THEORETICAL AND APPLIED ASPECTS OF LABOUR EFFICIENCY AS A SOCIAL AND ECONOMIC CATEGORY

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Introduction. Improving labour efficiency is the key to successful operation of any organization. Social and economic development of the state is largely depends on the in-depth study of labour efficiency management. These issues should be solved at certain enterprises at macro- and meso-economic levels.

Aim and tasks. The purpose of the article is to deepen theoretical and methodological principles and develop practical recommendations for improving labour efficiency.

Results. The generalization of theoretical and methodological provisions of the category of labour efficiency is carried out. Methodical approaches to the evaluation and measurement of labour efficiency at enterprises have been considered. It is established that labour efficiency, as an economic category, takes into account many aspects that reveal it through certain characteristics, which are expressed in labour productivity, quality and labour performance. It was found that increasing the production of surplus products can increase productivity, but will reduce its efficiency. It is noted that labour efficiency is a dynamic indicator that reflects evaluation of changes in the sum of indicators of labour quality and productivity, life quality of all stakeholders involved in the working process and the use of its results. It is proposed to consider the category "labour efficiency" in terms of qualitative and quantitative criteria and substantiate the essence of labour efficiency, which reflects qualitative component in the form of products of specific consumer quality with value added and quantitative component in the form of manufactured products to the amount of labour spent on its production. The method of building a model for determining the coefficients of rating of the factors of enterprise development using the method of linearization of the model of labour efficiency is proposed.

Conclusions. It is proposed to evaluate labour efficiency at the enterprise using a quantitative criterion which is the average hourly output of one employee, and a qualitative criterion which is the average hourly value added per employee. The increase in value added at the enterprise is achieved through the optimization of all production processes. The comparative complex analysis by means of the method of defining specific rating coefficients (SRC) of influence of development factors on labour efficiency at the machine-building enterprises is carried out. Proposals have been developed to evaluate optimal conditions for the development, stability and decline (bankruptcy) of machine-building enterprises.

Key words: labour efficiency, output, value added, factors, labour quality, labour costs.

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ТЕОРЕТИЧНІ ТА ПРИКЛАДНІ АСПЕКТИ ЕФЕКТИВНОСТІ ПРАЦІ ЯК СОЦІАЛЬНО-ЕКОНОМІЧНОЇ КАТЕГОРІЇ

Вступ. Підвищення ефективності праці виступає запорукою успішної діяльності будь-якої організації. Соціально-економічний розвиток держави набагато в чому обумовлений необхідністю поглибленого дослідження питань управління ефективністю праці, які повинні вирішуватися як на окремих підприємствах, так і на макро- та мезоекономічному рівнях.

Мета і завдання. Мета даної статті є поглиблення теоретико-методологічних положень та розробка практичних рекомендацій щодо підвищення ефективності праці.

Результати. Здійснено узагальнення теоретико-методологічних положень категорії ефективність праці, розглянуті методичні підходи щодо оцінки і вимірювання ефективності праці на підприємствах. Встановлено, що ефективність праці як економічна категорія враховує багато аспектів, які розкривають її за допомогою окремих характерних рис, що виражаються продуктивністю праці, якістю та результативністю праці. З'ясовано, що зростання виробництва зайвої продукції може підвищувати продуктивність праці, але буде знижувати її ефективність. Відзначено, що ефективність праці динамічний показник, що відображає оцінку зміни суми показників продуктивності праці, якості праці, якості життя усіх залучених у процес праці і користування його результатами зацікавлених сторін. Запропоновано категорію «ефективність праці» розглядати з якісних та кількісних критеріїв та обґрунтовано сутність ефективності праці, що відображає якісну складову у вигляді виробленої продукції конкретної споживчої якості із створенням доданої вартості та кількісну складову у вигляді виробленої продукції до кількості витраченої на її виробництво праці. Запропонована методика побудови моделі визначення коефіцієнтів рейтингу впливу чинників розвитку підприємства із використанням методу лінеаризації моделі ефективності праці.

Висновки. Пропонується здійснювати оцінку ефективності праці на підприємстві за допомогою кількісного критерію – середньогодинний виробіток одного працівника та якісного критерію - середньогодинна додана вартість одного працівника. Збільшення доданої вартості на підприємстві досягається завдяки оптимізації усіх процесів виробничої діяльності. Проведений порівняльний комплексний аналіз за допомогою методики визначення питомих коефіцієнтів рейтингу (ПК) впливу чинників розвитку на ефективність праці на машинобудівних підприємствах. Розроблені пропозиції щодо оцінки оптимальних умов розвитку, стабільності та занепаду (банкрутства) підприємств машинобудування.

Ключові слова: ефективність праці, виробіток, додана вартість, чинники, якість праці, витрати праці.

Introduction. Improving labour efficiency is directly related to the main goal of a society to ensure economic growth, which is determined by the increase in gross domestic product as a whole and per person employed in the economy in particular. Increasing the number of goods and services in the process of economic growth provides population with higher standards of living. Economic growth gives people more opportunities to choose occupations, work and leisure. The growth of labour efficiency can be achieved both by qualitative accumulation of labour potential and through its comprehensive and more efficient use.

The use of labour with the means of production should be organized in such a way that there is an increase in output without increasing labour costs. Labour efficiency plays a key role in successful operation of enterprise. It is necessary to increase efficiency and effectiveness at all levels, from direct production, provision of services and ending with investment and management decisions.

Analysis recent research and publications. A significant contribution to the study of theoretical, methodological and applied aspects of labour efficiency belongs to such scientists as D. Ricardo [1], who gave the concept of "efficiency" the status of an economic category. A. Golovanov [2] proved that it is advisable to use labour efficiency rather than productivity to improve the quality of work and quality of life of an individual, which is an intrinsic motivation for work. D. Deprins, L. Simar, H. Tulkens [3] consider that labour efficiency is a broader concept than labour productivity, as labour productivity uses only the economic resource "labour" at the stage of production. E. Konchakovskyi [4] defines labour efficiency as the ability of labour to create a certain number of goods of a particular consumer quality, taking into account qualitative characteristics and the amount of resources spent on its production. J. Nazarko, E. Chodakowska [5] studied labor efficiency indicators measured by productivity and costs (resources), which are taken into account in these indicators.

The analysis of scientific research shows that there is no common point of view on the definition of the category of "labour efficiency" and its indicators.

In particular, there is no generally accepted approach to understanding management of labour efficiency at machine-building enterprises.

Research methods. Modern methods of labour efficiency evaluation have been studied taking into account resource potential of an enterprise. It was found that they determine only the influence of particular factors on the efficiency of use of certain resources: correlation, multiple linear regression model, correlation-regression analysis method, Ferrar-Glauber test, Ridge estimation method (ie ridge regression), extrapolation method, systematization method. However, some of the theoretical and practical issues related to determining the impact of enterprise development factors on labour efficiency remain unclear.

Today, the issue of determining the influence of a number of social, economic, technical and technological, investment and innovation, information and organizational factors on the level of labour efficiency is relevant.

Previously unsettled problem constituent. The efforts of scientists and practitioners should be aimed at creating a conceptual and categorical apparatus of labour efficiency at all levels of management and development of methods for evaluating labour efficiency and determining the optimal conditions for development, stability and decline (bankruptcy) of machine-building enterprises.

The aim of the work is to deepen theoretical and methodological provisions of labour efficiency and to develop a method to build a model for determining the coefficients of rating of the influence factors of enterprise development on the increase labour efficiency.

Results. The concept of "efficiency" received the status of economic category, when the classic of political economy D. Ricardo [1] used the term "efficiency" as the ratio of the result to a certain type of expenditure. That is, the category of "efficiency" acquires specific meaning, which is important from the economic point of view in the evaluation of certain actions.

Many scholars have been engaged in practical research on labour efficiency.

Moreover, they not only noted constant growth of labour efficiency in the long run (since about 1860), associated with the technical improvement of the means of production, but also studied the relationship of many other causal phenomena with the final production and socio-economic results of work.

In reality, neither resource nor cost approaches in the practice of economic analysis did not exist in its pure form. The resource-cost definition of labour efficiency was put forward which assessed the rational use of all available human and material resources in creating user value.

In general, "labour efficiency can be defined as the ratio between labour productivity and the degree of rational use of resources".

It is also proposed to define labour efficiency as a socio-economic category that determines the level of achievement of a certain goal, correlated with the level of rational use of resources used in this case.
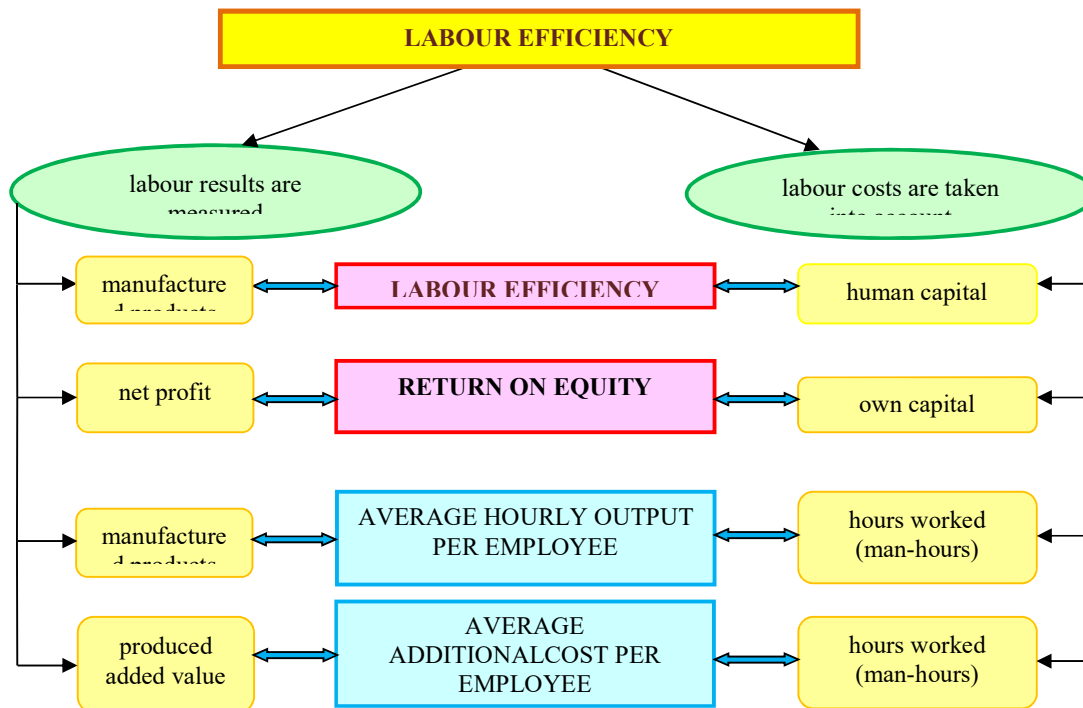

Fig. 1. Model of formation of labour efficiency indicators depending on the results and labour costs

Source: own study based on [1-3].

Thus, the criterion of production efficiency is saving time and achieving greatest result at the lowest labour costs.

A.I. Golovanov [2] believes that in the process of building up the strategy for state development, regions, enterprises, it is advisable to use a broader interpretation of labour productivity. Such a category, in his opinion, is labour efficiency, which combines labour productivity and quality of work and life. Thus, the category reflects not only quantitative but also qualitative results of labour. Thus, labour efficiency is proposed to be understood as an integral dynamic indicator that reflects the assessment of changes in the sum of indicators of labour productivity, quality of labour, quality of life of all stakeholders involved in the labour process and the use of its results. The growth of labour efficiency is designed to improve the quality of work and quality of life of an individual and, accordingly, serves as a powerful internal motivation for work.

The real essence of the category of labour efficiency is in its dual nature. On the one hand, effective labour is designed to ensure balance in meeting economic, social and spiritual needs of society.

On the other hand it is designed to meet growing dynamics of the world economy and its challenges: globalization, economic crises, depletion of natural resources, increasing environmental problems, etc. Labour efficiency is manifested in the totality of its properties. The properties of labour are characterized by quantitative and qualitative parameters [2].

At the same time, the essence of the concept of "labour efficiency" is defined as the capacity of labour to create a certain number of goods (work, services) of a particular consumer quality, taking into account qualitative characteristics of products and the amount of resources spent on its production [6-8].

The efficiency of labour includes a set of effects of human labour at all stages of the production process [9-10]. It determines the efficiency of economic system, and also significantly affects the dynamics of the system of social production as a whole. These scientists represent labour efficiency as the capacity to achieve production goals while providing resource opportunities to create benefits (mainly by activating creative component of labour) and well-established interaction of workers with the means of production (determining the order and conditions of regulated labour to obtain final product / service).

When changing main priorities of labour activity from the capacity to produce a certain amount of products over time to the capacity to form, combine and use economic resources for further production in the best way, the traditional indicator of labour productivity to assess performance in modern conditions "does not work".

On the one hand, labour productivity, as well as economic efficiency, implies the ratio of results and resource costs to achieve these results. On the other hand, in addition to production (creation of consumer value), the function of labour in the system of social production is the formation, consumption and improvement of means of production, as well as the formation of qualitative characteristics of these processes required to create final product.

Thus, the concept of "labour efficiency" is a broader concept than "labour productivity", as "labour productivity" is a special case of efficient use of the economic resource "labour" at the stage of production. The approach can be used to evaluate labour efficiency, which assumes that there is a system of criteria and a corresponding system of performance indicators. The criterion expresses the qualitative side of labour efficiency, characterizes general trend of its change and determines the principle and approach to measuring efficiency. And efficiency indicator is a measure that can be used to quantify the level of efficiency [11-13].

Efficiency is a broader category than labour productivity because the category of "efficiency" can be used to nalyse all types of labour activity, and labour productivity characterizes only material production.

Social and economic development of the state is largely conditioned by the need for in-depth study of labour efficiency management, identifying factors and reserves for its improvement. They should be addressed both at the level of certain machine-building enterprises and at the macro- and meso-economic levels.

In order to improve management of labour efficiency by purposeful influence on the factors of enterprise development, a methodology has been developed [6] for constructing a modelfor calculating the coefficients of influence of enterprise development factors on "Average hourly output per employee" and "Average hourly value added per employee". To determine the rating of the influence of factors of enterprise development on labour efficiency, we introduced the concept of coefficient of rating factor, which can be the coefficient $X_i(B_i = tg\varphi_i)$ of the linear model factor. That is, the greater the angle φ_i between the linearized functional and the abscissa, the faster the growth of labour efficiency when the value of the factor changes. That is, we accept B_i as the criterion of significance of the factor X_i (designations and names of the factors are given in Tables 1 and 2, column 1).
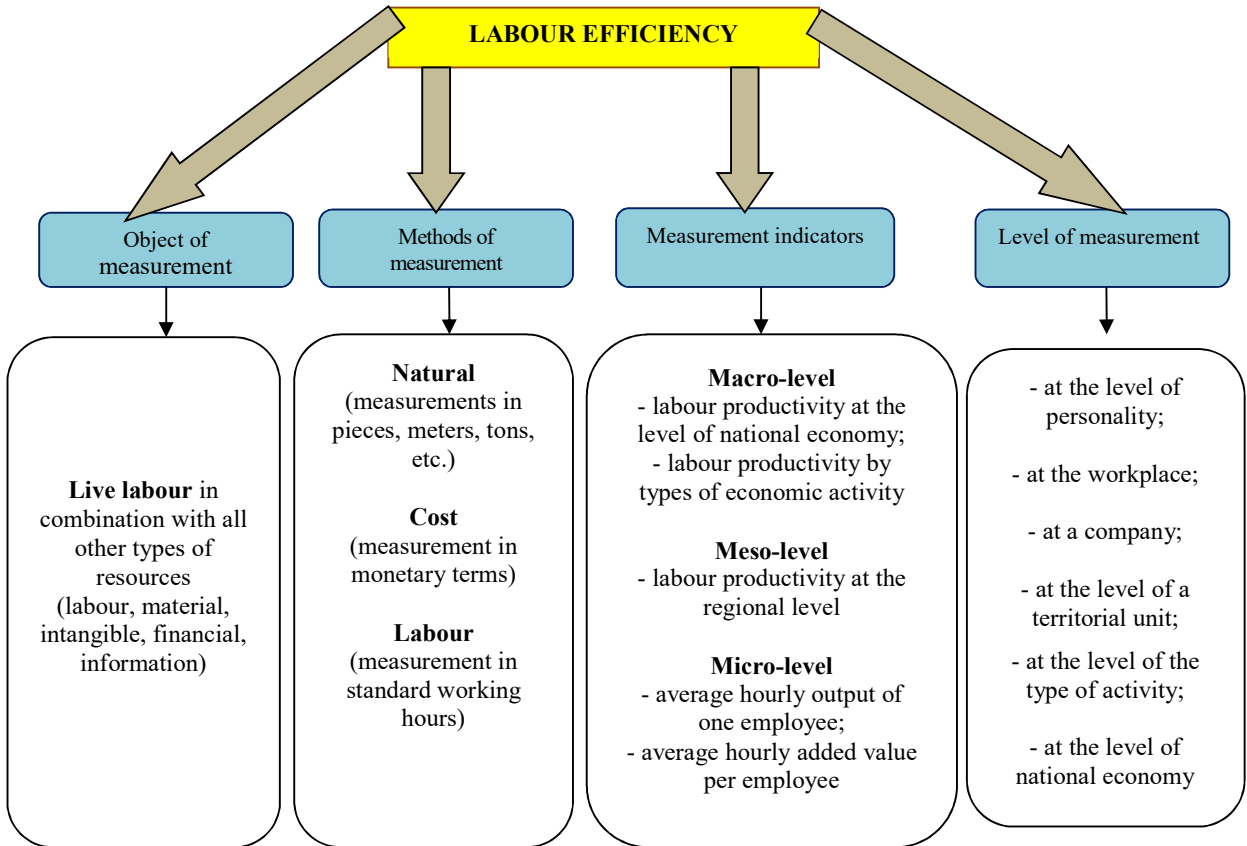
Fig. 2. Methodological approaches to measuring labour efficiency
Source: own study based on [3-5].

It is impossible to compare the coefficients $B_i(tg\varphi_i)$ in the model $y_i = f(X_i)$, because the scales of the values of the factors along the axis X_i are different and depend on the measurement units. To make it possible to compare the criteria of significance of factors, they are presented in the code form. For a two-dimensional linear model:

$$y = a + B_i \times X_i , \qquad (1)$$

where X_i is the abscissa (factor by volume with the appropriate measurement unit). After transferring the beginning of the ordinate to the point $y = a$ (Fig. 1), the transition to the values of factors in the code form x_i^* was carried out with the range of values for all factors $(x_i^* \ldots x_k^*)$ from "0" to "1".

After the transformations of formula (1) in the new coordinate system, the value b_i^* (rating coefficient of the *i-th* factor in the comparison format) was obtained on a single scale $x_i^*(0-1)$ equivalent to the natural value X_i.
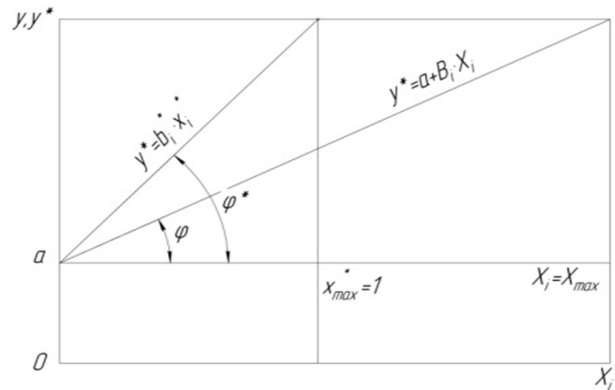
Fig. 3. Transfer of natural values of factors (Xi) to the code (dimensionless) forms (xi) and transfer of the beginning of an ordinate to the point $y = a$:
$y = a + B_i \times X_i$ is a functional (average hourly output of one employee or average hourly value added of one employee) for natural values of factors; $y = a + b_i \times x_i$ is a functional for the code values of factors.

For calculations we have accepted compliance $X_{i\,max} \rightarrow x_{i\,max}^*$, where, according to the condition $(x_i^* = 0 \ldots 1)$ $x_{i\,max}^* = 1$.

$$b_i^* = B_i \times X_{i\,max} \qquad (2)$$

For practical verification of the developed methodology and analysis of research results, as an example, we chose a machine-building enterprise that is developing rapidly, has modern technologies, applies best world experience in management, and systematically develops personnel [14-17].

We found that the value of the rating factor does not indicate the absolute level of its influence. It is used to identify relative influence of factors on the functionality, that is labour efficiency and factors location in ranking with the analysis within one enterprise.

Thus, the values of the rating coefficients of the influence of enterprise development factors on labour efficiency cannot be compared for different enterprises, as they are determined for different databases. Therefore, to compare ratings of the impact of factors on labour efficiency, we introduce the indicator: "specific rating coefficient (SRC) of the impact of factors of enterprise development on labour efficiency", which was determined by formula (3):

$$(SRC)_i = \frac{(K)_i}{\sum_{i=1}^{K}(K)_i}, \qquad (3)$$

where $(SRC)_i$ is the specific rating coefficient of the influence of the *i-th* factor of enterprise development on labour efficiency; $(K)_i$ is the rating coefficient of influence of the *i-th* factor of enterprise development on labour efficiency; k is the number of factors of enterprise development.

The values of specific rating coefficients (SRC) of the influence of enterprise development factors on the average hourly output and the average hourly value added for a group of five machine-building enterprises were calculated by formula (3) and determined statistical characteristics of the studied set of SRC values as follows. $\overline{SRC_i}$ is the average value of the specific rating coefficients of the *i-th* factor:

$$\overline{SRC_i} = \sum_{n=1}^{N}\frac{SRC_{in}}{N}, \qquad (4)$$

where SRC_{in} is a specific rating factor of the *i-th* factor of n-enterprise; n is a serial number of the enterprise; N is the quantity of enterprises (N=5).

$\overline{SRC_n}$ is the average value of specific rating coefficients of factors for enterprise n:

$$\overline{SRC_n} = \frac{1}{m} \times \sum_{i=1}^{m} SRC_{ni}, \qquad (5)$$

where SRC_{ni} is specific rating coefficient for n-enterprise of factor i; m is the number of factors ($m = 36$); S_i is standard deviation of the specific rating coefficient of the *i-th* factor of the enterprise n (random variable SRC_{in}) from its mathematical expectation, the estimate of which is $\overline{SRC_n}$:

$$S_i = \sqrt{\frac{\sum_{n=1}^{N}(\overline{SRC_i} - SRC_{in})^2}{N-1}} \qquad (6)$$

S_n is standard deviation of the specific rating coefficient of the n-enterprise for the *i-th* factor (random variable SRC_{ni}) from its mathematical expectation, the estimate of which is $\overline{SRC_i}$:

$$S_n = \sqrt{\frac{\sum_{i=1}^{m}(\overline{SRC_n} - SRC_{ni})^2}{i-1}} \qquad (7)$$

A_i is a measure of the asymmetry of the distribution graph compared to the symmetric distribution graph of each series X_{in} (n = 1… ..N, N = 5):

$$A_i = \frac{1}{N \times S_i^3} \sum_{n=1}^{N}(\overline{SRC_i} - SRC_{in})^3 \qquad (8)$$

A_n is measure of asymmetry of the distribution graph compared to the symmetric distribution graph of each series X_{ni} (i = 1 …… m, m = 36):

$$A_n = \frac{1}{m \times S_n^3} \sum_{i=1}^{m}(\overline{SRC_n} - SRC_{ni})^3; \qquad (9)$$

E_i is kurtosis measure of the elongation of the density graph of the actual distribution compared to the normal distribution of the series X_{in} (n = 1… N, N = 5):

$$E_i = \frac{1}{N \times S_i^4} \sum_{n=1}^{N}(\overline{\Pi K_i} - \Pi K_{in})^4 \qquad (10)$$

E_n is kurtosis measure of the elongation of the density graph of the actual distribution compared to the normal distribution of the series X_{ni} (i = 1… m, m = 36):

$$E_n = \frac{1}{m \times S_n^4} \sum_{i=1}^{m}(\overline{SRC_n} - SRC_{ni})^4 \qquad (11)$$

According to the obtained data, we worked out the system of the level of influence of factors on the average hourly output of one employee and on the average hourly value added of one employee at the enterprises with a high level of labour efficiency (№ № 1, 2, 3) and at the enterprises that subsequently ceased operations № № 4, 5) in three categories: significantly influential, insignificantly influential, non-influential (Tables 1, 2).

Table 1. The level of influence of factors on the average hourly output of one employee (y_1) and the average hourly value added per employee (y_2) at the enterprises with a high level of labour efficiency № № 1, 2, 3

Factor	Factor by groups	Influence of factors		
		significantly influence	insignificantly influence	do not influence
State of use of fixed capital (FC)				
X_1	The share of the active part of fixed capital	+		
X_2	The share of machinery and equipment in the active part of fixed capital	+		
X_3	Capital-labour ratio	+		
X_4	Technological equipment of labour	+		
X_5	Machine equipment of labour	+		
X_6	Renewal coefficient	+		
X_7	Coefficient of wear	significantly negatively influential		
X_8	Intellectualization coefficient of fixed capital	+		
Investment activity				
X_9	Capital investment, total	+		
X_{10}	The share of investments in fixed capital to the total amount	+		
X_{11}	The share of investments in capital construction to the total amount		+	
X_{12}	The share of investments in machinery, equipment and inventory to the total amount	+		
X_{13}	The share of investments in construction and mounting works to the total amount		+	
X_{14}	The share of investments in capital repairs to the total amount		+	
X_{15}	The coefficient of intellectualization of fixed capital investment		+	
Innovation activity				
X_{16}	The number of acquired new technologies (technical achievements), accumulated	+		
X_{17}	The number of new technological processes introduced into production, accumulated	+		
X_{18}	The number of introduced innovative types of products, by names, accumulated	+		
Use of working time				
X_{19}	The coefficient of loss of working time			+
X_{20}	Coefficient of losses of working time fund due to annual leave			+
X_{21}	Coefficient of losses of working time fund due to temporary incapacity for work			+
X_{22}	Coefficient of losses of working time fund due to training, vacations and other absences			+
X_{23}	Coefficient of losses of working time fund due to absences with the permission of the administration			+
X_{24}	Coefficient of losses of working time fund due to absences in connection with the transfer to a reduced working day, week			+
Composition of the payroll budget				
X_{25}	The share of basic salary in the payroll budget			+
X_{26}	The share of additional wage in the payroll budget	+		
X_{27}	The share of incentive and compensation payments in the payroll budget		+	
X_{28}	The share of payment for time not worked in the payroll budget			+
X_{29}	The average annual salary of a full-time employee	+		
Formation and use of personnel				
X_{30}	The share of employees who have received the educational qualification level of a Junior Specialist; Junior Bachelor or Bachelor degree	+		
X_{31}	The share of employees who have received a Master's degree or educational qualification level of a Specialist	+		
X_{32}	Coefficient of advanced training of the average number of full-time employees	+		
X_{33}	Coefficient of professional training of employees	+		
X_{34}	Coefficient of professional training of managers	+		
X_{35}	Coefficient of professional training of professionals, specialists		+	
X_{36}	Coefficient "Trained in new professions in relation to the average number of full-time employees"	+		

Note.

1. Developed and calculated by the author on the basis of internal reporting and forms of state statistical reporting of machine-building enterprises of Kirovohrad region [18].

2. The values of non-influencing factors (column 5) are less than 2% of the maximum values of SRC.

Table 2. The level of influence of factors on the average hourly output of one employee (y_1) and on the average hourly value added per employee (y_2) at the enterprises that subsequently ceased operations (№ № 4, 5)

Factor	Factor by groups	Influence of factors		
		significantly influence	insignificantly influence	do not influence
State of use of fixed capital (FC)				
X_1	The share of the active part of fixed capital	+		
X_2	The share of machinery and equipment in the active part of fixed capital	+		
X_3	Capital-labour ratio	+		
X_4	Technological equipment of labour	+		
X_5	Machine equipment of labour	+		
X_6	Renewal coefficient	+		
X_7	Coefficient of wear	significantly negatively influential		
X_8	Intellectualization coefficient of fixed capital			+
Investment activity				
X_9	Capital investment, total		+	
X_{10}	The share of investments in fixed capital to the total amount		+	
X_{11}	The share of investments in capital construction to the total amount			+
X_{12}	The share of investments in machinery, equipment and inventory to the total amount		+	
X_{13}	The share of investments in construction and mounting works to the total amount			+
X_{14}	The share of investments in capital repairs to the total amount		+	
X_{15}	The coefficient of intellectualization of fixed capital investment			+
Innovation activity				
X_{16}	The number of acquired new technologies (technical achievements), accumulated			+
X_{17}	The number of new technological processes introduced into production, accumulated			+
X_{18}	The number of introduced innovative types of products, by names, accumulated			+
Use of working time				
X_{19}	The coefficient of loss of working time			+
X_{20}	Coefficient of losses of working time fund due to annual leave			+
X_{21}	Coefficient of losses of working time fund due to temporary incapacity for work			+
X_{22}	Coefficient of losses of working time fund due to training, vacations and other absences			+
X_{23}	Coefficient of losses of working time fund due to absences with the permission of the administration			+
X_{24}	Coefficient of losses of working time fund due to absences in connection with the transfer to a reduced working day, week			+
Composition of the payroll budget				
X_{25}	The share of basic salary in the payroll budget	+		
X_{26}	The share of additional wage in the payroll budget	+		
X_{27}	The share of incentive and compensation payments in the payroll budget		+	
X_{28}	The share of payment for time not worked in the payroll budget			+
X_{29}	The average annual salary of a full-time employee	+		
Formation and use of personnel				
X_{30}	The share of employees who have received the educational qualification level of a Junior Specialist; Junior Bachelor or Bachelor degree	+		
X_{31}	The share of employees who have received a Master's degree or educational qualification level of a Specialist	+		
X_{32}	Coefficient of advanced training of the average number of full-time employees	+		
X_{33}	Coefficient of professional training of employees	+		
X_{34}	Coefficient of professional training of managers	+ enterprise № 4	+ enterprise № 5	
X_{35}	Coefficient of professional training of professionals, specialists		+	
X_{36}	Coefficient "Trained in new professions in relation to the average number of full-time employees"	+		

1. Developed and calculated by the author on the basis of internal reporting and forms of state statistical reporting of machine-building enterprises of Kirovohrad region [18].
2. The values of non-influencing factors (column 5) are less than 2% of the maximum values of SRC.

To determine development factors that affect the average hourly output and the average hourly value added for all machine-building enterprises (№ № 1, 2, 3, 4, 5), we used the concept of kurtosis coefficient, which determines the distribution or measure of the peak in the distribution of the random variable. The analysis of the data showed that the negative values have kurtosis for the distribution of the following factors as the values E_i decrease in modulus:

- X_{14} - investments in capital repairs to the total amount;
- X_{10} - the share of investments in fixed capital to the total amount;
- X_{11} - the share of investments in capital construction to the total amount;
- X_{18} - the number of introduced innovative types of products, by names, accumulated;
- X_9 - capital investment, total;
- X_{12} - the share of investments in machinery, equipment and inventory to the total amount;
- X_{22} - coefficient of losses of working time fund due to training, vacations and other absences;
- X_3 - capital-labour ratio;
- X_8 - intellectualization coefficient of fixed capital;
- X_6 - renewal coefficient;
- X_{27} - the share of incentive and compensation payments in the payroll budget;
- X_5 - machine equipment of labour;
- X_2 - the share of machinery and equipment in the active part of fixed capital;
- X_4 - technological equipment of labour;
- X_{28} - the share of payment for time not worked in the payroll budget.

Thus, the above-mentioned factors have the same influence (significant, insignificant, no influence at all) on the average hourly output (y_1) and the average hourly value added for all surveyed machine-building enterprises № № 1, 2, 3, 4, 5. Factor X_{16} "The number of acquired new technologies (technical achievements), accumulated" was not included in the number of equally influential factors, because in calculating kurtosis coefficient of distribution of specific coefficients of influence of factors of enterprise development on average hourly output (y_1) and average hourly value added only two relevant values for enterprises №№ 1, 2, and for enterprises №№ 3, 4, 5 specific rating coefficients are equal to zero.

Conclusions. Labour efficiency is a complex and multifaceted social and economic category, each side of which reveals some of its essential aspects and is expressed in less capacious categories. To understand its essence, material, social and labour results of production and economic activities must be taken into account.

The author's position is that the category of "labour efficiency" should be considered from qualitative and quantitative criteria. We propose the definition of the essence of the concept of "labour efficiency" as a socio-economic category that reflects the qualitative component in the form of products of specific consumer quality with the creation of added value and quantitative component in the form of products to the amount of labour spent on its production (working time).

In our case, the criterion of economic efficiency must express the purpose of economic activity of the enterprise and the conditions for its achievement. Based on this essence, the criterion of efficiency must meet the following requirements: to reflect the results of economic activity (manufactured products and created value added).

As a generalized quantitative criterion for evaluating labour efficiency at the enterprise, we propose to consider labour productivity, namely the average hourly output of one employee (functional y_1), which is defined as the ratio of output (thousand UAH) to hours worked (man-hours).

As a generalizing qualitative criterion for evaluating labour efficiency at the enterprise, we propose to consider the average hourly value added per employee (functional y_2), which is defined as the ratio of labour costs, social security contributions, depreciation and gross profit (thousand UAH) to hours worked (man-hours). This indicator is more objective in terms of net output, because the main function of living labour is to create new value. Qualitative criterion for evaluating labour efficiency which is " average hourly value added per employee" characterizes not only the assessment of the company's performance, but also areas for further development, efficiency of investment and innovation, intensive development of production based on saving resources.

This is primarily due to the fact that this category covers all aspects of an enterprise: integrity, multidimensionality, dynamism and interconnectedness. A decrease in this indicator will signal inefficient management and development difficulties. The method of building a model for determination of rating coefficients of influence of development factors of the enterprise on the increase of labour efficiency is offered. As a result of the analysis of these coefficients, priorities are set in the development of fixed capital components, investment and innovation activities, personnel formation and its use, use of working time, structure of payroll budget. It allows influencing the dynamics of labour efficiency growth. Therefore, it will lead to a more rational use of resources aimed at enterprise development.

The analysis of specific rating coefficients of influence of development factors of the machine-building enterprises which subsequently stopped their activity, allows forecasting development of crisis at the enterprise and further termination of its activity. Thus, the simultaneous non-influence of a number of factors on the average hourly output of one employee and the average hourly value added of one employee indicates the state of the enterprise in the period of decline and/or aging, when most significant indicators of life deteriorate significantly, and development as further improvement does not make sense. This is followed by liquidation or bankruptcy of the enterprise.

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