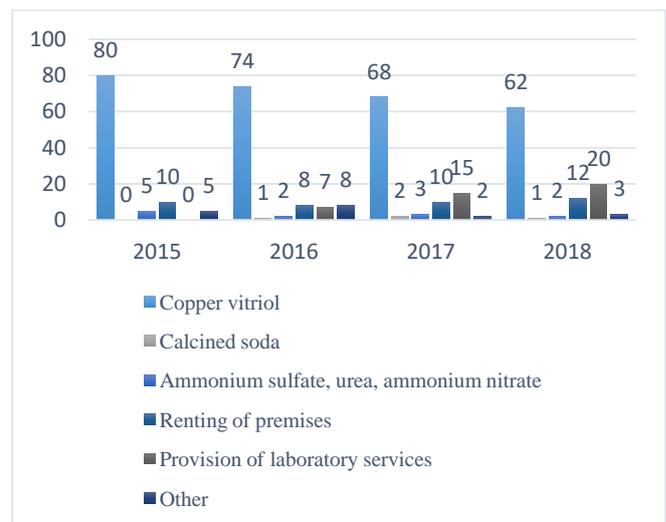


Fig. 6. Share of business units in the profit of GAMBIT Ltd.

The analysis of Fig. 5 and Fig. 6 shows that the leading role in the nomenclature of Ltd. "GAMBIT" is played by the production of copper sulfate, which provides in 2018 - 65% of sales. For other business units, we see that soda ash production began in 2015 and, like the production of ammonium sulphate, urea, ammonium nitrate, does not play a significant role in the activity of the enterprise - the sales market is small, as is the profit from products. For accurate analysis, it is necessary to analyse these products in detail: it may be that the wine is on the marketing department or the

price is incorrect. Another picture with services: Renting premises - gives the company a stable income, albeit small. Providing laboratory services is a very promising area. The share of sales is not so large, but is constantly increasing; at the same time, there is considerable profitability. The company needs to continue to develop this direction, as well as to analyse the market for the provision of other services.

Preliminary analysis showed that the current structure of its business portfolio is irrational and needs improvement (Fig. 7).

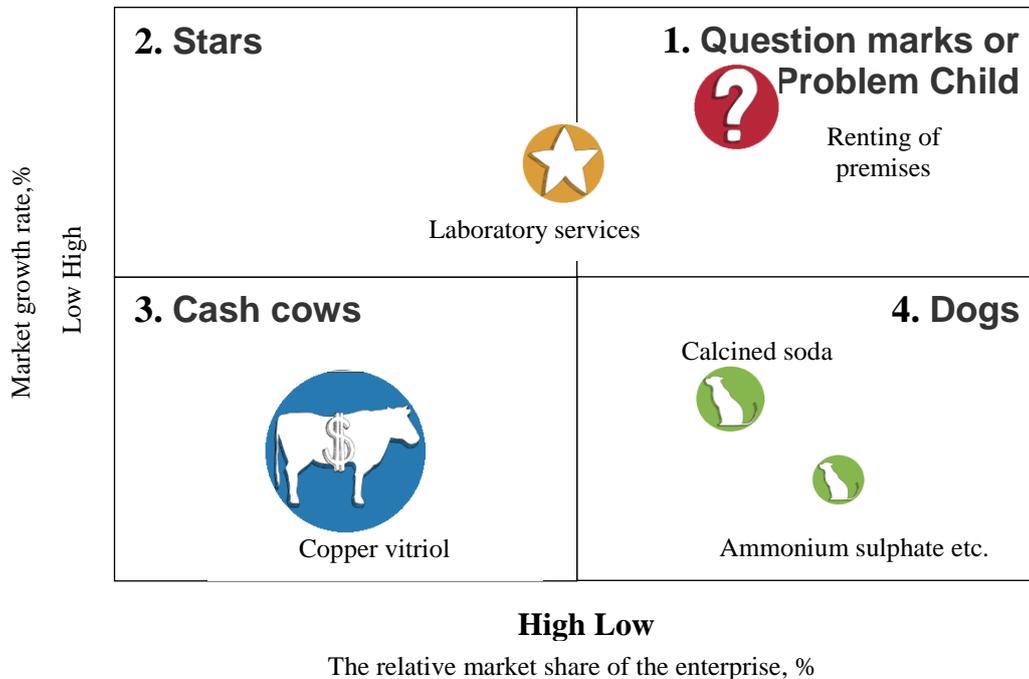


Fig. 7. BCG Matrix of GAMBIT Ltd.

B. Substantiation of the Choice Diversification Strategy for Ensuring the Safety of GAMBIT Ltd. Activity

As the analysis of the prerequisites for diversification of GAMBIT Ltd. activity showed, diversification is possible in such directions (Fig. 8).

As we can see from Fig. 8, 10 possible diversification projects are proposed:

- Production by main activity - will not incur retrofitting or re-equipment of existing means of production:
 - 1) 1.1 Iron sulfate;
 - 2) 1.2 Copper double superphosphate
- Further processing of basic products (copper sulfate). The main production of the enterprise is copper sulfate. Anhydrous copper sulfate is a good moisture absorber and can be used for ethanol absolute, gas drying (including air) and as a moisture indicator. In construction, an aqueous solution of copper sulfate is used to neutralise the effects of leakage, to eliminate rust stains, as well as to remove salts ("efflorescence") from brick, concrete and plastered surfaces, as well as as an antiseptic and fungicidal agent to prevent wood decay.

In agriculture, copper sulfate is used as an antiseptic, fungicide, and copper-sulfur fertilizer. A 1% solution (100 g per 10 l) is used to disinfect tree wounds, which is rubbed into

pre-cleaned damaged areas. Against the blight of tomatoes and potatoes are sprayed plantings with 0.2% solution (20 g per 10 l) at the first signs of the disease, as well as for prevention in the event of disease (for example, in wet weather). A solution of copper sulphate pours soil to disinfect and replenish the lack of sulfur and copper (5 g per 10 l). However, more often copper sulfate is used in the composition of Bordeaux fluid - the main sulfate of $CuSO_4 \cdot 3Cu(OH)_2$ copper against fungal diseases and grape aphids. For these purposes, copper (II) sulfate is commercially available.

It is also used for the manufacture of mineral paints, in medicine, as one of the components of electrolytic copper baths, etc. And as part of spinning solutions in the production of acetate fibre.

In the food industry is registered as a food additive E519. Used as a colour retainer and preservative.

At non-ferrous metal scrap points, the copper sulfate solution is used to detect zinc, manganese and magnesium in aluminium alloys and stainless steel. When these metals are detected, red spots appear. As you can see, the use of copper sulfate offers great opportunities for diversification of activities.

Analyzing the market, we propose to start the company with the most popular tools, which also do not require additional equipment, only in some cases of raw materials:

- 3) Fertilisers;
- 4) Plant protection products (fungicides).

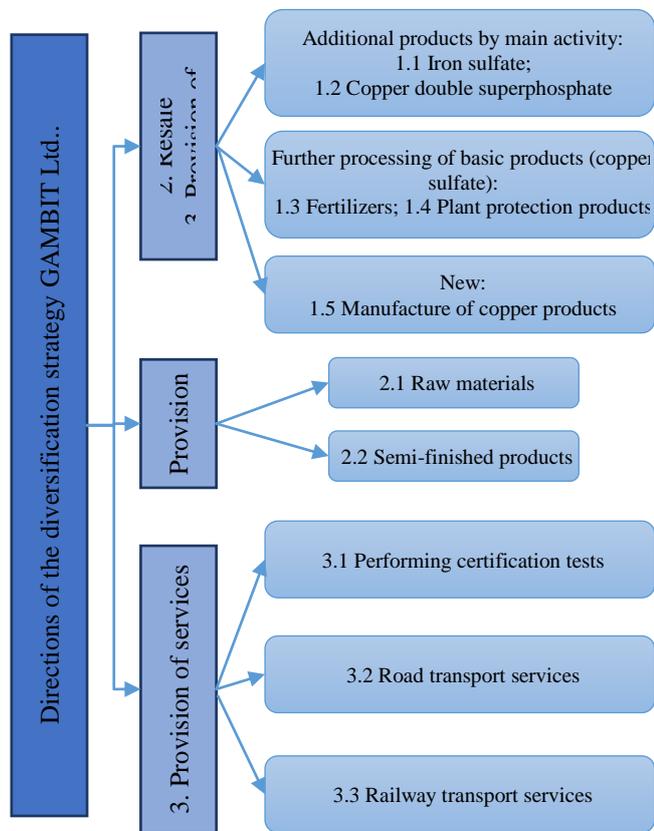


Fig. 8. Possible directions of diversification strategy of GAMBIT Ltd.

- Development of new products - it requires additional investment, but can generate big profits:
- 5) Manufacture of copper products. Copper is a very good natural antiseptic. Manufacturing using copper alloys door handles and other surfaces that are often touched by visitors to medical and other public facilities, including government and other public buildings, can be an effective way to kill bacteria. Humanity is increasingly thinking about its safety, so the production of door handles, handrails, etc. is a promising area.
 - Resale - ordering raw materials or manufacturing semi-finished products above the enterprise's demand will provide the enterprise with additional profit. But it can lead to strong competitors. Possible directions of resale:
 - 6) Raw materials;
 - 7) Semi-finished products.
 - Provision of services. The enterprise has on the balance warehouses and boxes intended for placement of the motor transport economy; motor transport, 9 access tracks, own railway depot and locomotives, modern laboratory. All this can also greatly diversify activities. We offer the following directions:
 - 8) Performance of certification tests;
 - 9) Provision of motor transport services;
 - 10) Provision of railway services.

Of course, the company is not able to immediately diversify its activities in all areas. So, using the method of expert assessments, we will select the most promising areas of a diversification strategy for GAMBIT Ltd. For this we use the technology proposed by I. Bashynska [11], Table 2.

Table- II: Summary matrix of expert estimates

Expert number (m)	Factor number (n)										Si
	1	2	3	4	5	6	7	8	9	10	
1	10	8	4	6	9	5	7	1	3	2	55
2	8	9	5	4	10	6	7	2	3	1	55
3	8	7	9	10	5	6	4	1	3	2	55
4	9	6	4	10	8	5	7	1	2	3	55
5	8	9	4	6	10	5	7	1	3	2	55
6	6	8	4	2	10	9	7	5	1	3	55
7	8	10	5	4	9	6	7	1	3	2	55
8	9	6	7	8	10	5	4	2	1	3	55
9	10	8	5	6	9	7	4	3	2	1	55
10	10	9	4	6	8	7	5	1	3	2	55
11	8	10	4	5	9	6	7	1	3	2	55
12	8	9	4	6	10	5	7	1	2	3	55
13	9	8	5	4	10	6	7	1	2	3	55
14	4	9	7	8	10	5	6	3	2	1	55
15	9	10	2	7	8	5	6	4	3	1	55
Sj	124	126	73	92	135	88	92	28	36	31	x
Sj-Sep	118,5	120,5	67,5	86,5	129,5	82,5	86,5	22,5	30,5	25,5	x
m*n-Sj-Sep	14042	14520	4556	7482	16770	6806	7482	506	930	650	x
m ³ *n-Sj-Sep	26	24	77	58	15	62	58	122	114	119	x
Kj	0,0385	0,0356	0,1141	0,0859	0,0222	0,0919	0,0859	0,1807	0,1689	0,1763	x

For clarity, we depict the results graphically (Fig. 9).

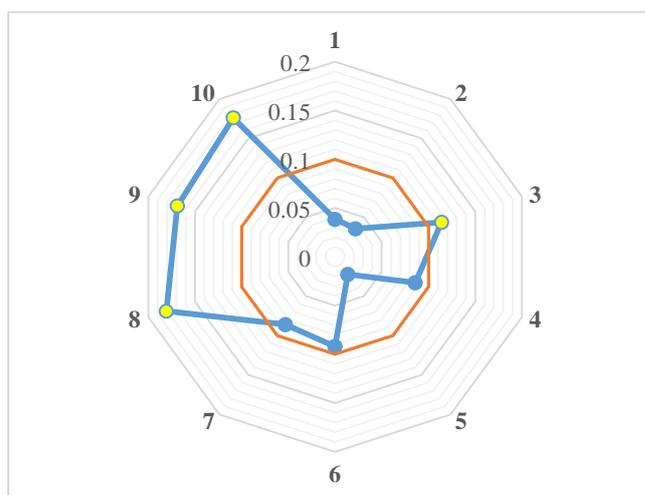


Fig. 9. Selection of the diversification directions of GAMBIT Ltd. to ensure the safety of its activities.

V. CONCLUSION

Thus, when choosing a strategy of diversification of the activity of GAMBIT Ltd, it is necessary to be guided by experts, namely to start with:

- Performance of certification tests;
- Provision of railway services;
- Provision of motor transport services;
- Production of fertilisers.

Our opinion is in line with the opinion of the experts because the provision of services is the most promising direction.

The suggested recommendations can help the company to rationalise and improve the structure of its business portfolio, will allow to expand markets and enter new ones, which is a necessary condition for its further functioning in the market.

The conducted researches allow forming the basis for further refinement of the choice of strategy of diversification of activity of production enterprise, namely development of the applied system of complex indicators (coefficients) for control and evaluation of results of strategy of diversification of activity of enterprise.

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