

## FORMATION OF DIVERSIFYING SUBSTRATEGIES FOR THE ENTERPRISE BUSINESS ACTIVITIES

Oleksandr Hrabovenko<sup>1</sup>, Olena Hrebeshkova<sup>2</sup>, Olena Kyzenko<sup>3\*</sup>


<sup>1, 2, 3</sup> Kyiv National Economic University named after Vadym Hetman,  
Faculty of Economy and Management, Ukraine


**Abstract:** The article presents the author's view on the methodological support for the formation of substrategies for diversifying the behavior of an enterprise with the ability to track (evaluate) the results achieved and develop scenarios for the future. The methodological bases for identifying the level of diversification of an enterprise's activities are formulated on the basis of a three-dimensional indicator that allows taking into account the triune nature of diversification as a diversity of the enterprise's resource portfolio ("inputs" into the enterprise system), formalization of its activities ("processor" of the system), and achieved (expected) results ("outputs") from the system). On the example of a group of Ukrainian enterprises of firefighting services, a developed system of economic metrics for diversifying their activities is presented, which is based on two concepts – a balanced scorecard (BSC) and economic management using the method of interval values. Based on the proposed idea of three-dimensionality of diversification by applying the methodology of morphological analysis, substrategies of diversification of the enterprise's activities are modeled and the results of practical testing of the development of a diversification strategy for the group of enterprises selected for study are presented.


**Keywords:** controlling, diversification, enterprise, management, strategy

**JEL classification:** C53, D22, L25, M10

---

<sup>1</sup> Oleksandr Hrabovenko, PhD (Econ.), Peremohy Ave, 54/1, Kyiv, Ukraine, 03057,  
[oleksandr.hrabovenko@kneu.ua](mailto:oleksandr.hrabovenko@kneu.ua),  <https://orcid.org/0000-0002-9607-704X>

<sup>2</sup> Olena Hrebeshkova, PhD (Econ.), Peremohy Ave, 54/1, Kyiv, Ukraine, 03057,  
[olena.hrebeshkova@kneu.ua](mailto:olena.hrebeshkova@kneu.ua)  <https://orcid.org/0000-0002-6896-3941>

<sup>3</sup> Olena Kyzenko, Doctor of Science (Econ.), Peremohy Ave, 54/1, Kyiv, Ukraine, 03057,  
[olena.kyzenko@kneu.ua](mailto:olena.kyzenko@kneu.ua)  <https://orcid.org/0000-0002-6109-4798>

\* Corresponding author: Olena Kyzenko, [olena.kyzenko@kneu.ua](mailto:olena.kyzenko@kneu.ua)

## Introduction

The rapid flow of technical, technological, and market changes, the reduction of the life cycle of products, the deepening of information capacity, and the intellectualization of all spheres of life, and, as a result, the growth of uncertainty (riskiness) of the business environment cause rethinking of theoretical and practical approaches in the field of management and economic performance. These tasks, enterprises of different sizes, forms of ownership, and business profiles resort to new practices of their long-term development, in particular, based on diversification behavior.

Scientific controversy over the diversification of enterprises is taking place in several directions. In particular, diversification is seen as a strategy to expand business lines and ensure the economic performance of the enterprise (Aaker, 2007; Ansoff, 1957; Gort, 1962; Kotler, 1991; Porter, 2008; Thompson & Strickland, 1996; Bowman, 2003; Katkalo, 2004; Kunz, 1994; Nalyvaiko, 2001; Rumelt, 1974; Dobroszek & Kalinowska, 2014; Kwon et al., 2021). The second aspect is formed by the views on diversification as a financial instrument to reduce business risks (Rumelt, 1982; Markowitz, 1959; Korinko, 2003; Vitlinskyi & Velykoivanenko, 2004; Hafner & Pidun, 2021). It should also be noted that the issue of diversification is revealed in the context of international resource sharing (geographic diversification), development of industries and sectors of the economy, strategic and economic management. Specifically, the latter context forms the field of our study.

A review of recent publications suggests that the issues of economic measurability and predictability of the diversification behavior of the enterprise remain fragmented and need further scientific support. In particular, in their in-depth study, Schommer et al. (2019) note that the relationship between diversification and firm performance in the context of declining diversification over time is ambiguous. This is manifested in the heterogeneity of the effects of related and unrelated diversification. The authors note that managers must consider their (diversification) strategies in the context of their firm's resources and capabilities (Chatterjee & Wernerfelt, 1991) and the external environment in which their firms operate (Li & Greenwood, 2004).

Therefore, the formulation of our research problem is due to the following considerations, which we perceive as the novel approach to this study.

First of all, the enterprise remains the primary and main link in the economy, which leads to the need to search for effective management technologies to ensure the effectiveness of its development and the development of higher-order systems (industry or sector of the economy, regional or national economy).

Secondly, the managerial influence on the activities of the enterprise is constantly balancing between political (power, managerial, relational) and economic (parametric, discrete) decisions, which requires the development of an appropriate methodological basis to ensure the expected development results.

Thirdly, there is a search for instrumental support for management decisions at the enterprise level, which would be based on an information base adequate to business conditions and would correspond to the competence profile of key stakeholders (owners, managers, specialists in accounting, analysis, and forecasting).

Finally, in order to maintain a stable competitive status in the context of rapid transformational processes in the modern economy, an enterprise is forced to implement active (and even proactive) behavior aimed at introducing innovations at the level of products, processes, technologies, and/or strategic moves based on diversification.

The task of determining dynamic factors is solved by the controlling system. The Quality standards for controlling (Quality standards for controlling) developed by the German Institute for Standardization (DIN – Deutsches Institut für Normung – German) note that controllers design and accompany management processes for setting goals, planning, and controlling, etc. share responsibility for achieving goals (DIN 2009, p. 5).

In the context of our study, it should be noted that control allows you to set up strategic management processes to ensure: 1) an organic combination of purely economic tools of managerial impact with tasks of a strategic nature (Kyzenko & Hrebeshkova, 2018); 2) economic evaluation of the key parameters of the enterprise, which are analyzed at each stage of strategic management (Yevdokymova, 2011; Ligonenko, 2013).

## **The goals and objectives of the study**

This article aims to:

- a) reveal the triune nature of the diversification development of an enterprise, which consists in the relationship between resource capacity, transformationality, and performance of an enterprise (working hypothesis 1);
- b) explore the possibilities of economic management in the formation of the diversification behavior of an enterprise based on balancing the economic and non-economic parameters of its activities (working hypothesis 2).

To test the formulated hypotheses, we have chosen an array of fire safety service enterprises, the choice of which is due to the specifics of this industry, which consists of a combination of service and production activities, high individualization of services for the client, and significant intellectual saturation of the created product, as well as low concentration of enterprises in the market leading to high competition.

We try to find answers to such research questions:

- what indicators (metrics) indicate the course of the diversification behavior of the enterprise, its results (intermediate and final) in the context of post-industrial transformations?
- how to track (control) these indicators (metrics) within the enterprise information system without excessive resource load (as a result, additional costs)?
- what criteria to establish for the implementation of the diversification behavior of the company and the adoption of adequate management decisions in a strategic perspective?

## **Methodology**

To model the diversification behavior of an enterprise, methods of analysis and planning of an enterprise's activities were applied, in particular, analytical tools for

strategic management, the concept of shareholder value, portfolio analysis, matrix analysis, and budgeting methodology.

In the context of tracking the diversification behavior of the companies under study based on the initial data obtained in the strategic control system, it is important to fix the diversification indicators in relation to the key performance indicators of the company (KPI), which would indicate the level of achievement of the established development goals of a particular company. Given the uncertainty of the methodological tools for fixing and evaluating the results of diversification, we have taken as a basis the author's model of a three-dimensional indicator of the level of diversification development of an enterprise (Hrabenko & Hrebeshkova, 2020), which allows us to fix the levels and dynamics of resource capacity, transformationality, and effectiveness of the diversification behavior of an enterprise.

Depending on the level of values of the integral indicators of the dynamics of the components of the enterprise activity and based on the methodology of morphological analysis (or the method of multidimensional matrix positioning, multidimensional matrices) (Zwicky, 1989), a set of scenarios has been developed that allow determining current and strategic tasks, options for management decisions to support, continue or terminate diversification as a whole as a strategy for achieving effective development.

For strategizing the diversification behavior of the enterprise, the methodology of the balanced scorecard (BSC) by Norton and Kaplan (1992) was chosen, which allows systematizing exactly those indicators that are most manageable by the company's management and are transparent to other key stakeholders, whose interests must be coordinated and balanced as a result of achieving diversification goals. Furthermore, the use of BSC allows you to combine financial and non-financial indicators of control over the activities of an enterprise and, most importantly, thanks to the "goal mapping" methodology, it allows you to form exactly the strategy that will help achieve the diversification development.

To form the initial information base necessary for monitoring the diversification processes in the enterprise, it is proposed to rely on the data of the controlling system, which allows you to integrate almost any company management tools and provides support for the long-term development of the enterprise based on the system integration of planning, control, and information support functions. This approach to identifying control is relatively new; it distinguishes the strategic orientation of control between its areas of application and, as the researchers note, is actually a highly developed system for managing the achievement of organizational goals (Kyzenko & Hrebeshkova, 2018; Kyzenko, 2019).

## Results

The complexity of determining the effectiveness of the diversification behavior of an enterprise in retrospective and prospective projections lies in the problem of forming an appropriate metric system. The parameters of these metrics should give a comprehensive answer to the question: Does the accepted diversification behavior of the enterprise contribute to the achievement of certain criteria for its effective

development? This property of these metrics distinguishes them from other measurements of the effectiveness of the strategic process, which are based on the comparison of target and achieved performance indicators, which does not allow tracking the progress of the strategy in terms of its impact on the key parameters of the enterprise, and are reduced to an assessment of specific results, the diversity of which sent specific solutions.

Therefore, ensuring the adoption and support of decisions based on the economic assessment of the strategic process of diversification is a methodological tool for economic management, which is manifested in the collection, ordering, and processing of economic information and its reflection in a certain metric system. Its formation is based on the measurability of the strategic process. The diversification strategy is characterized by a certain set of economic and non-economic dimensions at each of its stages, from setting development goals (goal setting), choosing ways to achieve them, to direct implementation. It should be noted right away that there cannot be a universal system of economic metrics of diversification behavior, and therefore the question of building such a system is situational for each enterprise due to the unique features of each enterprise and its environment. The metrics system should be informative, simple, and flexible and provide objective and complete information to management regarding the actual performance of the enterprise. Therefore, it should reflect the diversity of all aspects of the economic activity of a business entity (resources, processes, results) during and as a result of the diversification of the enterprise. The key components of the diversification activity of an enterprise are manifested through the triune nature of the diversification of an enterprise as a system (“input” - “process” - “output”), reflected in the characteristics of resource saturation (at the “input”), the transformational nature of the enterprise system (in the “process”) and performance of its activities (at the “output”).

To assess the effectiveness of business processes, its metrics can be considered at least in three periodic values – target (planned), current (accounting), and estimated (analytical, based on the analysis of deviations). The level of reach of the general goal of the enterprise's activity can be evidenced by complex dynamic indicators of effective development, reflecting the variability of the enterprise's activity links, resources, processes and results, through integral indicators of resource capacity, transformationality, and effectiveness.

Integral indicators of enterprise development in three groups of enterprise activity metrics make it possible to form a three-dimensional indicator of the level of effective enterprise development. The integral indicator for each metric group includes all indicators (indices) of each corresponding group of metrics, reflecting their dynamic value. Thus, the indicator of the level of diversification development of the enterprise will be defined as the integral value of the three integrated dynamic indicators of diversification.

$$D = \{I_R; I_T; I_E\} \quad (1)$$

$D$  – Three-dimensional indicator of the level of diversification development of the enterprise;  $I_R$  – Integral dynamic indicator of resource capacity;  $I_T$  – Integral

dynamic indicator of transformationality;  $I_E$  – Integral dynamic indicator of effectiveness.

The components of the effectiveness of diversification development (corresponding integral indicators) are proposed to be determined in this way:

- Integral dynamic indicator of resource capacity

$$I_R = \sqrt[n]{R_1 \cdot R_2 \cdot \dots \cdot R_n} \quad (2)$$

$R_n$  – dynamic indicators of resource capacity in the analyzed periods during the period of implementation of the diversification strategy ( $n$ );

- Integral dynamic indicator of transformationality

$$I_T = \sqrt[n]{T_1 \cdot T_2 \cdot \dots \cdot T_n} \quad (3)$$

$T_n$  – dynamic indicators of transformationality in the analyzed periods during the period of implementation of the diversification strategy ( $n$ );

- Integral dynamic indicator of effectiveness

$$I_E = \sqrt[n]{E_1 \cdot E_2 \cdot \dots \cdot E_n} \quad (4)$$

$E_n$  – dynamic indicators of effectiveness in the analyzed periods during the period of implementation of the diversification strategy ( $n$ ).

The dynamic characteristics of resource capacity, transformationality, and effectiveness are calculated by the ratio of the achieved value of the  $i$ -th indicator to the base one. For a more objective assessment, the performance indicators of the company should accurately reflect the expected changes, and their number should be within ten indicators in each group. Obviously, if the value of each integral indicator is greater than 1 (an increase is observed), this indicates a certain positive level, that is, that the company achieves effective development.

Depending on the level of values of the integral indicators of the dynamics of the components of the enterprise's activity ( $I_R$ ;  $I_T$ ;  $I_E$ ), the enterprise can build a certain set of scenarios (Table 1) that allow determining current and strategic tasks, options for management decisions to support, continue or stop diversification in general as a strategy for achieving effective development. An approach to the construction of such scenarios can be provided using the method of morphological analysis (also known as the method of multidimensional matrix positioning, multidimensional matrices), which was studied and described by the Swiss astrophysicist Zwicky (1989). The reference value, against which the measure of high, medium or low level of integral indicators is determined, is proposed to be determined by the method of interval values: To determine the level (high, medium, or low) of the value of each of the three integral indicators, numerical intervals are used, based on all values of dynamic indicators that group of metrics of the company's activity, which is described by a specific integral indicator (interval distribution series).

**Table 1. Combinatorics of integrated indicators of diversification of enterprise activity according to possible estimated levels of their values**

Possible levels of the integrated indicator of resource capacity (R)	Indicator combinations of resource capacity (R) and transformational (T)	Combinations of indicators of resource capacity (R), transformational (T) and effectiveness (E)
R (h)	R (h) T (h)	R (h) T (h) E (h)
		R (h) T (h) E (m)
		R (h) T (h) E (l)
	R (h) T (m)	R (h) T (m) E (h)
		R (h) T (m) E (m)
		R(h) T (m) E (l)
	R (h) T (l)	R (h) T (l) E (h)
		R (h) T (l) E (m)
		R (h) T (l) E (l)
R (m)	R (m) T (h)	R (m) T (h) E (h)
		R (m) T (h) E (m)
		R (m) T (h) E (l)
	R (m) T (m)	R (m) T (m) E (h)
		R (m) T (m) E (m)
		R (m) T (m) E (l)
	R (m) T (l)	R (m) T (l) E (h)
		R (m) T (l) E (m)
		R (m) T (l) E (l)
R (l)	R (l) T (h)	R (l) T (h) E (h)
		R (l) T (h) E (m)
		R (l) T (h) E (l)
	R (l) T (m)	R (l) T (m) E (h)
		R (l) T (m) E (m)
		R (l) T (m) E (l)
	R (l) T (l)	R (l) T (l) E (h)
		R (l) T (l) E (m)
		R (l) T (l) E (l)

Remark: (h) «high», (m) «medium», (l) «low» indicators values.

Source: Developed by (Hrabovenko & Hrebeshkova, 2020)

The method to determine the interval variation series involves the formation of a group table that has two columns: the first indicates the interval ‘from and to’ (options), and the second indicates the number of units included in the interval (frequency). The width of the interval (step) is determined by the formula:

$$h = \frac{X_{max} - X_{min}}{k} \quad (5)$$

$h$  – the interval width (step),  $X_{min}$  and  $X_{max}$  – the minimum and maximum value of the selection,  $k$  – the number of options selection values.

Under given conditions, the number of intervals is equal to the number of qualitative levels of assessment (high, medium, low):  $k = 3$ .  $X_{min}$  and  $X_{max}$  we choose from the calculated dynamic indicators among the sample (metrics group indicators). Then the values of the intervals and their values will look like (Table 2):

**Table 2. Value distribution of integrated indicators**

The level of the integrated indicator	The value of integrated indicator
Low (l)	$X_{min} \leq i < X_{min} + h$
Medium (m)	$X_{min} + h \leq i < X_{min} + 2h$
High (h)	$X_{min} + 2h \leq i \leq X_{min} + 3h$

Source: Formalized by the author (O. Hrabovenko)

According to these criteria, the values of the integral indicators are translated into a qualitative assessment of the levels: high (h), medium (m) and low (l). From the values obtained, it is possible to give a comprehensive description of diversification processes and show their impact on the key parameters of the enterprise's economy.

The evaluation of the presented approach to modeling the diversification behavior of an enterprise was carried out on materials from enterprises in the field of fire protection services in the Kiev region (Ukraine). The choice of this group of companies is due to the following specific characteristics:

- this business is not characterized by the presence of regular customers. Fire protection services have different terminal characteristics, which depend on the duration of operation of the respective fire protection systems (from 3 to 25 years). Therefore, the pool of regular customers of such companies is formed, as a rule, from among the general contractors of construction, reconstruction, or major repairs (for example, local, district councils (unified territorial communities), capital construction departments, management bodies of educational institutions, healthcare and other social infrastructure facilities;
- fire protection services are subject to mandatory standardization in accordance with ISO 9001 and 45001 according to the requirements of the tender documentation for public procurement of fire protection products in every second tender;
- the key sources of competitive advantages for service companies providing fire protection services are of a dynamic nature since they depend on their ability to transform technological solutions for the client in the event of switching from



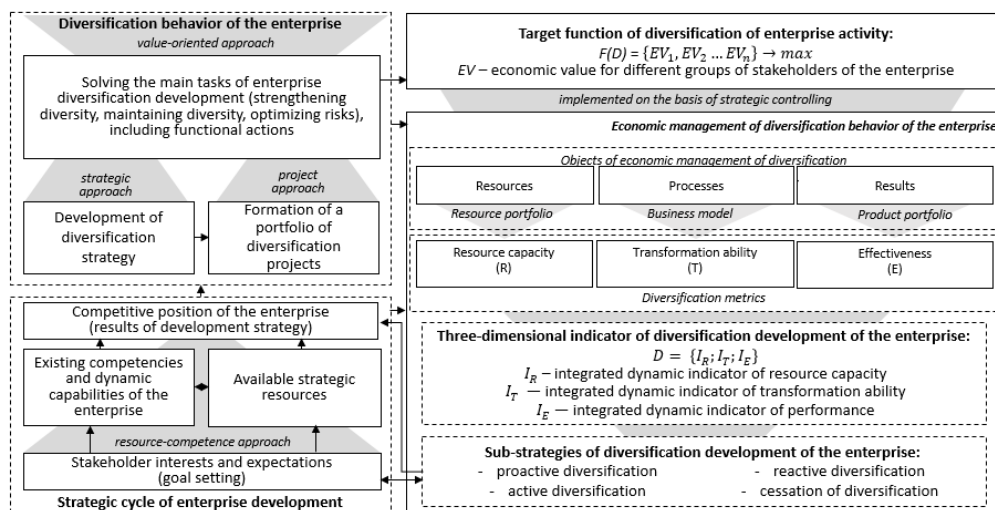
a domestic manufacturer of fire protection systems to foreign analogues, which increases the requirements for the qualifications of the contractor's personnel, increasing its costs, however, it reduces the order fulfilment time, since the delivery of products from a Ukrainian manufacturer must be expected for more than 30 days from the date of order, while a foreign analogue is shipped in 3-5 days;

- the priority in the selected industry is the mechanization of individual works and the automation of the commissioning of fire protection systems, respectively, the greater the share of the cost of commissioning, the less manual labor is used and the higher the level of intellectualization of these services;
- fire safety enterprises are interested in employees of different qualifications, which creates additional sources of competitive advantages, expanding the profile of the company's specialization. Therefore, the more employees with a competency profile from related professional fields, the greater the flexibility of the staff, the ability to perform work on the creation of other products at the enterprise, which is a prerequisite for diversification;
- there is a high cost of materials and components of fire protection systems, which usually make up about 70% of the traditional “fire protection” calculation;
- the problem of the rapid closing of the contract is explained in particular by a) the peculiarities of financing firefighting work at the facilities of state and municipal forms of ownership; b) features of planning work at private facilities, often delaying the implementation of fire protection measures until the last moment. Consequently, the ability to close the contract directly affects the success (competitiveness) of the contractor.

The most successful methodological basis for the formation of economic diversification metrics is the Balanced Scorecard (BSC) (Kaplan & Norton, 1992). The choice of BSC as a methodology is not accidental, because its main advantages are: a combination of financial and non-financial indicators, purposefulness in various management projections, and a value-oriented approach to setting goals, as well as the relationship between strategic and tactical levels of management. In addition, the BSC methodology organically combines the tasks of strategic management and strategic control (economic management), which are complementary in the context of the diversification of the enterprise, which provides a comprehensive solution to the issues of achieving the strategic goals of diversification and information support for this process.

In the context of our study, the basis of the BSC methodology is the fixation of diversification performance indicators (KPI) in relation to the key performance indicators of the company, which would indicate the level of achievement of the set development goals of a particular company during the strategic diversification process as a whole. BSC allows you to select exactly those indicators that are most manageable by the company's management and are transparent to other key stakeholders, whose interests must be coordinated and balanced as a result of achieving diversification goals. In addition, the use of BSC allows you to combine financial and non-financial indicators of the control of the enterprise.

Taking into account the general assumptions about the diversification of behavior, the specific features of its economic management, and the proposed general procedure for the formation of economic metrics (Figure 1), as well as based on the analysis of the activities of the group of enterprises selected for the study, we propose a metric system for diversifying the activities of enterprises in the field of fire safety services (Table 3).



**Figure 1. Conceptual model of formation of sub-strategies of diversification behavior of the enterprise**

Source: Compiled by the authors based on (Hrabovenko & Hrebeshkova, 2020)

**Table 3. System of economic metrics for diversification of enterprise activities in the field of fire protection services**

BSC perspectives	Economic metrics of enterprise activity diversification		
	Resource capacity	Transformationality	Effectiveness
Finance	<ul style="list-style-type: none"> <li>- Share of costs for innovation activities</li> <li>- Share of unconcluded contracts (refusals) due to expensive materials and components</li> <li>- Financial autonomy ratio</li> <li>- Current liquidity ratio</li> <li>- Material intensity of services</li> <li>- Innovative cost-performance ratio</li> <li>- The ratio of the cost of developing a business area to the total value of assets</li> </ul>	<ul style="list-style-type: none"> <li>- The share of attracted capital attributable to innovative activities</li> <li>- Equity transformation ratio</li> <li>- Fixed asset renewal ratio</li> <li>- Retirement rate of fixed assets</li> <li>- The volume of bonuses for innovative activity</li> <li>- Share of introduced capital investments</li> <li>- Amount of revenue by technology from traditional products transferred to new products</li> <li>- Resource return ratio</li> </ul>	<ul style="list-style-type: none"> <li>- Profitability of operating expenses</li> <li>- Net ROI</li> <li>- Proportion of set-up costs to total direct cost</li> <li>- Operating income</li> <li>- Average contract profitability</li> <li>- Expenses for 21 sales proceeds</li> <li>- Enterprise value</li> <li>- Return on investment</li> <li>- Retained earnings</li> </ul>

BSC perspectives	Economic metrics of enterprise activity diversification		
	Resource capacity	Transformationality	Effectiveness
Market	<ul style="list-style-type: none"> <li>- Percentage of loyal customers among traditional products</li> <li>- Share of products voluntarily certified according to ISO 9001</li> <li>- Share of products voluntarily certified according to ISO 45001</li> <li>- Coefficient of monopoly dependence on suppliers</li> <li>- Product patentability ratio</li> <li>- Voluntary product certification ratio</li> </ul>	<ul style="list-style-type: none"> <li>- Share of products that do not fall into the “losers” in the total number of products</li> <li>- Share of products with the final stage of the life cycle of products that do not fall into the “losers” in the total number of products.</li> <li>- Share of products with the final stage of the life cycle</li> </ul>	<ul style="list-style-type: none"> <li>- Average contract lead time</li> <li>- Defectiveness rate of products</li> <li>- Defect coverage ratio</li> <li>- Level of comprehensive competitiveness</li> <li>- Market position</li> <li>- The level of influence according to the concept of 5 competitive forces by M. Porter</li> <li>- Market share</li> </ul>
Processes	<ul style="list-style-type: none"> <li>- Cost-effectiveness ratio for additional education</li> <li>- Minimize costs, maximize intelligent capacity</li> <li>- Asset Intelligence Ratio</li> <li>- Coefficient of automation/mechanization of technological processes</li> <li>- Ratio of provision of business processes with own technologies (including inventions)</li> <li>- Share of insourced support and maintenance business processes</li> </ul>	<ul style="list-style-type: none"> <li>- Share of diversification projects implemented in the business processes of the enterprise</li> <li>- Product activity ratio</li> <li>- Share of automated labor</li> <li>- Share of similar business processes with business processes from other areas.</li> <li>- Balanced workload of production and technical resources ratio</li> <li>- Level of automation operations</li> <li>- Resource replacement ratio (raw materials, materials, components)</li> <li>- Reduction coefficient of material resources (raw materials, materials, components)</li> <li>- Coefficient of remoteness of business processes</li> <li>- The “office dependency” ratio</li> </ul>	<ul style="list-style-type: none"> <li>- Control of business processes</li> <li>- Technological solutions efficiency ratio</li> <li>- Speed of business process execution</li> <li>- Operating cycle speed</li> <li>- Reduced bureaucracy</li> </ul>
Development	<ul style="list-style-type: none"> <li>- Personnel agility factor</li> <li>- Intelligence Ratio of labor resource</li> <li>- Employee innovation ratio</li> <li>- Educational activity ratio</li> <li>- Creativity Ratio</li> <li>- Level of knowledge accumulation</li> <li>- Inventive activity ratio</li> </ul>	<ul style="list-style-type: none"> <li>- Volume of social payments (motivation, incentives, compensation) per employee</li> <li>- Share of commercialized service and support business processes in the revenue structure</li> </ul>	<ul style="list-style-type: none"> <li>- Commissioning costs per engineer and technical worker</li> <li>- Level of additional competencies</li> <li>- Share of employees involved in the formation of additional competencies</li> </ul>

Source: Compiled by the author (O. Hrabovenko)

The components of the metrics may differ depending on the development projects implemented as part of diversification. The presented metric system will make it possible to conduct an economic assessment of the effectiveness of economic levers of influence and the reach of the general diversification of the enterprise's activities.

**Table 4. Sub-strategies typology of the enterprise diversification behavior and their characteristics**

Sub-strategies of the enterprise diversification behavior	Indicator's combinatorics of resource capacity (R), transformationality (T) and effectiveness (E)	General characteristics of the diversification behavior sub-strategy
Proactive diversification	R (h) T (h) E (h)	Recommended for enterprises with strong diversification potential. The attractiveness of diversification is high. The probability of successful diversification is high. Diversification risk is low.
	R (h) T (h) E (m)	
	R (h) T (m) E (h)	
	R (h) T (m) E (m)	
	R (m) T (h) E (h)	
	R (m) T (h) E (m)	
	R (m) T (m) E (h)	
	R (m) T (m) E (m)	
Active diversification	R (h) T (h) E (l)	Recommended for enterprises with a satisfactory diversification potential. The attractiveness of diversification is high. The probability of successful diversification is low. The diversification risk is medium.
	R (h) T (m) E (l)	
	R (m) T (h) E (l)	
	R (m) T (m) E (l)	
	R (l) T (h) E (h)	
	R (l) T (h) E (m)	
	R (l) T (m) E (h)	
	R (l) T (m) E (m)	
	R (h) T (l) E (h)	
	R (m) T (l) E (h)	
	R (h) T (l) E (m)	
	R (m) T (l) E (m)	
Reactive diversification	R (h) T (l) E (l)	Recommended for enterprises with low diversification potential. The attractiveness of diversification is low. The probability of successful diversification is low. The risk is high.
	R (m) T (l) E (l)	
	R (l) T (h) E (l)	
	R (l) T (m) E (l)	
	R (l) T (l) E (h)	
	R (l) T (l) E (m)	
Stop diversification	R (l) T (l) E (l)	Recommended for enterprises that lack (exhaustible) potential for diversification of activities. The attractiveness of diversification is low. Probability of successful diversification – none. The risk is very high.

Remark: (h) «high», (m) «medium», (l) «low».

Source: formed by the author (O. Hrebeshkova)

Depending on the combination of verbal characteristics of the levels of integral indicators of diversification and based on the positioning of the enterprise according to the corresponding value of the three-dimensional indicator of its diversification development, it is possible to propose the allocation of four universal types of sub-strategies: proactive diversification, active diversification and reactive (passive) diversification (Table 4).

The substrategy of continuation (proactive diversification) is recommended at a high or medium level of resource capacity (R), transformation (T), and performance (E) and aims to further enhance the diversification activity of the enterprise.

The substrategy of support (active diversification) is recommended provided that one of the components of the three-dimensional indicator of the level of diversification development of the enterprise – resource capacity (R), transformation (T) and performance (E) – has a low level, while the rest are characterized by a high or medium level. Such a substrategy is aimed at the most complete realization of the potential of all components of the diversification potential.

The substrategy of reactive diversification is recommended for enterprises that have predominantly (two out of three) low levels of components of the three-dimensional indicator of diversification development and whose diversification is associated with a high level of risk.

The substrategy for stopping diversification is recommended for those enterprises that simultaneously have a low level of all three components of the indicator of diversification development. Such enterprises either have not yet formed the necessary potential for diversification or have already exhausted it. Approbation of this assessment is presented at the level of 23 companies of the selected industry. The summary results of the calculations performed are summarized in Table 5.

**Table 5. Estimated values of enterprise diversification behavior integral indicators in the field of fire protection services**

Enterprises	Integral dynamic indicator of resource capacity ( $I_R$ )	Integral dynamic indicator of transformationality ( $I_T$ )	Integral dynamic indicator of effectiveness ( $I_E$ )	Combinatorics of diversification development level indicator's ( $D$ )	Recommended substrategy of diversification behavior
	meaning (level)	meaning (level)	meaning (level)	level	
1	1,139 (H)	1,222 (H)	1,081 (H)	H H H	proactive
2	1,239 (M)	1,286 (M)	1,216 (M)	M M M	proactive
3	1,012 (L)	1,058 (M)	1,032 (L)	L M L	reactive
4	1,147 (M)	1,168 (L)	1,087 (L)	M L L	reactive
5	1,091 (H)	1,011 (H)	1,014 (H)	H H H	proactive
6	1,212 (L)	1,007 (M)	1,164 (M)	L M M	active
7	1,327 (H)	1,214 (L)	1,179 (M)	H L M	active

8	1,291 (M)	1,178 (H)	1,072 (H)	M H H	proactive
9	1,174 (H)	1,259 (M)	1,193 (H)	H M H	proactive
10	1,254 (H)	1,186 (M)	1,114 (L)	H M L	active
11	1,007 (M)	1,032 (M)	1,008 (H)	M M H	proactive
12	1,102 (M)	1,178 (M)	1,092 (M)	M M M	proactive
13	1,141 (M)	1,100 (M)	1,092 (H)	M M H	proactive
14	1,097 (M)	1,041 (L)	1,051 (H)	M L H	active
15	1,067 (M)	1,083 (H)	1,099 (M)	M H M	proactive
16	1,112 (L)	1,123 (M)	1,018 (H)	L M H	active
17	1,044 (H)	1,071 (H)	1,041 (H)	H H H	proactive
18	1,101 (L)	1,019 (L)	1,020 (M)	L L M	reactive
19	1,006 (H)	1,010 (H)	1,007 (M)	H H M	proactive
20	1,143 (L)	1,084 (M)	1,105 (H)	L M H	active
21	1,201 (M)	1,154 (H)	1,099 (H)	M H H	proactive
22	1,007 (M)	1,071 (L)	1,021 (M)	M L M	active
23	1,161 (H)	1,132 (L)	1,178 (H)	H L H	active

Remark: (H) high level, (M) medium level, (L) low level.

Source: calculated by the author (O. Hrabovenco)

It is easy to see that the average level of diversification development for the enterprises in the sample is quite high: the combinatorics of the indicators of the achieved level of diversification development corresponds to the substrategy of proactive diversification for 12 enterprises studied (52% of the sample), the substrategy of active diversification – 8 enterprises studied (35% diversification – 3 enterprises (13%). The obtained results suggest that the vast majority of fire protection service enterprises (87% of the sample) have the prerequisites for (over)active diversification of their activities, which should ensure the strengthening of their competitive status.

The mechanism for the formation and tracking of the proposed metrics of the diversification behavior of an enterprise is only a fragment of the economic management system for the diversification of an enterprise's activities based on strategic controlling, therefore, for a more correct understanding of the stages of diversification and its tracking, it is necessary to develop a model of its economic management. The main stages of the management cycle are connected by information flows corresponding to the support of management decisions and their adoption through the collection, analysis and evaluation of economic information, which is provided by means of strategic controlling, which leads to an economic assessment of the diversification processes of the strategic and tactical (project) levels, as well as parameterization of goal setting in financial and non-financial economic indicators.

## Conclusions

The generalization of the above theoretical foundations for identifying, tracking, evaluating, and predicting the diversification behavior of an enterprise allows us to conclude that the conceptual idea of the economic management of the diversification behavior of an enterprise based on strategic controlling is logically based on the following provisions:

- 1) ensuring the effectiveness of the diversification behavior of an enterprise requires the use of an integrated management approach based on an economic way of thinking and using an appropriate economic management paradigm;
- 2) the combination of methodologies of economic management and strategic controlling, which are complementary in nature, allows you to create an effective management technology that provides a solution to the triune task of diversifying the activities of the enterprise and satisfying the manageability of the complex process of diversity of resources, processor, and results of the enterprise;
- 3) taking into account the fact that diversification is implemented at the strategic and tactical levels of management, the task arises of combining the principles of value-oriented management, methods and techniques of strategic and project management.

Based on the methodological foundations of the concept of economic management of the diversification behavior of an enterprise based on strategic controlling, we consider universal requirements for the economic metric system of diversification of an enterprise's activities, among which are: reflection of the factors of effective diversification development of an enterprise; description of noneconomic parameters of diversification in economic (financial) indicators; reflection of the resource capacity and effectiveness of the diversification of the enterprise, as well as the ability to transform the enterprise as a system; inclusion of characteristics of a strategic nature; focus on the objects of economic management by diversifying the activities of the enterprise.

The set of economic metrics proposed to track the course of the diversification behavior of an enterprise includes three groups of them, identified on the basis of the success criteria for the diversity of objects of economic management, in particular: processes and performance results; 2) transformational metrics, consisting of meters that reflect the ability of resources, processes, and results of the enterprise to transform into new forms and combine them with the emergence of a new quality; 3) a performance metric based on indicators that characterize the consequences of diversification for performance results ("outputs" from the enterprise system) compared to the efforts (costs) expended to achieve them. Identification of economic metrics of diversification of the enterprise's activity allows the operationalization of the diversification strategy at the enterprise, which increases the level of controllability of the diversification behavior of the enterprise.

To understand possible scenarios for the development of events as a result of the implementation of diversification behavior by enterprises and in order to provide methodological support for the implementation of economic management of the

enterprise's diversification activities based on strategic controlling, a three-dimensional indicator of diversification development (D) is proposed, determined on the basis of integral indicators of resource capacity (R), transformationality (T) and effectiveness (E). The calculation of this indicator based on the method of interval values makes it possible to identify all possible configurations of the three components of the indicator of the diversification development of an enterprise, on the basis of which four sub-strategies of the diversification behavior of enterprises are determined and characterized.

The practical approbation of scenario forecasting of the diversification development of the studied enterprises in the field of fire protection services testified to the effectiveness of this methodological approach, in particular: b) allow to clarify the strategic navigation of the enterprise on the basis of objective economic parameters of its activities; c) allow to make management decisions on the advisability of continuing diversification development and focus on its critical areas.

The next study deserves the questions of checking the predictive power of scenario modelling of the diversification behavior of an enterprise based on the proposed sub-strategies in the conditions of various business areas, scales of activity, and business models of enterprises. We consider it expedient to replenish the relevant information base and tools for its analytical processing in order to scale the conclusions drawn and further develop methodological tools for the development and adoption of strategic management decisions for the conditions of the postindustrial economy.

The limitation of this study can be seen in a very specific type of activity and a limited scope of research. However, the advantage of this research is the possibility of extending this methodological approach to other forms and scopes of economic activity.

## References

- Aaker, D. (2007). *Business Strategy. From Market Research to Win-Win Solutions*. Jeksmo (in Russian).
- Ansoff, I. (1957). Strategies for Diversification. *Harvard Business Review*, 35(5), 113-124.
- Bowman, C. (2003). *Strategy in Practice*. Piter (in Russian).
- Chatterjee, S., & Wernerfelt, B. (1991). The Link between Resources and Type of Diversification: Theory and Evidence. *Strategic Management Journal*, 12, 33-48.
- DIN SPEC 1086: 2009-04. Quality Standards for Controlling. (2009). [https://www.igc-controlling.org/fileadmin/downloads/SPEC1086\\_Druckmanuskript\\_ohne-Titelblatt.pdf](https://www.igc-controlling.org/fileadmin/downloads/SPEC1086_Druckmanuskript_ohne-Titelblatt.pdf)
- Dobroszek, J., & Kalinowska, K. (2014). System rachunku kosztów w działalności logistycznej i zarządzaniu łańcuchem dostaw. In: J. Chluska, S. Kowalska (red.), *Zarządzanie kosztami przedsiębiorstwa w warunkach ryzyka. Aspekty praktyczne* (85-94). Sekcja Wydawnictw Wydziału Zarządzania Politechniki Częstochowskiej.
- Gort, M. (1962). *Diversification and Integration in American Industry*. Princeton University Press.
- Hafner, C., & Pidun, U. (2021). Getting Family Firm Diversification Right: A Configurational Perspective on Product and International Diversification Strategies. *Journal of Family Business Strategy*, In Press. DOI: 10.1016/j.jfbs.2021.100456
- Hrabovenko, O. (2019). A Concept of Economic Management of the Diversification of Enterprise Activities Based on Strategic Controlling. *Strategy of Economic Development of Ukraine*, 45, 55-66 (in Ukrainian). DOI: 10.33111/sedu.2019.45.055.066



- Hrabovenko, O., & Hrebeshkova, O. (2020). Conceptual Model of Economic Management by Diversification of the Enterprise's Activities. *European Journal of Economic and Management*, 6(3), 74-81 (in Ukrainian). DOI: 0.46340/eujem.2020.6.3.10
- Kaplan, R. S. & Norton, D. P. (1992). The Balanced Scorecard – Measures Then Drive Performance. *Harvard Business Review*, 1(70), 71-79.
- Katkalo, V. S. (2004). Interaction of the Theory of the Firm and the Theory of Strategic Management: On the Way to the “Strategic Theory of the Firm”. *Economic Science of Modern Russia*, 4, 83-94 (in Russian).
- Korinko, M. D. (2003). Risks in Diversification. *Actual Problems of the Economy*, 7, 69-74 (in Ukrainian).
- Kunz, R. M. (1994). Diversification Strategy and Goals of the Enterprise. *Problems of Theory and Practice of Management*, 1, 5-8 (in Russian).
- Kyzenko, O., & Hrebeshkova, O. (2018). Transformation of the Strategic Controlling System under the Influence of the Digital Economy: The Experience of Ukrainian Enterprises. *Zeszyty Naukowe Politechniki Częstochowskiej. Zarządzanie*, 30, 155-162. DOI: 10.17512/znpcz.2018.2.13
- Kyzenko, O. O. (2019). Development of the Concept of Controlling Activity at the Enterprise: from Analytical Accounting to Strategic Transformation. *Economy and State*, 2, 77-81 (in Ukrainian). DOI: 10.32702/2306-6806.2019.2.77
- Kyzenko, O., Hrebeshkova, O., & Grebeshkov, O. (2017). Business Intelligence in the Economic Management of Organization. *Forum Scientiae Oeconomia*, 5(2), 15-27. DOI: 10.23762/fso\_vol5no2\_17\_2
- Kotler, P. (1991). *Marketing Essentials*. Progress (in Russian).
- Kwon, T. H., Bae, S. C., & Park, S. H. (2021). The Interactions of Corporate Sales Growth and Diversification Strategy: Cross-Country Evidence. *Journal of International Financial Markets, Institutions and Money*, 75, 101422. DOI: 10.1016/j.intfin.2021.101422
- Li, S. X., & Greenwood, R. (2004). The Effect of Within-Industry Diversification on Firm Performance: Synergy Creation, Multi-Market Contact and Market Structuration. *Strategic Management Journal*, 25, 1131-1153.
- Lihonenko, L. (2013). Conceptual Principles of Economic Management of the Enterprise. *Bulletin of the Kyiv National University of Trade and Economics*, 3 (in Ukrainian).
- Markowitz, H. M. (1959). *Portfolio Selection: Efficient Diversification of Investments*. John Wiley & Sons (reprinted by Yale University Press, 1970, 2nd ed. Basil Blackwell, 1991).
- Nalyvaiko, A. (2001). *Theory of Enterprise Strategy. Current State and Directions of Development*. KNEU (in Ukrainian).
- Porter, M. E. (2008). The Five Competitive Forces that Shape Strategy. *Harvard Business Review*, 86(1), 78-93.
- Rumelt, R. (1974). *Strategy, Structure, and Economic Performance*. Harvard Business School Press.
- Rumelt, R. P. (1982). Diversification Strategy and Profitability. *Strategic Management Journal*, 3, 359-369.
- Schommer, M., Richter, A., & Karna, A. (2019). Does the Diversification – Firm Performance Relationship Change Over Time? A Meta-Analytical Review. *Management Studies*, 56(1), Special Issue: Meta Analyses on Contemporary Phenomena, 270-298. DOI: 10.1111/joms.12393
- Thompson, A. A., & Strickland III A. J. (1996). *Strategic Management. Concept & Cases*. McGraw-Hill Companies, 9th edition.
- Vitlinsky, V. V., & Velykoivanenko, H. I. (2004). *Riskology in Economics and Entrepreneurship*. KNEU (in Ukrainian).
- Yevdokymova, N. M. (ed.) (2011). *Economic Management of the Enterprise*. KNEU (in Ukrainian).
- Zwicky, F. (1989). *Morphologische Forschung. Wesen und Wandel materieller und geistiger struktureller Zusammenhänge*. Baeschlin (in German).

**Contribution of the authors:** Co-authors have equal participation in the preparation of the article, except for the cases indicated in the article.

**Conflict of Interest:** No conflict of interest.

**Acknowledgements and Financial Disclosure:** There is no special funding for the publication.

## TWORZENIE ZRÓŻNICOWANYCH PODSTRATEGII DZIAŁALNOŚCI PRZEDSIĘBIORSTWA

**Streszczenie:** W artykule przedstawiono poglądy autorów na metodyczne wspomaganie tworzenia substrategii dywersyfikacji zachowań przedsiębiorstwa z możliwością śledzenia (oceny) osiąganych wyników oraz opracowywania scenariuszy na przyszłość. Podstawy metodologiczne identyfikacji poziomu dywersyfikacji działalności przedsiębiorstwa formułowane są w oparciu o trójwymiarowy wskaźnik pozwalający na uwzględnienie trzywymiarowego charakteru dywersyfikacji jako zróżnicowanie portfela zasobów przedsiębiorstwa („wkładów” do systemu przedsiębiorstwa), sformalizowanie swoich działań („procesor” systemu) i osiągniętych (oczekiwanych) wyników („wyników”) z systemu. Na przykładzie grupy ukraińskich przedsiębiorstw służb przeciwpożarowych przedstawiono rozbudowany system mierników ekonomicznych dywersyfikacji ich działalności, który opiera się na dwóch koncepcjach – zrównoważonej karcie wyników (BSC) oraz zarządzaniu gospodarką metodą wartości przedziałowych. W oparciu o zaproponowaną ideę trójwymiarowości dywersyfikacji poprzez zastosowanie metodologii analizy morfologicznej modelowane są substrategie dywersyfikacji działalności przedsiębiorstwa oraz wyniki praktycznych testów opracowania strategii dywersyfikacji dla grupy przedsiębiorstw wybranych do badań.

**Słowa kluczowe:** controlling, dywersyfikacja, przedsiębiorstwo, zarządzanie, strategia

Articles published in the journal are made available under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International Public License. Certain rights reserved for the Czestochowa University of Technology.

