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## THE SYSTEM OF EVALUATION EFFICIENCY OF THE STRATEGY OF SUSTAINABLE DEVELOPMENT OF THE ENTERPRISE IN THE DECENTRALISATION CONDITIONS<sup>6</sup>

*The article proposes a scientific and methodological approach to strategising the development of a manufacturing enterprise in a decentralised environment based on the principle of feedback. This approach involves taking into account the direct and feedback indicators of the enterprise, aimed at increasing its competitiveness and achieving sustainable development goals. The authors propose to assess the level of development of the production enterprise in decentralisation, taking into account the multiplier effect of interaction with the united territorial community on the basis of the target approach (indicators are distributed according to the goals of the enterprise), taking into account the main directions of sustainable development component, each of which has its own system of evaluation indicators.*

*The proposed methodological approach to assessing the level of development of a production enterprise in decentralisation allowed to assess the development of the enterprise in accordance with its qualitative and quantitative characteristics in each of the areas of sustainable development (social, economic, environmental, budget), taking into account their interaction levels. A scientific and methodological approach to modelling the management system of the dynamic state of the production enterprise in terms of decentralisation, which provides for the formation of a model of development of the production enterprise in cooperation with OTG on indicators of its development. The model of management of development of the industrial enterprise in the conditions of decentralisation for LLC TIS, which is located in the territory of the Vizyr UTC of the Odessa region is constructed.*

*Keywords: sustainable development strategy; decentralisation; territorial community; comprehensive assessment of the strategy*

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## **1. Introduction**

In order to build a well-designed long-term strategy for the development of production enterprises in cooperation with the region, a comprehensive analysis of the state of the integrated structure as a whole and the development of an optimal set of management influences taking into account production, financial and other available capabilities, as well as an assessment of the forecast results and state of territorial and industrial education taking into account the formation of strategic plans for both the region and production enterprises. The analysis of the state of the production enterprise is based on the assessment of a set of factors and business indicators covering various types of enterprise activities and their impact on the sustainable development of the territory. At the same time, the assessment should be carried out in comparison of the position of the production enterprise with the position of other business entities operating in the same markets and producing the same products (services).

## **2. Literature Review**

Sustainable development has traditionally been defined as development that “meets the needs of present generations without compromising the ability of future generations to meet their own needs” (Elkington, 1997). Thus, it is associated with the process of achieving the goal of steel, in which economic growth, social responsibility and environmental protection constitute the so-called concept of the triple criterion (“triple bottom line” or in the English version of “triple bottom line” (Elkington, 1997)) and are considered as single-level, mutually complementary.

Among the specialists, Lozano was recognised and interpreted (Lozano, 2012) who, considering the company in the context of its stakeholders, defined corporate constancy as a corporate activity that aims to ensure balance, including the economic, environmental and social aspects of today, as well as their relationship in the strategic planning period.

By analysing the literature on constancy in the business context, at least four approaches can be identified. Proponents of one equate constancy with sustainable development (Banerjee, 2003; Lankoski, 2016; Villiers, 2016). And, therefore, socio-environmental guidelines are necessarily considered. In another approach, corporate constancy is interpreted as a synonym for corporate social responsibility (Hediger, 2010; Montiel, 2008; Okoye, 2009). According to the third approach, the concept of constancy should be directly related to long-term business competitiveness (Lozano, 2015; Saltzman, Ionescuc-Somers, Steger, 2005; Hopkins, 2009). Authors who share this view attribute a sustainable competitive advantage to the concept we analyse. Proponents of the fourth approach, the concepts of constancy refer exclusively to a higher level, in relation to the micro-level, arguing that individual enterprises cannot be sustainable. In general, within the framework of this direction, a corporate organisation is invested, and it contributes to the achievement of sustainable development of large systems (Jennings, Zandbergen, 1995). This diversity of approaches may raise problems and questions that require further research.

### **3. Materials and Methods**

The following methods were used in this study: economic-statistical and regression analysis – to study the development potential of Ukrainian production enterprises, assess the impact of production development and regional decentralisation on the economic growth of united territorial communities; optimisation methods and mathematical models of dynamic development management - to substantiate the generalised statistical indicators of monitoring and evaluation of the implementation of development strategies of industrial enterprises in the context of decentralisation; cascading method – to build a comprehensive model of strategising the development of industrial enterprises in a decentralised environment; expert assessments - to determine the consistency of the strategic goals of development of the production enterprise with the target program documents of the united territorial community.

### **4. Results**

Since the basis of sustainable development, as well as social responsibility, is the parity of relations in the human-business-nature chain, the basis for building the concept of social responsibility of an enterprise in the 21<sup>st</sup> century should be the principles of a strategy for sustainable development of an enterprise. In fact, we are talking about the transition from the current “economy of the use of resources” to the economy of their systemic reproduction. A condition for the transition to sustainable development is the organisation of interaction of resource subsystems. The natural scene of such interaction is the territory. To do this, however, they must not only respond to the proposals of enterprises, but themselves lead them, producing holistic environmental complexes and individual areas of the territory that are specially equipped for the activities of enterprises.

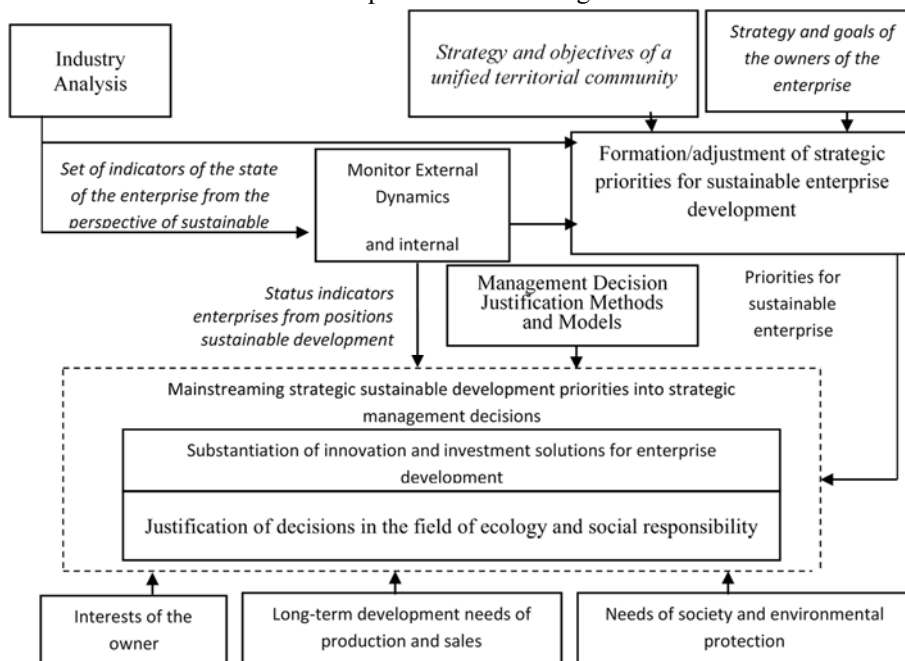
Therefore, sustainability – is the ordering of technical, scientific, environmental, economic and social resources in such a way that the resulting system is able to be maintained in a state of equilibrium in time and space.

To achieve sustainable development requires a comprehensive approach: environmental security (preservation and restoration of natural ecosystems, stabilisation and improvement of the environment, reducing emissions, etc.), economic stability (creating a socially and environmentally efficient economy that ensures a decent standard of living, increasing product competitiveness), social welfare (increasing life expectancy, family planning and rationalisation of personal consumption, improving the living environment of people, developing the social activity of citizens, ensuring equal opportunities for health care, social protection of vulnerable population groups).

The concept of strategic management of a manufacturing enterprise, which ensures sustainable development in a decentralised environment, is able to be represented in this way (Figure 1). Socially and environmentally responsible behaviour in the part that exceeds formal obligations becomes relevant in the presence of sufficient free resources and the absence of significant negative impact on the financial performance of the enterprise. An example of the manifestation of such an approach of responsible behaviour of the enterprise

will be the direction of part of the profits for the implementation of environmental measures or landscaping.

Figure 1  
Conceptual model of strategy for sustainable development of the production enterprise in cooperation with the region



Source: author development.

Decision-making in these areas is considered comprehensively and interconnected, as well as taking into account the interests of owners and development strategies of the united territorial community in the territory of the enterprise. It is necessary to find a balance between investments in different areas of interest of owners and local authorities and their focus on the implementation of social and environmental projects in the area.

The specifics of the relationship between industrial enterprises and the united territorial community that are part of the territorial-industrial formation as a system and their impact on its sustainability require the development of a scientific and methodological approach to developing and monitoring the effectiveness of sustainable development strategy. Therefore, the authors propose a scientific and methodological approach to strategising the development of a production enterprise in a decentralised environment, based on the use of methods of systems approach and systems analysis, the object of study is considered as a set of interacting objects and relationships between them and takes into account the impact of a set

of factors on the sustainable development of the production enterprise in the context of decentralisation

The concept of strategy for sustainable development of the enterprise in the context of decentralisation, its conceptual model, developed (Figure 1), is based on management decisions based on a set of targets formulated as a compromise between the achievement of the goals of the owners of the enterprise, standard financial and economic indicators and priorities of sustainable development of the enterprise, formulated taking into account the sectoral characteristics and sustainable development needs of a certain.

The concept is based on the formalisation of the main priorities of sustainable development of production enterprises, combined with an assessment of the impact of planned decisions on the dynamics of the identified priorities, aimed at making balanced management decisions taking into account the interests of the owners of enterprises, priorities for the long-term development of resource support, production and marketing, the needs of the population of the territory, protection of the environment.

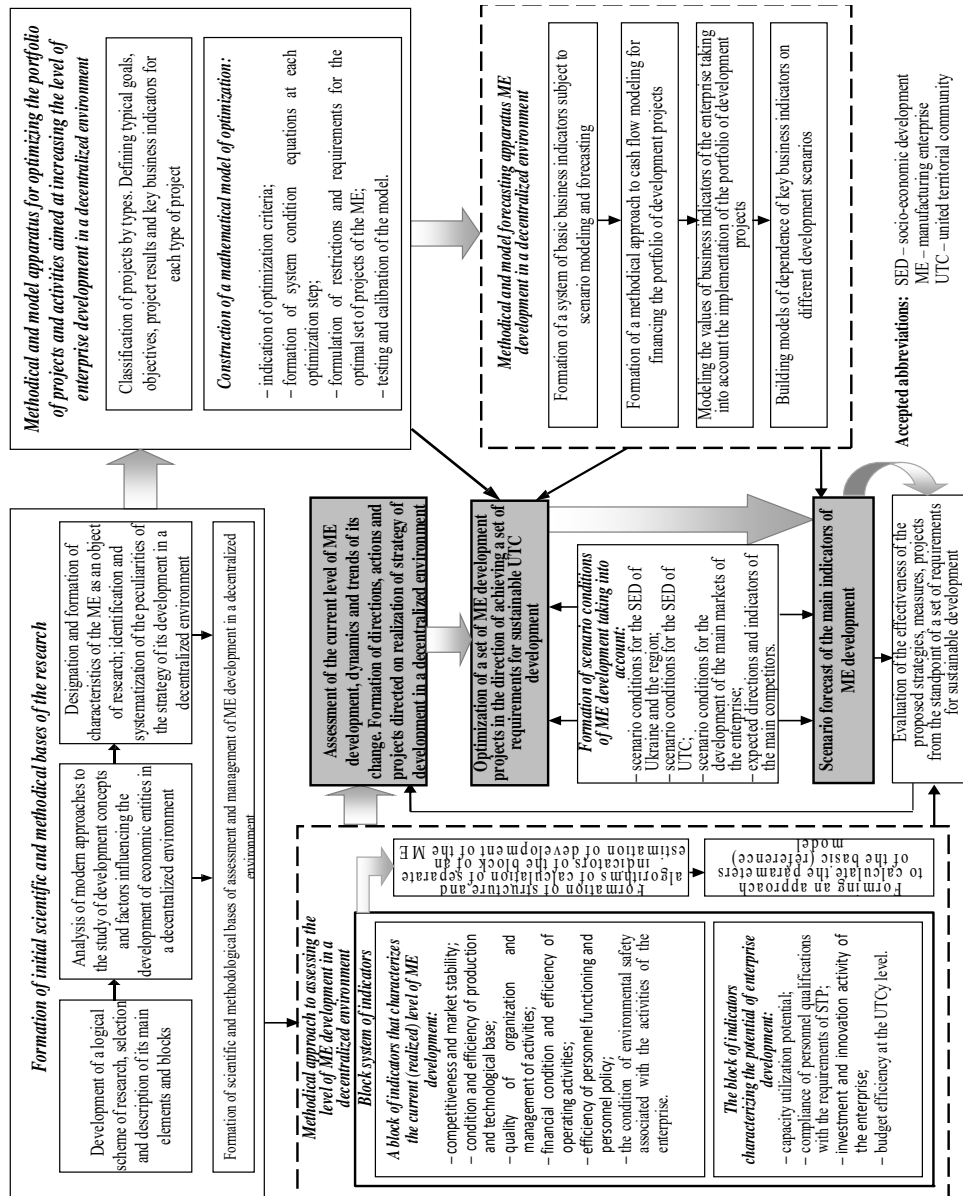
The study proposes a scientific and methodological approach to the strategy of development of a production enterprise in a decentralised environment based on the principle of feedback, when direct and backward linkages of enterprise performance indicators and management influences aimed at increasing its competitiveness and achieving sustainable development goals are taken into account, it was possible to identify three components that support three blocks of analytical tools (Lozano, 2015):

- 1) a unit for assessing the current state of development of a production enterprise by economic, social, environmental and budgetary indicators of activity and assessing the impact of its functioning on the sustainable development of a united territorial community;
- 2) project portfolio optimisation unit in order to implement the development strategy at the lowest risk and highest return;
- 3) a block for forecasting the state of development of a production enterprise in the conditions of decentralisation, taking into account scenario conditions for the development of the domestic and world economy, the region and the united territorial community (Figure 2).

The quantitative assessment of the sustainable development of the productive enterprise and territories is based on a set of measured indicators and indicators for regular monitoring of the situation, which makes it possible to identify the missing areas of monitoring that need to be monitored in order to achieve the overall goal of improving the level of sustainable development.

Therefore, the authors propose to assess the level of development of the production enterprise in the context of decentralisation, taking into account the multiplicative effect of interaction with the united territorial community, based on a targeted approach (indicators are distributed according to the goals of the enterprise), taking into account the main areas of sustainable development, namely the economic, social, environmental and budgetary components, each of which has its own assessment indicator system.

Figure 2  
Scientific and methodological approach to strategising the development of a manufacturing enterprise in a decentralised environment based on the principle of feedback

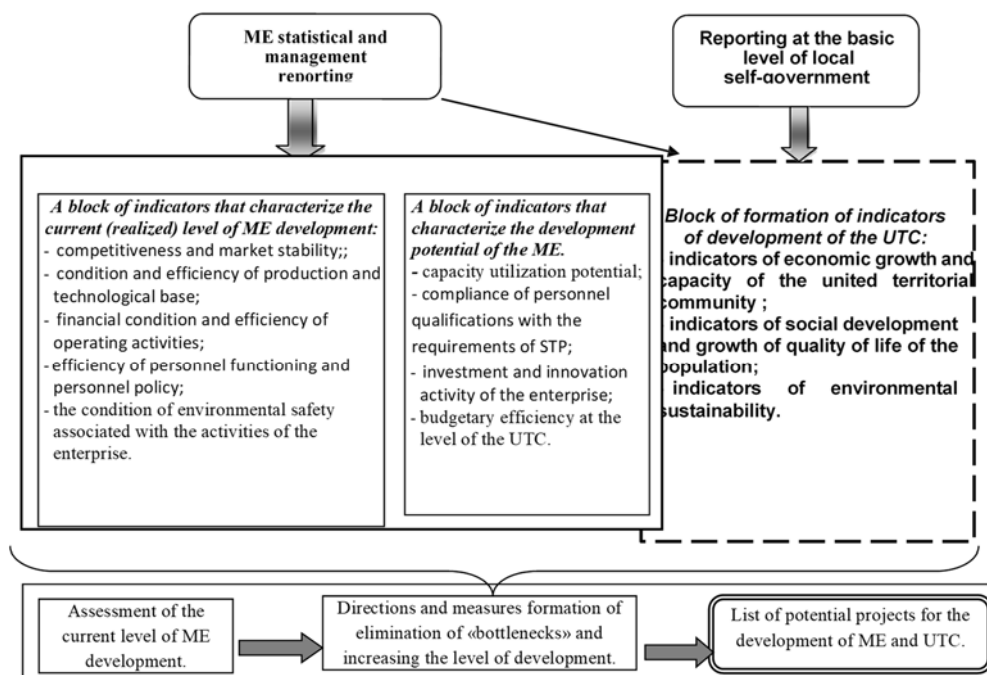


Source: compiled by the authors.

A methodological approach has been developed to assess the current state of development of a manufacturing enterprise in the context of decentralisation, which aims to determine its position in the socio-economic environment, taking into account the identified main projections of development, as well as the possibility of its further influence on the sustainable development of the united territorial community (Figure 3).

Figure 3

Logical scheme for assessing the state of development of the production enterprising the context of decentralisation



Source: compiled by the authors.

The methodological approach is based on the following scientific principles:

- Consistency, which allows you to formulate a set of interconnected indicators, which characterise the developmental aspects of the activity of a viral enterprise and, in short, start a new development;
- hierarchy that allows to aggregate indicators in the integrated development index, on the one hand, and factor analysis of the development of the production enterprise to identify the causes of the situation, on the other;
- Complexity, which allows to take into account a set of factors influencing the development of the production enterprise in terms of decentralization;

- Universality, which allows to apply a methodological approach to assess the activities of any manufacturing enterprise, subject to adaptation to the specifics of its activities;
- Transparency, which allows the inclusion in the study of additional indicators depending on the specifics and conditions of the investigated production enterprise;
- interdependence, which consists in taking into account the direct and inverse interconnections between the condition of development of the studied manufacturing enterprise and the influences of management aimed at increasing the level of its development in a decentralised environment.

The assessment of the level of development of the production enterprise in the context of decentralisation involves six stages (Figure 4).

*At the first stage*, the analytical base of the system of estimates of the production enterprise in the context of decentralisation is compiled. At the same time, information material is selected on the results of functioning of the analysed objects and calculations of the selected indicators are carried out on the basis of established criteria.

Assessment of the current condition of development of the production enterprise in a decentralised environment is designed to solve the following tasks: 1) identification of strengths and “bottlenecks” in the development of the production enterprise; 2) determination of the main directions of development of the production enterprise and “points of influence” on the sustainable development of the UTC.

In accordance with the methodological approach, all the activities of a production enterprise in the context of decentralisation are divided into several enlarged blocks:

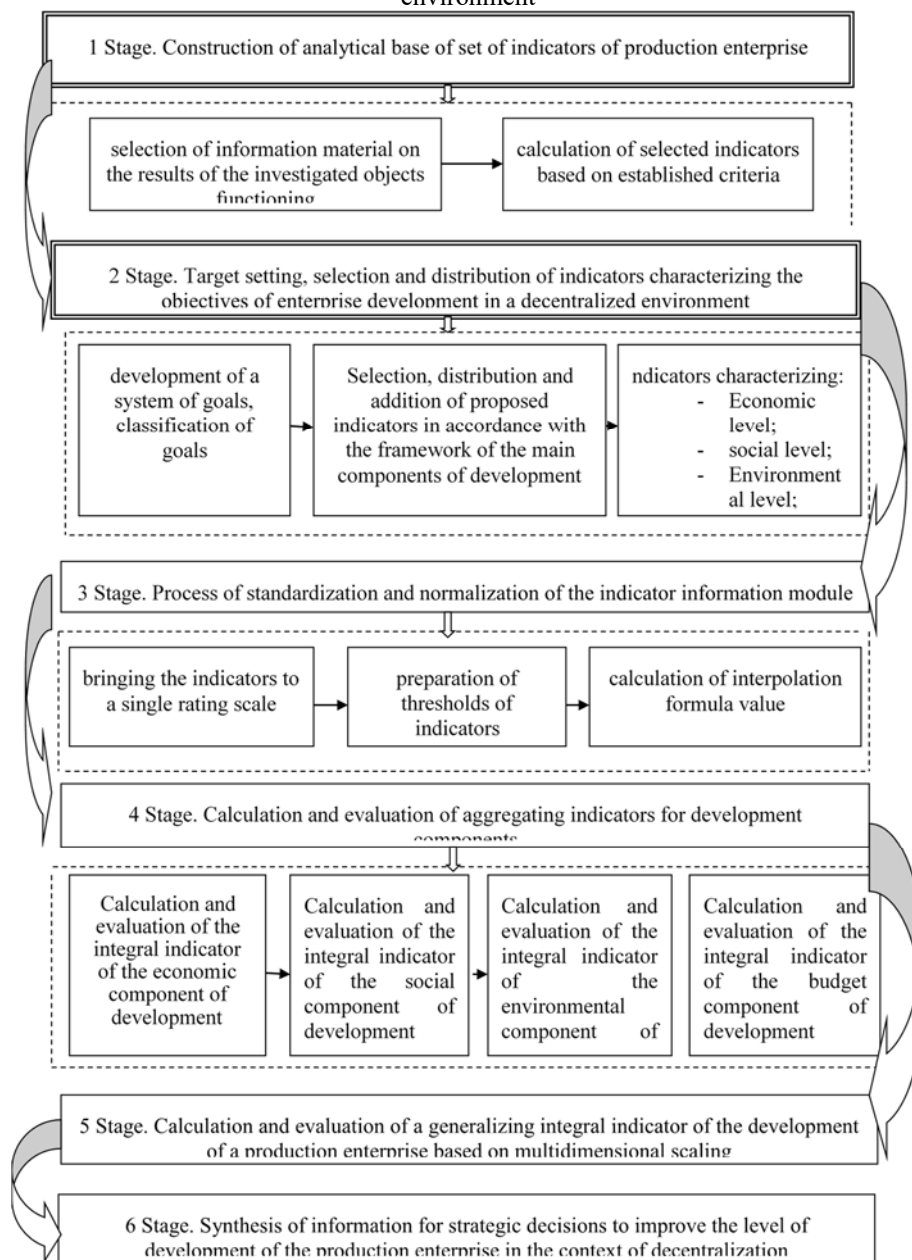
- competitiveness and market sustainability;
- the state and efficiency of the production and technological base;
- financial condition and operational efficiency;
- innovative and investment activity of the enterprise;
- effective functioning of personnel and social policy of the enterprise;
- state of environmental safety related to the enterprise activity;
- budgetary efficiency of the enterprise at the level of the united territorial community.

The input to the process of assessing the current state of development of the production enterprise is statistical and management reporting, which characterises various aspects of the activity.



Figure 4

Methodology for assessing the development of a production enterprise in a decentralised environment



Source: author's development.

*At the second stage*, the objectives of the enterprise are set, their grouping in qualitative and quantitative areas, while considering the levels of economic, social, environmental and budgetary sustainability. The effectiveness of the development assessment depends on the correctness of the goals and goals of sustainable development, the assessment of the factors influencing the activities of the enterprise and the clarity of the choice of its direction of development. To strategy sustainable development and further assess its level, it is necessary to develop a system of interacting indicators of the enterprise's production and economic activities and indicators of its stable growth and development, based on the principles of completeness, reliability, quality of information, which will make it possible to make effective management decisions.

The authors proposed the following group of indicators in Table 1.

It is proposed to include only those indicators that correspond to the strategic development goals of the studied enterprise, which allows reducing the number of indicators; takes into account the specificity and objectives of the enterprise development; identifies the cause of the failures of their achievement.

Thus, a distinctive feature of the proposed methodological approach for assessing the level of development of a production enterprise in a decentralised environment is a targeted approach that allows assessing the development of an enterprise in accordance with its qualitative and quantitative characteristics in each of the areas of sustainable development (social, economic, environmental, budgetary), while considering their interaction by levels.

*The third stage* consists of the processes of standardisation and normalisation of the information module of indicators and bringing them into one dimensionless form, which is the necessary procedure for eliminating the influence of differences of different indicators when they are combined into an integral assessment, while using and using methods that allow calculating the normalised value of zero and negative indicators. The statistical practice has developed many versions of the standardisation procedure, in particular, the classical way, the way of relations, standardisation by varying scale, the choice of which depends on the purpose of the study, the statistical nature of the primary indicators and their socio-economic content (Table 2) (Beltyukov, Dyskina, 2013).

*The fourth stage* consists in the definition of generalising indicators for the development components of the production enterprises under study in the context of decentralisation (economic development, social development, environmental and budgetary efficiency), taking into account the specifics and strategic aspects of their activities on the basis of multidimensional scaling.

Table 1

System of indicators for assessing the level of development of a manufacturing enterprise in a decentralised environment

The part of development		Indicators for assessing the level of development of a manufacturing enterprise in a decentralised environment
Economical development	Market stability	The growth rate of production, %; Sales growth rate (due to the expansion of markets), %; Market share, %; The growth rate of the number of employees, %.
	Production stability	The growth rate of fixed assets, %; Return on assets, UAH/ UAH; Depreciation rate of fixed assets; The growth rate of labour productivity, %.
	Financial and economic stability	The growth rate of the financial result, %; The rate of reduction of the cost of products (services), %; Autonomy ratio; Total liquidity ratio; Solvency ratio; The level of return on assets, % The level of profitability of production, % The level of profitability of sales, %
	Innovation and investment activity	The share of intangible assets in the structure of assets, %; Number of advanced technologies created, un.; Number of advanced technologies used, un. The share of innovation costs in the total costs of the enterprise, %; The share of sold innovative products in the total sales, %; Fixed assets renewal ratio. The amount of investment in fixed assets, thousand UAH; Volume of investments in R&D, thousand UAH
Social development	The size of the average monthly salary (coefficient); Staff turnover ratio; Staff dropout rate; Total morbidity rate; The share of highly qualified employees, %; Number of employees who have undergone professional retraining, training, persons;	
Environmental sustainability	The share of low-waste and resource-saving technologies in the total number of technologies at the enterprise, %; Material consumption ratio; Energy consumption ratio; The rate of reduction of harmful emissions, %; Expenditures on environmental protection measures, thousand UAH.	
Internal budget efficiency	The amount of revenues to the budget of UTC from the payment of personal income tax, thousand UAH; The amount of revenues to the UTC budget from the payment for land, thousand UAH.; The amount of revenues to the UTC budget from the payment of real estate tax, thousand UAH.; Fees and other payments to the UTC budget.	

*Source: compiled by the authors.*

Table 2

Basic methods of standardisation of indicators

Method of standardisation	The nature of the impact of indicators		Legend
	Stimulants	Destimulators	
The classic method of standardisation	$z_i^j = \frac{x_i^j - \bar{x}_i}{\sigma_i}$	$z_i^j = \frac{\bar{x}_i - x_i^j}{\sigma_i}$	$\bar{x}_i$ – average value; $\sigma_i$ – standard deviation
The method of relations	$z_i^j = \frac{x_i^j}{a}$	$z_i^j = \frac{a}{x_i^j}$	$a = x_{\min}; x_{\max}; x_{em}; \bar{x}$ – minimum, maximum, standard or average value
Standardisation on a variational scale	$z_i^j = \frac{x_i^j - x_{\min}}{x_{\max} - x_{\min}}$	$z_i^j = \frac{x_{\max} - x_i^j}{x_{\max} - x_{\min}}$	$x_{\min}; x_{\max}$ – minimum or maximum value.

Source: Beltyukov, Dyskina, 2013.

The main and important features of the method of multidimensional scaling as a tool for combining individual indicators in the group is as follows (Figure 5).

- 1) Information on the similarities and differences of enterprises is determined in the n-dimensional space of the initial features, i.e. simultaneously for all primary indicators in the context of each pair of enterprises (stage 2 of the picture).
- 2) The problem of combining uniform estimates in general (determining the coordinates of comparison objects in a new space of smaller dimension /spaces of latent features/, stages 3 and 4 of the picture) forms as an optimising problem that solves the help of special optimisation methods. The optimisation criterion is the minimum value of «stress» (an indicator that reflects the level of similarity of the proximity matrices d and D), which provides the maximum possible level of preservation of the degree of similarity and diversity of objects in the new space of smaller size.
- 3) The method of multidimensional scaling is calculated on the basis of both interval and ordinal values. Accounting for the nature of the primary indicators is determined in the process of optimisation by accounting for ordinal values only for the requirement of maintaining order.

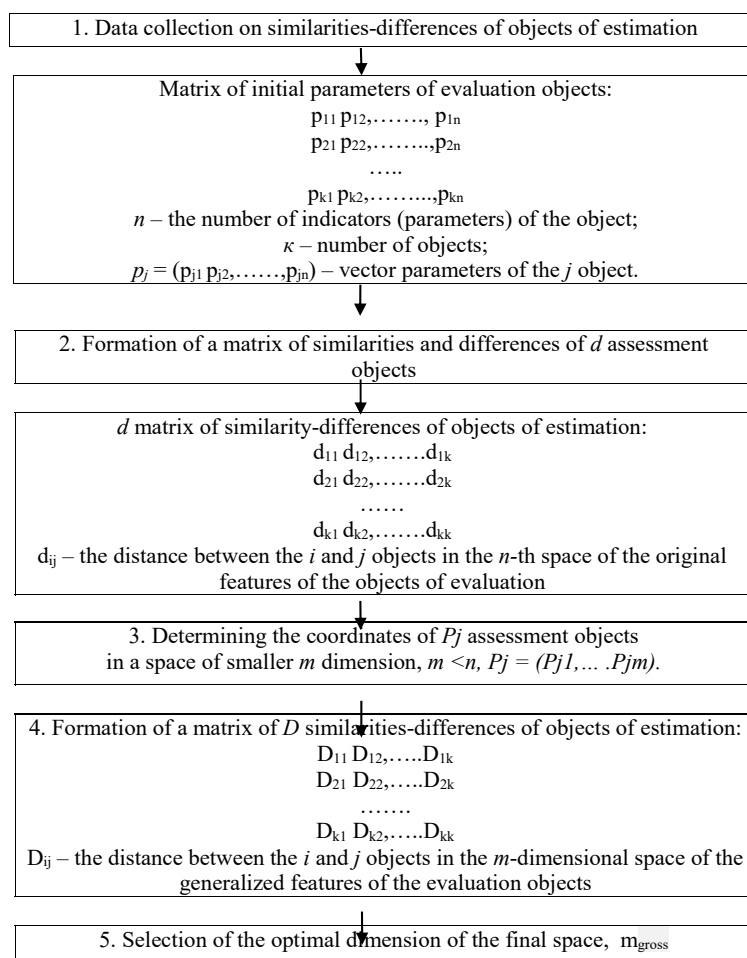
The multidimensional scaling method fully fits into the generally accepted comparison scheme, which is based on the analysis of a larger set of heterogeneous factors and development indicators, the consistent generalisation of the initial parameters of the evaluation objects into a group and integral ones based on the corresponding classification of these factors and indicators, offers a fundamentally new, effective, scientifically justified.

At the *fifth stage*, a generalising (integral indicator) of the development of a production enterprise in a decentralised environment is calculated using the PROXSCAL multidimensional scale application package, which allows you to assess the level of

enterprise development not only in terms of goals, but also in four components: economic, social, environmental and budgetary.

Figure 5

Scheme for assessing the development of the enterprise using the method of multidimensional scaling



Source: Beltyukov, Dyskina, 2013.

The first range of the integrated indicator (high level of development) is the absolute and high level of sustainability of the production enterprise. Factors that reduce the resilience of development may be identified in this range. The second range of values of the integrated indicator (average level of development) characterises the sustainable development of the

production enterprise and warns of violations of sustainable development. The third range of values of the integrated indicator (moderate level of development) reflects the negative trends occurring in the enterprise, and warns of threats to economic security and approaching a crisis. The fourth range of values of the integrated indicator (low level of development), which is below the extreme normative value, is a zone of crisis in which the balance and sustainable development of the production enterprise is disturbed and the processes leading to complete collapse begin.

*The sixth stage*, as a result of the process, defines strategic guidelines for the development of the production enterprise in the context of decentralisation, which is the basis for the development of a combination of innovative and investment projects for the sustainable development of the enterprise and the unified territorial community (Niekrasova, Chukurna, Dobrianska, Izmaylov, Shkrabak, Ingram, 2020).

Based on the developed methodological approach to assess the level of sustainable development of the production enterprise, the level of development of budget-forming enterprises of the Vizirska united territorial community (UTC) of the Odessa region was evaluated. Data from enterprise reporting were used to calculate indicators of economic, social, environmental and budgetary blocks for quantitative purposes. The value of the integrated indicator for assessing the level of development of enterprises of the Vizirska united territorial community (UTC) is summarised in Table 3.

Table 3

Comprehensive indicator of assessment of the level of development of enterprises of Vizirska united territorial community (UTC) for 2016-2020

№	Enterprise	Integrated indicator				
		2016p/place	2017p/place	2018p/place	2019p/place	2020p/place
1	LLC «TIS COAL»	0,63/2	0,46/2	0,39/3	0,45/2	0,46/2
2	LLC «TIS – KT»	0,75/1	0,38/3	0,48/2	0,37/3	0,41/3
3	LLC «TIS»	0,45/3	0,62/1	0,67/1	0,63/1	0,68/1
4	LLC «M.V. CARGO»	–	0,21/4	0,18/4	0,18/4	0,24 /4

Source: own calculations.

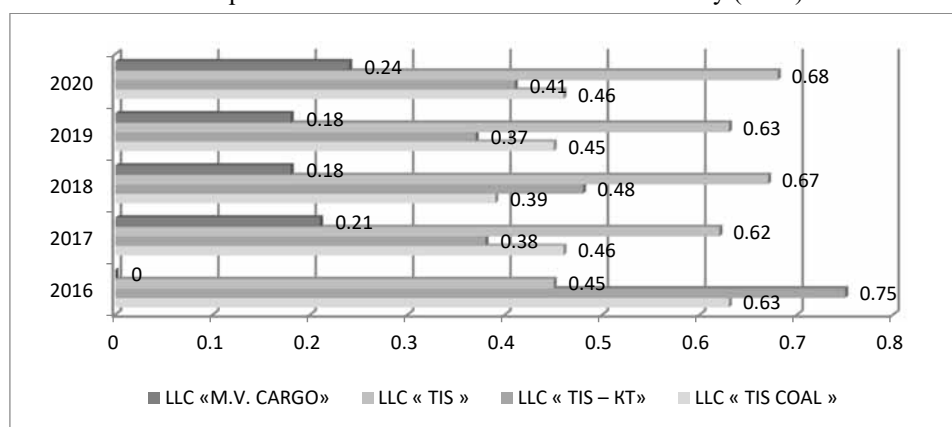
In order to visualise the value of the integrated indicator of the level of development assessment, we will construct a diagram that will reflect the trend of growth or decrease of the studied complex indicator during 2016-2020 for basic enterprises (Figure 6).

Analysing the value of the complex indicator, we conclude that in 2014 LLC «TIS-KT» had the greatest importance (0.75). In second place in terms of the value of the complex indicator in 2016 was LLC «TIS-COAL» (0.63), the smallest value was LLC «TIS» (0.45). In 2015, the situation changed very much: LLC «TIS» (0.62) took the leading position, LLC «TIS-COAL» (0.46) worsened its condition, LLC «TIS-KT» (0.38) occupied the third city, and the value of the complex indicator was halved. In 2018, the situation did not improve for all enterprises: the largest value of the complex indicator belonged to the company LLC «TIS» (0.67), LLC «TIS-COAL» reduced its position and the level of development compared to last year decreased (0.39), LLC «TIS-KT» took second place, and the value of the complex indicator was 0.48. In 2019-2020, LLC «TIS» had the largest value of the complex indicator

and amounted to 0.63 and 0.68, respectively. LLC «TIS-COAL» for two years left behind a second position with the value of a complex indicator at the level of 0,45-0,46. In third place in terms of the value of the complex indicator in 2019-2020 was LLC «TIS-KT» (0.37 and 0.41, respectively). For four years, the last positions have been held by LLC «M.V. CARGO».

Figure 6

Dynamics of the integrated indicator of assessment of the level of development of enterprises of Vizirska united territorial community (UTC)



Source: author's development.

To determine strategic guidelines for the development of production enterprises in the context of decentralisation, it is advisable to analyse for 2018 the results of a comprehensive assessment of economic, social, environmental and budgetary components of development, taking into account a system of indicators on the following aspects of development: market, production, financial and economic, innovative investment, social, environmental and budgetary (Table 4 and Figure 7).

Thus, based on the calculations and the scale of assessment of the level of development, we can conclude that LLC «TIS» has the highest level of development for all components, which allows it to implement a sustainable development strategy.

Table 4

Comprehensive indicators for assessing the level of development of Vizirska united territorial community (UTC) enterprises by development components for 2020

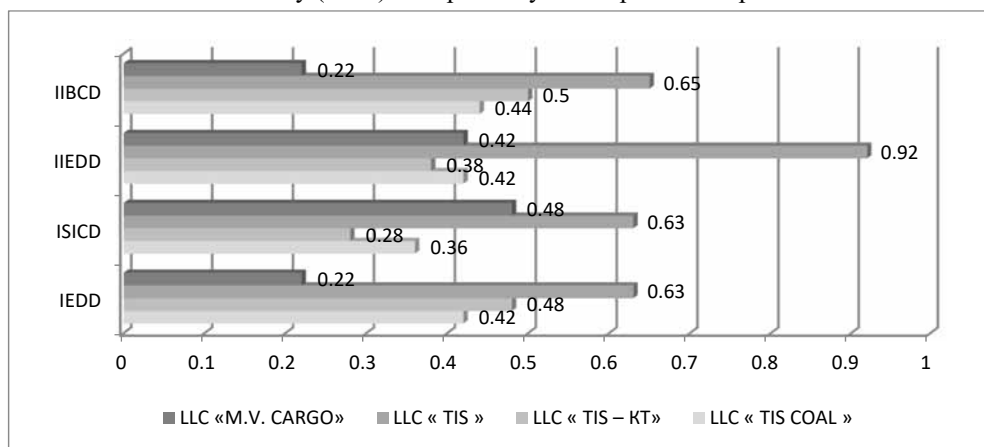
№	Enterprise	Integrated Economic Dimension of Development (IEDD)	Integrated social indicator component of development (ISICD)	Integrated indicator of the environmental dimension of development (IIEDD)	Integrated indicator of the budgetary component of development (IIBCD)
1	LLC «TIS COAL»	0,42	0,36	0,42	0,44
2	LLC «TIS – KT»	0,48	0,28	0,38	0,5
3	LLC «TIS»	0,63	0,63	0,92	0,65
4	LLC «M.V. CARGO»	0,22	0,48	0,42	0,22

Source: own calculations.

According to the scale of assessment of the level of development of a production enterprise, the economic, social and budgetary components of the development of LLC «TIS» are at an average level, but closer to the level of “normal development,” the environmental component is characterised by an “absolutely stable state.”

Figure 7

Comprehensive indicators for assessing the level of development of the Vizirska united territorial community (UTC) enterprises by development components for 2020



Source: author development.

According to the results of the study, comprehensive indicators of economic development, environmental sustainability and budgetary efficiency of LLC «TIS-COAL» and LLC «TIS-KT» in 2020 are at the level of unstable development, and the social component is in critical condition. In order to achieve the goals of sustainable development, enterprises need to pay attention to the quantitative goals of economic development, namely, to increase innovation and investment activity, and to make efforts to increase the level of social development.

LLC «M.V. CARGO» is at the lower level of development in 2020, and in terms of economic and budgetary components, it is in a completely critical condition, which is explained by the lack of profit at the enterprise. At the same time, at the enterprise, the goals of social development and environmental efficiency are achieved much better, social sustainability has the highest indicator.

The assessment of the selected directions of sustainability of the manufacturing enterprise with the subsequent access to determine the level of development carried out within the study allows to reasonably moving to the formation and implementation of its development strategy.

The assessment of the level of capacity of the Vizirian UTC in 2020 was carried out on the basic criteria that characterise the main socio-economic indicators that affect the development of the relevant capable territorial community (hereinafter – the criteria for assessing the level of capacity). Criteria for assessing the level of capacity are:



- population size, permanently residing in the territory of the capable territorial community;
- the number of students educating in general secondary education institutions located in the territory of the capable territorial community;
- the area of the land capable territorial community;
- index of fiscal capacity of the capable territorial community budget (coefficient that determines the level of tax capacity of the relevant local budget compared to the same average for all consolidated local budgets of Ukraine per capita);
- the share of local taxes and fees in capable territorial community budget revenues.

According to the Methodology of formation of capable territorial communities, approved by the Cabinet of Ministers of Ukraine, the estimated level of capacity of capable territorial communities is determined on the basis of the sum of numerical values of capacity assessment criteria and is: low level of capacity – from 1,5 to 2,1; middle level of capacity – from 2,2 to 3,8; high level of capacity – from 3,9 to 5.

Therefore, to ensure the development of both the Viziyan united territorial community and enterprises on its territory, there are all favourable conditions (Table 5).

Table 5

Financial capacity of Viziyan UTC in 2020 (forecast)

Evaluation criteria	Indicator	Numerical value	Capability level
Population size	7 508	1	high
Number of school-age children	903	1	high
Area, km <sup>2</sup>	255,4	0,6	middle
Tax capacity index	6,48	1	high
Share of local taxes and fees	20%	0,6	middle
General level of capability		4,2 points	high

*Source: authors calculations.*

The assessment of the integrated nature of the impact of production development in the context of decentralised environment and growth of economic capacity of united territorial communities in Ukraine on the population's welfare is based on the expediency of deepening decentralisation and development of industrial enterprises to strengthen the economic capacity of territorial communities in Ukraine.

Using regression analysis tools for regional statistical data of Ukraine (Anatolii V. Usov, Liubov A. Niekrasova, Predrag V. Dašić, 2010) there was built econometric models (1) and (2) dependence of own incomes from one inhabitant of the united territorial community on private financially designed communities, and also with the participation of workers and volume of the realised products:

$$Y^{\wedge} = 2082,59 + 33,76X_1 + 2,19 X_2, \quad (1)$$

$$Y^{\wedge} = 2364,86 + 32,11X_1 + 1,47 X_3, \quad (2)$$

where:

$Y^{\wedge}$  is the projected income of the general fund per capita of the UTC, UAN;

$X_1$  – share of financially capable communities, %;

$X_2$  – number of working employees, thousand people;

$X_3$  – volume of sold products, billion UAH.

The calculations showed a statistically significant impact of budget decentralisation and the development of productive business on the level of well-being of the population of the united territorial community. Therefore, firstly, the function of community development should be economic growth, which provides expanded reproduction of the economy of the territory.

Therefore, the territorial-industrial formation consolidates the resources of territorial public and industrial enterprises on the basis of common interests and goals of sustainable development, contributes to the formation of relations of social partnership between society, government and business.

Strengthening the independence of local authorities should stimulate and intensify economic activity, motivate the effective and rational use of existing capacity or management decisions to find alternatives and additional opportunities to increase the level of sustainable development of territorial production entities, by intensifying production activities to achieve the appropriate multiplier effect. economic growth and living standards

The developed scientific and methodological approach to modelling the system of management of the dynamic state of the production enterprise in the conditions of decentralisation provides for the formation of a model for the development of the production enterprise in cooperation with the UTC according to indicators of its development (Figure 8).

$$Y(t) = \int_0^t g(t-\tau)v_p(\tau)d\tau = g(t-\theta)\int_0^t v_p(\tau)d\tau = g(t-\theta) * Su, \quad (3)$$

Where:

$0 < \theta < t$ ;  $Su$  – component value  $v_p(t)$  development resource.

$X$  – vector-function of the production and processing process of the enterprise;

$\frac{dx}{dt}$  – operation of the production system;

$V_{p2}$  – production control system;

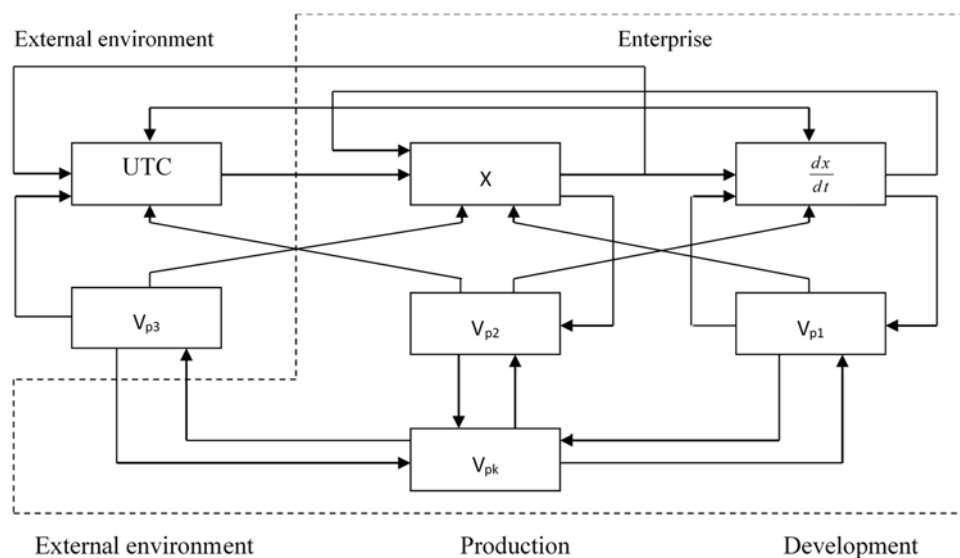
$V_{p1}$  – development management system;

$V_{p3}$  – control system of interaction with UTC;

$V_{pk}$  – negotiation system, which provides interaction with UTC –  $x(t) \frac{dx}{dt}$ .

Figure 8

Structural diagram of the development model of the production enterprise in cooperation with the united territorial community (UTC)



The quantitative assessment of the sustainable development of the productive enterprise and territories is based on a set of measured indicators and indicators for regular monitoring of the situation, which makes it possible to identify the missing areas of monitoring that need to be monitored in order to achieve the overall goal of improving the level of sustainable development.

The concept of strategy for sustainable development of the enterprise in the context of decentralisation, its conceptual model, developed (Figure 2), is based on management decisions based on a set of targets formulated as a compromise between the achievement of the goals of the owners of the enterprise, standard financial and economic indicators and priorities of sustainable development of the enterprise, formulated taking into account the sectoral characteristics and sustainable development needs of a certain.

A model of management of the development of the production enterprise was built in the conditions of decentralisation for LLC «TIS», which is located on the territory of the Vizirska united territorial community (UTC) (4). Thus, an increase in the input characteristic of the share of advanced technologies by 17% leads to an increase in budget efficiency by 10%, the remaining efficiency in the Armed Forces for its development:

$$y_2^*(t) = \int_0^t \{ [0,278 + 0,163(t - \tau)]0,193 + [0,313 + 0,056(t - \tau)]0,23 \} d\tau = y_2(t) * 1,1 \quad (4)$$

Thus, it is advisable to carry out a comprehensive assessment of the level of development using economic, social, environmental and budgetary indicators at all enterprises of the united territorial community. It is this approach that will make it possible to realise your position both to enterprises and local authorities. The detailed analysis will determine the state of the enterprise on the market, adopt the experience of leading enterprises and calculate their capabilities to introduce effective development strategies considering the interests of the owners of enterprises, priorities for the long-term development of resource support, production and marketing, as well as the needs of the population of the territory and environmental protection.

Achieving their interests by each stakeholder – government, business, community, it is possible to provide conditions for regulating the interaction between them, employees and interaction, which as a result provide positive synergy effects for all parties:

- financial effects from the concentration of financial resources: increasing the financial efficiency of the page in the implementation of large projects, including infrastructure;
- economic effects: the benefits of the region and the state as a whole from the increase in tax revenues; from larger and higher-quality results of activity of large investors and contractors with the increased technical possibilities, productivity and quality of work involved under bigger volumes of financing; from combining technical, land, infrastructural capabilities; from the reduction of various risks of production activity and increase of probability of achievement of the planned result; from the effect of scale (savings on fixed costs);
- social effects: due to the implementation of joint large-scale social programs on a financial and economic basis, budget revenues have increased, as well as the joint use of the social infrastructure of the territories, which has led to improved quality of life;
- impact on the environment: due to increased resource opportunities for the implementation of pollution control programs;
- managerial and organisational effects, which are expressed in strengthening the relationship of coordination and interaction of municipalities, the implementation of management functions of local government;
- political effects, which are expressed in the increased level of trust of the population of territorial communities to local and central government;
- synergistic effects as a consequence of orderly interaction in large systems.

## **5. Conclusions**

Application of the proposed scientific and methodological approach to the formation of a model of a system for managing the development of a production enterprise in the context of

decentralisation makes it possible to determine the dominant parameters of the development of production enterprises, which have an influence on OTG and timely tracking of pulses and spaces of OTG states considering the state of the Sun as parameters for its development. The results of the study are applicable for the development of systems for monitoring and strategic management of processes of development of production enterprises in the configuration of territorial-production entities.

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