

Formation and classification of system of indexes of productivity in agrarian factories

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The purpose. To determine nature and content of classification of indexes of productivity of alive and materialized, abstract and concrete, individual and social labour, and also modern methods of analysis of efficiency of activity of agricultural factories. **Methods.** Analytical, theoretical generalization of indexes of productivity and their place in system of productivity, economic analysis, international comparison of efficiency and competitive strength of agricultural factories. **Results.** Depending on processes of industrial transformation and their properties classification of indexes of productivity is justified. System of indicators on the basis of which economic research of productivity of a factory is carried out is specified. **Conclusions.** Classification of indexes of productivity is justified and it is recommended for use in analysis of monitoring of industrial activity of factories of all patterns of ownership with the purpose of duly reaction to changes of the market.

Key words: *productivity of alive and materialized labour, classification of indexes of productivity, methods of measurement of alive and materialized labour.*

In today's economic environment, the role of day-to-day management of the measurement is increasing. Modern approaches to determining the indicators of economic activity of agricultural enterprises give an opportunity to determine the effectiveness of their activities; to substantiate current and perspective projects and managerial decisions; implement measures to improve accounting and control; to identify reserves; evaluate the results of the enterprise; determine the direction of development for the long term. Businesses often have the task of evaluating their relative performance and efficiency for a specific period of time and for the future. In economic practice, the problem of productivity analysis as one of the performance indicators is solved by calculating various quality performance indicators, by dividing quantitative indicators, and effecting costs. Therefore, in the last 20 years, a systematic classification of indicators on a normative basis is carried out to assess the performance of foreign enterprises. The majority of enterprises due to the complexity and cumbersomeness of calculations of performance indicators do not sufficiently or fragmentarily measure the processes of transformation during production, which leads to its rise in price, decrease in quality and competitiveness.

Analysis of recent research and publications. The problem of a comprehensive assessment of productivity in the system of effectiveness was studied by scientists from different fields of science R. Acoff [1], VS Diesperov [2], R. Waterman [3], D. William [4], B.M. Genkin [5], G.O. Shvydanenko [6], VG Andriychuk [7], N.V. Tarasenko [8], A. Lissitsa [9].

The purpose of the research is to determine the essence and economic content of the classification of indicators of productivity of living and natural, concrete and abstract, private and public labor, as well as modern methods of analysis of the efficiency of agricultural enterprises.

Research methods. Analytical, theoretical generalization for the generalization of performance indicators and their place in the system of performance.

Research results. Scenic managers of developed countries do not identify the market requirements and their indicators: if they take the market demands indisputable, then indicators use caution in choosing a company strategy depending on the actions of various external factors, including the market itself. Therefore, the choice of a long-term strategy for the behavior of an enterprise in the market is least dependent on the current values of market indicators, although they are always taken into account [1 - 4]. Before considering the performance issue as such, it is necessary to determine its place in the overall system of quantitative and qualitative indicators of "state parameters" of the enterprise, firm, industry, state. The system of indicators and characteristics, which together reflect the economic category of the

effectiveness of the organizational and economic system, we are proposed to be divided into 7 subsystems: efficiency, efficiency, quality, profitability, quality of work life, introduction of innovations, productivity.

Efficiency is the degree of achievement by the economic system of the purpose. In order to assess the degree of effectiveness, at least 3 criteria are required: quality, quantity and timeliness, which should answer the question: do we "need things" in accordance with the requirements; do the right things "; do we do the "necessary things" and on time?

Cost-effectiveness is the extent to which the system uses "necessary things":

Cost-effectiveness = Resources required for consumption/Resources are actually consumed.

Hence, profitability is an indicator that determines the effectiveness of the organizational system in terms of costs through the corresponding indices that characterize the dynamics of profitability in particular periods.

Quality is the degree of conformity of the economic system with standards, specifications and expectations.

Profitability - the ratio between gross revenues and total costs.

The quality of working life is the response of the society of the economic system to the social and technological aspects of life and development of workers.

B.M. Genkin convincingly classified the quality of working life as a system of indicators from the standpoint of the employee, enterprise and society as a whole (table) [5].

The introduction of innovations is a process by which you can get higher quality goods and services. In most literary sources devoted to productivity, innovations as an applied direction are written a bit, despite the fact that they are the determining factor of productivity. However, the authors are united in the one that an organization that does not introduce new products, services, does not improve their quality and does not improve the technological processes, will not be able to compete for a certain time.

Productivity is the ratio between the production of this system over a certain period of time and the cost of producing this product at the same time. The notion remains unchanged regardless of which systems are discussed: an individual, a working group, a branch, an enterprise, an association, an industry, a region or the economy of the country as a whole. The specificity of the views on productivity is determined by a range of interests or occupations and manifests itself, in our opinion, in two directions.

In accordance with the economic analysis carried out by us in the economic literature it has been discovered that the systems of measurement, planning, control and productivity analysis in all of the above performance subsystems can be used as a variety of methods, methods and models of economic, financial and social analysis. At the same time, their number and breadth of application depend on the specific objectives of the research objects. That is why during the development of a list of indicators of economic I will become an enterprise justifying the expediency of their application. This problem is devoted to many works of domestic and foreign economists. However, there is no single indication of the use of indicators for the study, and each scientist offers his own variant of this problem.

Since each economic process is predominantly expressed not by one indicator, but by a whole system of indicators related to each other, the indicators by which economic diagnostics are carried out can be classified as follows [6, 7].

Depending on the properties of the conversion processes, they are:

- quantitative (determine the size of economic phenomena, the magnitude of quantitative changes occurring in them, the magnitude of resources);
- qualitative (characterizing the essential features and properties of the phenomena under study, their level of development, the use of resources, and the effectiveness of activities).

Depending on the scale of use, these processes are:

- general (used to characterize the performance of all sectors of the economy);
- special, partial or specific. Depending on the technology of their education, they are:
 - primary; derivatives; synthetic; analytical Depending on the method of calculation, they are:
 - relative (show the ratio of absolute indicators and are expressed in percentages, coefficients, indices);
 - absolute (expressed in hryvnias).

N.V. Tarasenko and IM Wagner [8] suggests adding these coefficients to the specified coefficient classification.

By the nature of the reflection of the analyzed processes, they are:

- natural (expressing the size of the phenomenon in physical units of measurement);
- cost (show the value of economic objects and processes in value terms);
- labor (characterizing labor costs and their efficiency).

In place of causative relationships, they are:

- Results (the indicator is considered as the result of one or more factors and is the subject of the study);
- factor (determine the state of the result indicator and cause the change in its value).

By way of formation they are: normative, plan, contractual, accounting, reporting, analytical.

The efficiency of an enterprise for the use of the econometric approach is based on the proximity of the values of the indicators of the individual enterprise (say, costs, volume of services rendered, etc.) to the potential or actual efficiency threshold. The efficiency bound is calculated by the production function. In the framework of the econometric approach parallel parametric and nonparametric methods are developed. Both are of an equal nature, and researchers do not give final benefits to any of them.

Parametric methods are based on econometric analysis and require the definition of the functional form of the production function of the company or functions of costs, profits, income. Among the advantages of this group of methods, one can distinguish the effect on the total function of statistical noise and factors, due to certain reasons not included in the model. Parametric methods have several advantages. First, they take into account such a characteristic as stochasticity - they all give an assessment of efficiency, and not its rigorous calculation. Unlike nonparametric, parametric methods do not require additional techniques (for example, bootstrap) to test the hypotheses about the significance of the estimates obtained and the impact of various factors. Secondly, the methods take into account the possibility of correcting random errors. An incorrect measurement of the efficiency of one enterprise does not lead to shift estimates of other enterprises.

Nonparametric methods use mathematical programming and do not require a definition of the functional form of the production function (cost functions, etc.), which is one of the main advantages of these methods over parametric ones. Non-parametric methods have two advantages over parametric ones. Firstly, in order to assess the effectiveness, it is not necessary to know the functional form of the efficiency boundary. The boundary is represented as an arbitrary fracture curve. Secondly, non-parametric methods do without assumptions about the distribution of the indicator of inefficiency. The methods are based on the calculation of the coordinates of the locations of the enterprises with the greatest efficiency, and determine the vertices of the broken curve. Their main drawbacks are: the lack of vector error models and the sensitivity of the results to the number of variables in the model (with the increase in the number of factors in the model, the number of enterprises that are on the verge of efficiency is increasing). Non-parametric methods include: an analysis of the enveloping surface or DEA (for the Data Envelopment Analysis method, there is currently no common name in the Ukrainian and Russian languages); free layout method (FDH); performance indices.

The essence of the boundary methods of the analysis of efficiency is that the effectiveness of companies is evaluated in terms of efficiency threshold, which is determined by the most effective companies represented in the sample. Unlike boundary methods, the non-boundary analysis is based on comparison with the sample-level average, which is determined by the calculation of indices or the method of least squares [9, 10].

Given the above, it is the very definition and justification of the system of indicators (indicators), on the basis of which the economic research of productivity and productivity of the enterprise is carried out. For these criteria, it is necessary to develop qualitative and quantitative characteristics, scales for the calculation of indicators and to identify their normative values.

Conclusions

Known in economic theory, indicators do not identify the economic content of multi-factor productivity. The existing interpretation of these indicators differs from their actual content: the productivity coefficients do not determine the reduction of the natural cost per unit of output, since they use cost parameters. The use of unchanged prices to weigh the real volumes of production and costs eliminates the impact of current, but takes into account the impact of past, already inactive market parameters. In this context, the ratio is the bearer of past information.

The proposed methods and the justified classification of indicators of labor productivity and capital are recommended for use in the analysis, monitoring of the production activity of enterprises of all forms of ownership by minimizing costs, optimizing profits, evaluating technical, organizational and other innovations, managing quality, identifying positions in competitive relationships with related firms, etc.

Bibliography

1. Akoff R. Planyrovanye budushcheho korporatsyy/R. Akoff. — M.: Prohress, 1985. — 328 s.
2. Diyesperov V.S. Produktivnist' sil's'kohospodars'koyi pratsi: monohr./V.S. Diyesperov. — K.: IAE, 2006. — 274 s.
3. *In Search of Excellence: Lessons from America's Best-Run Companies.* Warner Books Inc/J. Peters Thomas, H.JR. Waterman. — 1984. — P. 360.
4. G. *William.* How American Business Can Meet the Japanese Challenge. Avon Books (P)/G. William, Oughi Theory Z. — 1993. — P. 255.
5. Henkyn B.M. Ekonomyka y sotsyolohyya truda/B.M. Henkyn. — M.: NORMA-YNFRAM, 1999. — 412 s.
6. Shvydanenko H.O. Biznes-diahnostyka pidpryyemstva/H.O. Shvydanenko, A.I. Dmytrenko, O.I. Oleksyk. — K.: KNEU, 2008. — 344 s.
7. Andriychuk V.H. Teoretyko-metodolohichne obgruntuvannya efektyvnosti vyrobnytstva/V.H. Andriychuk//Ekonomika APK. — 2005. — # 5. — S. 52 – 63.
8. Tarasenko N. Finansovyy analiz/N. Tarasenko, I. Vahner. — L'viv: Novyy svit 2000, 2008. — 444 s.
9. Lissit-sa A. Teoretychni osnovy analizu produktyvnosti ta efektyvnosti sil's'kohospodars'kykh pidpryyemstv/A. Lissit-sa//Dyskusiyeni materialy # 5 Ukrayins'koyi ahrarnoyi konferentsiyi. — K., 2007. — 30 s.
10. Posibnyk z ekonomichnoho rehulyuvannya pryrodnykh monopoliy. — K.: Mizhnarodnyy tsentr perspektyvnykh doslidzhen', 2005. — 69 s.