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2. ECONOMICS AND ADMINISTRATION

COMPREHENSIVE ASSESSMENT OF EFFICIENCY IN USING HUMAN RESOURCES OF THE ENTERPRISE

Author: Alina Puzyna
Supervisor: Yuliia Hryniuk
National University of Food Technologies (Ukraine)

Abstract. *In the paper was proposed a methodological toolkit for assessing the efficiency in using human resource as a source of competitive advantage of companies, based on a dynamic standard (in the author's interpretation), formed by the economical justification of its key HR-metrics, cause and effect comparison with their further ranking in the dynamics and calculation methods of mathematical statistics. This will allow informatively, adequately to the inversion type of market transformations, that observed today and taking into account the time factor, to analyze all substantive aspects of the object of research that cannot be estimated by classical methods, which traditionally boil down to the analysis of a certain set of labor indicators in statistics and / or comparison their magnitudes over a number of periods, and do not imply the identification of mutual influence, significant relationships, and the dynamic subordination between them. The scientific novelty lies in devising a matrix model for selecting strategies for improving the efficiency in using human resources, which combines its integral indicator with the rating position of the enterprise in terms of labor productivity indicator in the industry, which allows comprehensively approach to the issues of evaluation of such efficiency, obtain economic benefits from synergy and can claim to versatility as an analytical tool. According to the results of the research the estimation of the efficiency in using human resources of the enterprises-leaders of the sauce and seasonings market in Ukraine with corresponding recommendations on the options of strategic development in this direction.*

Keys words: *an efficiency in using human resources, a dynamic standard, a graph, an integral indicator and a matrix.*

I. Introduction

Human resources are the key asset of the company, whose value in the context of global personnel default, that are projected and the innovation of the economy, drives which they are, is growing. Accordingly, for Ukrainian business bring new challenges, that complicate the management process and, in particular, the role of human resources in it, which means that there is an urgent need to obtain comprehensive and fully information about the efficiency of their using for making the reasonable management decisions, which in turn, leads to the need to improve methodological approaches to measurement. At the same time, the dynamism of the market environment and the internal business processes of companies requires to extrapolate it to a methodological toolkit of such an assessment, which should be based on a system of dynamic HR metrics, tracking which will allow companies to control the efficiency in using human resources, and most importantly - to determine the strategic directions of its enhancement. The majority HR executives of Ukrainian companies approach to this issue intuitively and situationally, or by using established

techniques that do not take into account the realities of time. Instead, it is traditional among scientists to note the assessment of efficiency in using human resource to the separation of different combinations of its partial indicators, with rare attempts to aggregate them into the integral indicator, which also updates the theme of further research.

II. Literature overview

The research experiments were based on the idea of normative (reference) ordering of economic systems indicators in dynamics, what has been called "the theory (method, model) of dynamic standard", first formulated in the work of Professor Syroiezhyn I.M. [1], and developed in the writings of his followers – Motyshyna M.S. [2], Pohostynska N.M., Pohostynskyi Yu.A. [3] and Tonkykh A.S. [4], who devised methodological rules and procedures for their statistical evaluation. Nowadays, the method of dynamic standard is actively discussed in the scientific community and is widely practiced in completely different aspects of analysis: the socio-economic efficiency of banking activities [5], the liquidity of the banking system [6], the balance of development of enterprises [7], the investment activity of non-state pension funds [8], performance of corporate finance management [4] and others, however, there is lack of scientific development on how to build a dynamic standard for assess the efficiency in using human resource of enterprise. The paper presents its author's version, which contains a system of indicators for the directions of their using, theoretically substantiated by domestic economists: Bahrii K.L. [9], Lashkun H.A., Shakhno Yu.A. [10] and Cherep A.V. [11]. Industry specificities in the calculations were provided by data and information from official statistical observations and marketing analysis [12, 13].

III. Object, subject and methods of research

The object of research is the process of ensuring the efficiency in using human resources of enterprises. *The subject of research* – is a set of theoretical and methodological approaches and applied aspects of the implementation of the comprehensive methodology of assessment of efficiency in using human resources of PJSC «Volynholding» (Nestlé S.A. Corporation) and PJSC «Chumak» (Delta Wilmar International) based on normative-index diagnostic model and matrix technologies of strategy formation. *Methods of research.* In the paper were found the traditional general scientific and special methods, which allowed to examination the objects and phenomena in close relationship and to solve the list of tasks set before the researcher: *the theoretical generalization, system analysis and synthesis* – for clarification the subject-object scope of research; *the statistical grouping and method of relative values* – for formation the system of key indicators of efficiency in using human resources of enterprises; *the method of reference dynamics of the indicators* – for construction the linear and nonlinear dynamic standard of such efficiency, and for calculation of its integral indicator (EF) – *the non-parametric method of statistic*; *methods of strategic diagnostics* – with the purpose of positioning the enterprise in the strategic matrix «EF – the rating indicator of labor productivity»; *method of logical generalization* – in formulating conclusions of investigations.

IV. Results

Disparate indicators in the statistic are matched in dynamics and, moreover, have a distinct cause and effect relationships, so they can be ranked and subordinate the relative to each other – this observation became the basis for the development of the theory about dynamic standard, founded by a famous scientist Syroiezhyn I.M. [1], was awarded by the author's certificate, which he also validated during his work as a part of the United Nations Expert Group on Planning Methodology. In general, under the term of a dynamic standard is understood a set of indicators, which organized in terms of growth rate, so that maintaining this order for a long time interval provides the best mode of the economic system operation [2, p. 210]. The completed methodology of its estimation by the methods of nonparametric statistics and the mathematical apparatus of the theory of matrices, which are used now, is phased formed and brought to practical capacity in papers [2 – 4].

The construction of a dynamic standard begins with the selection of key indicators of the phenomenon, which is being analyzed. Some authors are betting on absolute indicators [5, 8], others [6, 7] – on relative ones, which, in our view, more comprehensive characterize the concept of «efficiency», as opposed to absolute, which are measures of «effect». The recommended optimal number indicators of dynamic standard is in the range up to 10 [1, p. 85] and from 6 to 25 [3, p. 55]: both too few and too many can lead to errors in further integral assessment and loss of its information content.

By scientists, who consider the evaluation of efficiency in using human resources of enterprise theoretical platform for research [9 – 11 and many others] have established its basic directions, notably: the analysis of productivity and profitability of labor; the availability of workforce in the enterprise (its number, composition and movement); the working time fund. Consequently in table 1, we have submitted metrics of efficiency in using human resources of enterprise with a breakdown on groups of indicators, which appropriate to each of these directions.

The relative indicators from the table 1 will be used to form a dynamic standard by establishing the ratio of their tempo values, which will be economically interpretable and have high diagnostic informativeness to evaluate the efficiency in using human resource. An ordinal scale of growth rate (T) labor productivity indicators and personnel profitability would be as follows:

$$T(P_p) > T(LP) > T(CL_r) > T(C_w) > 100\% > T(C_{dfem-e}) \qquad (12)$$

The initial element of a dynamic standard $T(P_p)$ guarantees the maximum efficiency in using human resources for the enterprise through the operating revenue indicator per employee, because, in our opinion, this kind of profit is directly influenced by the production personnel, since profits from other operating, financial and investment activities, mainly, the result of management influence and unregulated factors of diverse nature. The benchmarking $T(P_p)$ i $T(LP)$ in favor of the former indicates the available cost savings of production and marketing of enterprise commodities, because, there is a more intensive profit growth in comparison with growth of production volumes and further sales.

Table 1 – Metrics of efficiency in using human resources of the enterprise

№	Indicators	Formula of calculation	
1	**Labor productivity and personnel profitability**		
1.1	Profitableness of personnel	$P_p = P_{oper} \div N_{av}$	(1)
1.2	Labor productivity	$LP = PV \div N_{av}$	(2)
1.3	Capital-labor ratio	$CL_r = BPF \div N_{av}$	(3)
1.4	The coefficient of ratio the average wage on the enterprise to the average industry wage	$C_w = W_{int} \div W_{ind}$	(4)
1.5	Defect coefficient due to fault of employee	$C_{dfem-e} = V_{dfem-e} \div PV$	(5)
2	**Stability of personnel and their qualitative composition**		
2.1	Coefficient of personnel stability	$C_{stab} = N_{stab} \div N_{av}$	(6)
2.2	Coefficient of qualified employees stability	$C_{stabq} = N_{stabq} \div N_{av}$	(7)
2.3	Coefficient of prospective employees turnover	$C_{turnpr} = N_{turnpr} \div N_{av}$	(8)
2.4	Coefficient of personnel turnover	$C_{turn} = N_{disturn} \div N_{av}$	(9)
3	**Efficiency in using work time**		
3.1	Coefficient of efficiency in using work time	$C_{ewt} = WT_{act} \div CF_{wt}$	(10)
3.2	Coefficient of breach labor discipline	$C_{bld} = \frac{L_{ishld}}{EF_{wt(per.-hours)}} + \frac{L_{rounld}}{EF_{wt(per.-days)}}$	(11)

Notation keys: P_{oper} – the operating revenue; N_{av} – the average number of employees; PV – the production volume; BPF – the basic production funds; W_{int}, W_{ind} – the average monthly wage for the year, accordingly by enterprise and by industry; V_{dfem-e} – the value of the defect due to fault of employee; N_{stab} – the number of stable employees with more than 3 years of experience in the enterprise; N_{stabq} – the number of qualified employees who have advanced training, have undergone retraining and / or vocational training and have been on the company lists for the last 3 years; N_{turnpr} – the number of prospective employees whose development the company has invested for the last 3 years; $N_{disturn}$ – the number of employees, dismissed for reasons of personnel turnover; WT_{act} – the actual time worked (person-hours); CF_{wt} – the calendar fund of work time; L_{ishld} – the intra-shift losses of work time related to a breach labor discipline, (person-hours); L_{rounld} – the round-the-clock losses of work time related to a breach labor discipline (person-days); $EF_{wt(per.-hours)}$; $EF_{wt(per.-days)}$ – the effective fund of work time accordingly in person-hours and person-days.

The dependence of indicators $T(LP) > T(CL_r)$ explains the enhance in production capacity of the enterprise through progressive rates of results of output growth over labor financial security, and indicators $T(CL_r) > T(C_w)$ – more dynamic using the means by the personnel, which were invested by the enterprise in basic production funds as a driver of productive capital rather than aimed at labor remuneration which determines its motivational environment.

The ratio $T(LP) > T(W_{av})$ is a classic and a determined for assessment of efficiency in using human resources: with productivity growth are created the real prerequisites for increasing level its remuneration, which, in turn, enhances employee motivation for more productive work. Comparison of average wage by enterprise and by industry will give a more objective picture of satisfying the level of material requirements of employees of a particular enterprise and assessing the prestige of labor.

Defects of goods causes additional losses for the enterprise and increases the cost price of its production, and defects due to fault of employee is also attest to lack of

competence (qualification) or the level of practical training of such employees, which should be minimized: $100\% > T(C_{dfem-e})$.

In relation to personnel stability indicators and their qualitative composition (table 1) we present their dynamically ordering in the following way:

$$T(C_{stabq}) > T(C_{stab}) > 100\% > T(C_{turn}) > T(C_{turnpr}) \quad (13)$$

Inequality $T(C_{stab}) > 100\%$ – is a positive trend towards building employee loyalty to the employer, who is satisfied with wage and working conditions for at least the last three years, and $T(C_{stabq}) > T(C_{stab})$ – on the increment of loyalty of qualified personnel, who actively involved in the process of professional development. As is custom, indicators of personnel turnover should decline in dynamics in order to eliminate threats to the personnel security of the enterprise due to staff leakage. Moreover, the rate of decrease in the coefficient of personnel turnover as a whole $T(C_{turn})$ should be lower than the rate of decline prospective employees $T(C_{turnpr})$ because the latter are costly for enterprise (in addition to the salary, a sufficiently long time in professional and personal development, career advancement of prospective employees are invested money, which, if they are fired, will not receive a financial return in the form of productive labor results) and strategically important to close key positions by internal candidates.

The efficiency in using work time, which is determined by the self-titled indicator and is another component of assessment of efficiency in using human resource (table 1), should increase, and the coefficient of breach labor discipline, in reverse:

$$T(C_{ewt}) > 100\% > T(C_{bld}) \quad (14)$$

An ascending dynamic C_{ewt} means that on the enterprise is reducing unproductive losses of working time, and a downward trajectory of movement C_{bld} describes an effective system of prevention and control over the employees' compliance with the rules of internal labor arrangements, work regulations and self-organization.

The formed above dynamic standards (12) – (14) are linear, means such, where the temporal pairwise ordering of the indicators has an unambiguous interpretation of the economic relations between them, and can be used autonomously as partial evaluation indicators of efficiency in using human resource. However, from a systemic approach point of view, they should be combined. As a result, we obtain a nonlinear dynamic standard (fig. 1), when interdependence between some pairs of tempo indicators is not obvious, but in the aggregate compliance with their reference dynamic will ensure to any enterprise the high efficiency in using of human resources.

Nonlinear dynamic standard of efficiency in using human resources of the enterprise, except the graph of the reference ordering (fig. 1), can be represented with the assistance the mathematical apparatus of matrix theory, and to be analyzed by methods of nonparametric statistics according to the methodological recommendations shown in figure 2.

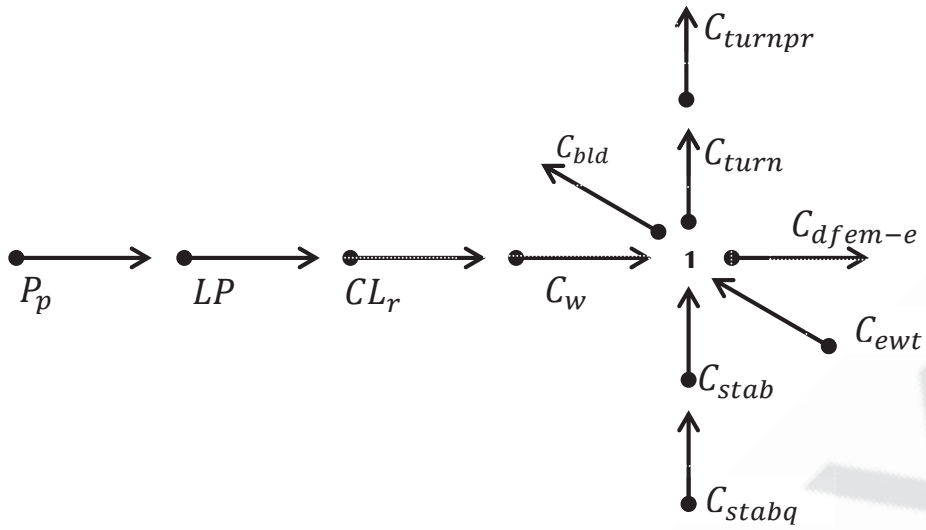

Fig. 1. Graph of the reference ordering the indicators of efficiency in using human resources in the enterprise

* Compiled by the author on indicators, the notation keys of which are given in table 1

** The elements of the graph are not the relative indicators but indexes

On the fig. 2 notation keys are as follows:

$I(b_i)$ – the index changes in the i-the indicator b;

b_i^1, b_i^0 – an absolute amount of the indicator b in the reporting and base periods, respectively;

i, j – sequence number of indicator b in dynamic standard that matches the i-th row and the j-th column;

e_{ij}, f_{ij}, d_{ij} – according to the matrix of reference, actual, incidence of reference and actual ordering of indexes changes in indicators of dynamic standard;

EF – the efficiency integral indicator, range of the assessment those lies within [0;1].

The closer the value of EF gets to 1, the more normative (reference) ratios of indexes change in indicators are actually being applied. About the efficiency in using human resources should talk subject to $0{,}5 \le EF \le 1$.

For the purpose of building the comprehensive methodology for assessing the efficiency in using human resource, is created by us, a strategic matrix, that allows the enterprise to be placed in a two-dimensional coordinate system, where the horizontal vector is its integral indicator, and as a landmark on vertical vector was elected a central indicator of efficiency as labor productivity as the ratio of its actual value of the enterprise to the mid-industry, which allows to get a rating:

$$R_{LP} = LP_i^1 \div LP_{mid-in}^1 \quad (20)$$

where R_{LP} – the rating indicator of labor productivity; LP_i^1 – the labor productivity of the i-th enterprise in the reporting year; LP_{mid-in}^1 – mid-industry meaning of the labor productivity in the reporting year according to the State Statistics Service of Ukraine.

1. Indices calculation of change of indicators as a part of a dynamic standard:

$$I(b_i) = b_i^1 \div b_i^0 \quad (15)$$

2. Constructing a matrix of reference ratios of indexes changes in indicators on the basis of the matrix of preferences and guided by the principle of their transitivity:

$$e_{ij} = \begin{cases} 1, \ if \ I(b_i) > I(b_j) \\ -1, \ if \ I(b_i) < I(b_j) \\ 0, \ if \ between \ I(b_i) \ and \ I(b_j) \ absent \ reference \ ratio \end{cases} \quad (16)$$

3. Constructing the matrix of actual ratios of indices change in the indicators of the dynamic standard:

$$f_{ij} = \begin{cases} 1, \ if \ I(b_i) > I(b_j) \\ -1, \ if \ I(b_i) < I(b_j) \\ 0, \ if \ I(b_i) = I(b_j) \end{cases} \quad (17)$$

4. Constructing the incidence matrix of the reference and actual ordering of indexes change in indicators of dynamic standard:

$$d_{ij} = \begin{cases} 1, \ if \ e_{ij} = 1 \ simul\tan eously \ with \ f_{ij} \geq 0, \\ or \ if \ e_{ij} = -1 \ simul\tan eously \ with \ f_{ij} \leq 0 \\ 0, \ in \ another \ cases \end{cases} \quad (18)$$

5. Calculation of efficiency integral indicator:

$$EF = \sum_{i=1}^{n}\sum_{j=1}^{n} d_{ij} \div \sum_{i=1}^{n}\sum_{j=1}^{n} |e_{ij}| \quad (19)$$

Fig. 2. Structurally-logical scheme of assessment the efficiency in using human resources of the enterprise on the nonlinear dynamic standard

* Compiled by author based on sources [3, c. 66; 5, c. 255]

The developed matrix of efficiency estimation in using human resources of the enterprise will have four quadrants, each of which contain a corresponding strategy in this field, which is summarized in the figure 3. The value of the horizontal scale of the matrix «EF-R_{LP}» 0,5 is consistent with the boundary mark, after its crossing will begin progressive-regressive changes of the integral indicator of the efficiency in using human resources, which will become exceptionally progressive when in proximity to 1.

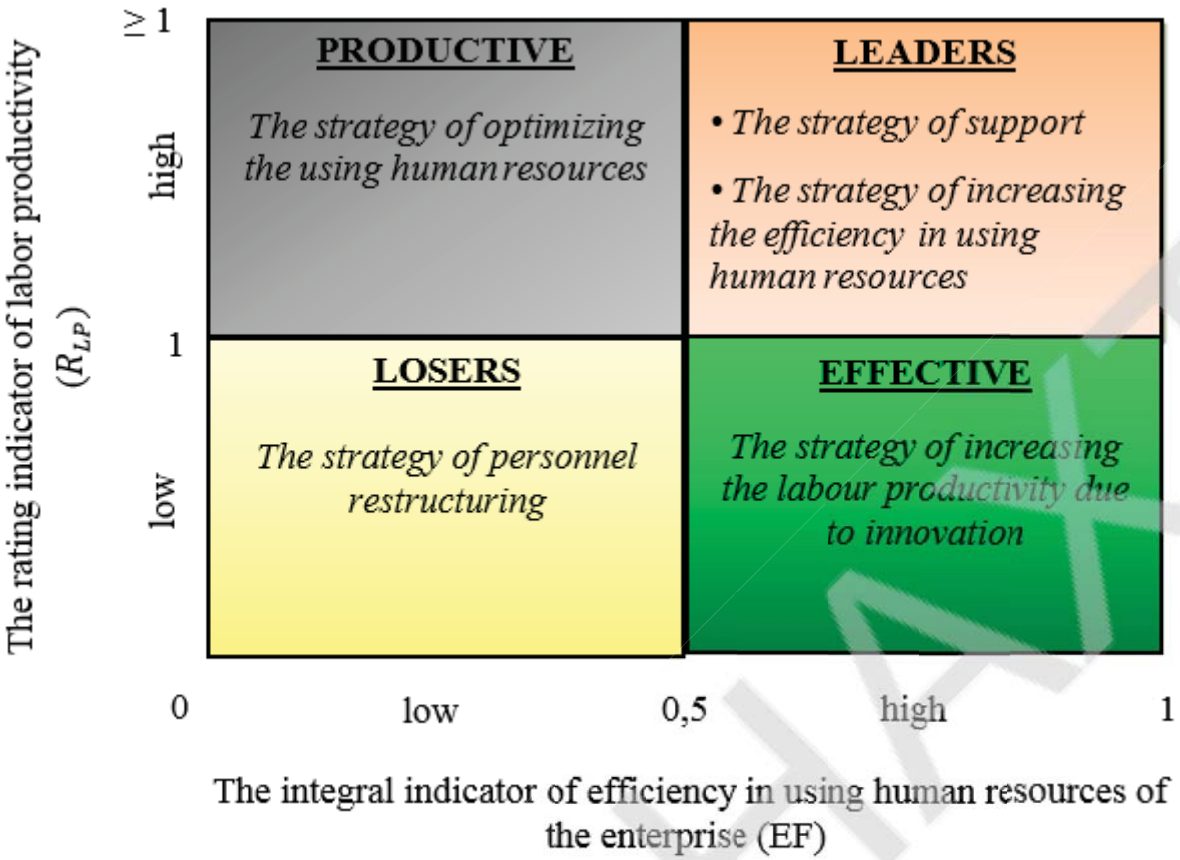

Fig. 3. The matrix of the strategic positioning the enterprise in the coordinate system «the efficiency in using human resources - the rating indicator of labor productivity»

*Compiled by the author

The interval of the vertical scale of the matrix [0;1] means that the personnel labor productivity of the enterprise is below than its mid-industry level, and, accordingly, exceeding the mark 1 is regarded as a significant benefit in a competition.

Every strategic position in the matrix on fig.3 requires an economic justification (table. 2).

The described above, comprehensive methodology for assessing the efficiency in using human resource will be tested on the example of manufacturers whose activities are in class 10.84 Manufacture of spices and condiments (section C10 «Production of food products» of group 10.8 «Production of other food products»).

Activity in the sauce market, including ketchup, and seasonings in Ukraine is detected by more than 30 enterprises, among which there is fierce competition, mainly in the economical and middle price category, since the share of imports is small – 5,9% [12], and, in basically, it is an elite segment of products under the exclusive recipe. In the coming years, is expected the increasing intensification of competition, due to the offensive development of Private Label, the demand for certain types of products by HoReCa companies, as well as the increasing emergence of number of craft sauce producers, who making this products in small batches and at high prices and do not will be able to compete with the giants of the industry, but their presence is a positive signal for it.

Table 2 – The characteristic of strategic capabilities of improvement the efficiency in using human resources of the enterprise in the matrix «EF-R_{LP}»

The matrix coordinates	Linguistic evaluation of the scale	The content of the strategy
1	*2*	*3*
The strategy of personnel restructuring (quadrant «LOSERS»)		
EF [0;0,5] R_{LP} [0;1]	EF, R_{LP}: low	Continuous audit of all directions of using human resources, implementation of a complex of anti-crisis and preventive measures, such as: scientifically substantiated normalization of labor and revision of its norms; optimization of personnel composition, taking account of the real personnel needs; eliminating the imbalance between remuneration and labor productivity; improving the qualitative composition of personnel; system in saving of costs on personnel; critical revision of HR-policy
The strategy of optimizing the using of human resources (quadrant «PRODUCTIVE»)		
EF [0;0,5] R_{LP} [0;1]	EF: low R_{LP}: high	Here, the emphasis should be on the indicators-perpetrators of the nonlinear dynamic standard of efficiency in using human resources in order to overcome their negative dynamics and stabilize positive changes in time
The strategy of increasing the labor productivity due to innovation (quadrant «EFFECTIVE»)		
EF [0,5;1] R_{LP} [0;1]	EF: high R_{LP}: low	Searching and mobilizing innovative reserves of labor productivity improvement: reengineering of personnel processes, corporate informative HR-systems, digital-recruiting, developing of command and management structure, kaizen-management and others. This is exactly about innovations, because the high level of EF in this quadrant means that the enterprise has already formed favorable conditions for improving labor productivity, there are not enough new approaches to strengthen its industry position
The strategy of support (quadrant «LEADERS»)		
EF [0,5;1] R_{LP} [1; ∞]	EF, R_{LP}: high	Maintaining the status quo of acquired positions through the establishment on the enterprise monitoring system of efficiency in using human resources and benchmarking of competitive-companies' positions
The strategy of increasing the efficiency in using human resources (quadrant «LEADERS»)		
EF [0,5;1] R_{LP} [1; ∞]	EF, R_{LP}: high	Rising investment in human resources development, improving the labor motivation mechanism, stimulating employees to innovations, strengthening the corporate culture and promoting a positive image of the employer in the labor market

* Compiled by the author

The main producers of ketchup and tomato sauces in the country are PJSC «Chumak» (TM Chumak) and PJSC «Volynholding» (TM Torchyn), which account for 60% volumes of output. In the table 3 according to their reporting and based on official statistics [13] on the average industry wage level, have been calculated the indicators of the efficiency in using human resources of these enterprises and their averages for the period, included in the dynamic standard.

Table 3

Table 3 – Metric of efficiency in using human resources of the investigated sauces and seasonings producers-enterprises of PJSC «Volynholding» and PJSC «Chumak»

№	Indicators	Units of measurement	Volynholding (E_1)			Chumak (E_2)			Average indices	
			Years			Years				
			2016	2017	2018	2016	2017	2018	E_1	E_2
1	**Labor productivity and personnel profitability**									
1.1	Profitableness of personnel	thousand UAH/person	124,6	118,2	134,0	-210,8	37,5	127,8	1,04	1,61
1.2	Labor productivity	thousand UAH/person	1514,1	1608,0	1578,9	1378,6	1214,6	1276,4	1,02	0,97
1.3	Capital-labor ratio	thousand UAH/person	294,4	324,3	316,9	177,3	168,0	182,0	1,04	1,02
1.4	The coefficient of ratio the average wage on the enterprise to the average industry wage	%	90,0	92,4	95,4	112,2	105,3	104,0	1,03	0,96
1.5	Defect coefficient due to fault of employee	%	0,95	0,9	1,2	1,0	1,4	1,6	1,14	1,26
2	**Stability of personnel and their qualitative composition**									
2.1	Coefficient of personnel stability	%	79,7	73,3	72,1	83,2	81,4	83,0	0,95	1,00
2.2	Coefficient of qualified employees stability	%	41,0	44,3	41,0	38,0	39,2	40,0	1,00	1,03
2.3	Coefficient of prospective employees turnover	%	1,1	0,5	1,3	2,0	2,3	2,9	1,53	1,21
2.4	Coefficient of personnel turnover	%	2,8	6,4	9,5	10,4	10,0	10,1	1,89	0,99
3	**Efficiency in using work time**									
3.1	Coefficient of efficiency in using work time	%	93,4	94,5	94,6	92,4	94,0	94,1	1,01	1,01
3.2	Coefficient of breach labor discipline	%	3,2	2,8	2,4	4,0	2,8	2,7	0,87	0,83

*Calculated according to Form №1 Balance Sheet (Statement of Financial Position), Form №2 Statement of Financial Results «Statement of comprehensive income», Form 1-PV Work report, internal personnel documentation on the quantitative and qualitative composition of the personnel of the enterprise

It is difficult to give an unambiguous answer as to which enterprise has more efficient human resources, bearing in mind the multi-vector trajectory of the movement of indicators over time and their value.

Express review shows that PJSC «Volynholding» has difficulties in the direction of fluctuations in labor productivity and its capita-labor ratio in the direction of decrease, increase of the share of defects, due to fault of employees, as well as disturbance of personnel stability and its qualitative composition by all indicators. In doing so, the enterprise offers candidates and pays employees a non-competitive salary, the level of which is below the industry average for three years. This may be a reason for the increasing personnel turnover of PJSC «Volynholding» and the relatively low but existing destabilization of its staff. PJSC «Chumak» problems also lie in the turnover of staff, including prospective staff, negative wage trends, despite the outperformance of the average market wage, and the loss due to human factors-related product shortages.

For the purpose of integral assessment of efficiency in using human resources of PJSC «Volynholding» and PJSC «Chumak» in table 4 was compiled a matrix of graph of reference ordering of its indicators (formula 16 fig. 2), which is based on the theory of matrices and the principle of transitivity, the matrix of their actual ordering for each enterprise (formula 17 fig. 2) and the matrix of their incidence (formula 18 fig. 2), are presented in table 5. Next, using the methods of nonparametric statistics according to the formula 19 (fig. 2), we calculated the integral index of the dynamic standard EF, which comes down to determining the degree of similarity of the matrices of the reference and actual ordering of indicators, that were constructed in the previous stages. As a result, Chumak's EF turned out be higher $(EF = 60 \div 94 = 0{,}64)$, than Volynholding's $(EF = 38 \div 94 = 0{,}4)$.

Finally, let us find out the value of the rating indicator of enterprise labor productivity, for which we use the data of the State Statistics Service [13] regarding its sectoral trends and the formula 20.

Table 4 – Matrix of a graph of reference ordering indicators of efficiency in using human resources of the enterprise

	1	P_p	LP	CL_r	C_w	C_{stabq}	C_{stab}	C_{ewt}	C_{turnpr}	C_{turn}	C_{bld}	C_{dfem-e}
1	X	-1	-1	-1	-1	-1	-1	-1	1	1	1	1
P_p	1	X	1	1	1	0	0	0	1	1	1	1
LP	1	-1	X	1	1	0	0	0	1	1	1	1
CL_r	1	-1	-1	X	1	0	0	0	1	1	1	1
C_w	1	-1	-1	-1	X	0	0	0	1	1	1	1
C_{stabq}	1	0	0	0	0	X	1	0	1	1	1	1
C_{stab}	1	0	0	0	0	-1	X	0	1	1	1	1
C_{ewt}	1	0	0	0	0	0	0	X	1	1	1	1
C_{turnpr}	-1	-1	-1	-1	-1	-1	-1	-1	X	1	0	0
C_{turn}	-1	-1	-1	-1	-1	-1	-1	-1	1	X	0	0
C_{bld}	-1	-1	-1	-1	-1	-1	-1	-1	0	0	X	0
C_{dfem-e}	-1	-1	-1	-1	-1	-1	-1	-1	0	0	0	X

* Compiled in accordance with the graph in Fig.1

Table 5 – The matrix of the ratios of reference and actual ordering indicators of efficiency in using human resources in PJSC «Volynholding» and PJSC «Chumak»

	1	P_p	LP	CL_r	C_w	C_{stabq}	C_{stab}	C_{ewt}	C_{turnpr}	C_{turn}	C_{bld}	C_{dfem-e}
1	X	1 (1)	1 (0)	1 (1)	1 (1)	1 (1)	0 (0)	1 (1)	0 (1)	0 (1)	1 (1)	0 (0)
P_p	1 (1)	X	1 (1)	1 (1)	1 (1)	0 (0)	0 (0)	0 (0)	0 (1)	0 (1)	1 (1)	0 (1)
LP	1 (0)	1 (1)	X	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (1)	0 (0)	1 (1)	0 (0)
CL_r	1 (1)	1 (1)	0 (0)	X	1 (0)	0 (0)	0 (0)	0 (0)	0 (1)	0 (1)	1 (1)	0 (0)
C_w	1 (0)	1 (1)	0 (1)	1 (1)	X	0 (0)	0 (0)	0 (0)	0 (1)	0 (0)	1 (1)	0 (0)
C_{stabq}	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	X	0 (0)	0 (0)	0 (1)	0 (1)	1 (1)	0 (0)
C_{stab}	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	X	0 (0)	0 (1)	0 (1)	1 (1)	0 (0)
C_{ewt}	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	X	0 (1)	0 (1)	1 (1)	0 (0)
C_{turnpr}	0 (0)	0 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	X	0 (1)	0 (0)	0 (0)
C_{turn}	0 (1)	0 (1)	0 (0)	0 (1)	0 (1)	0 (1)	0 (1)	0 (1)	1 (1)	X	0 (0)	0 (0)
C_{bld}	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)	0 (0)	0 (0)	X	0 (0)
C_{dfem-e}	0 (0)	0 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	X

*Compiled in accordance with the data table 3

** Figures in brackets () indicate the data about PJSC «Chumak»

In 2018, the labor productivity in the sauce and seasoning market is slightly higher than in the food industry as a whole. At the same time, its level in PJSC «Volynholding» is higher, and in PJSC «Chumak» it is lower than the average market mark, which influenced on the places of enterprises in the rating and, as a consequence, their location in the strategic matrix (fig. 4).

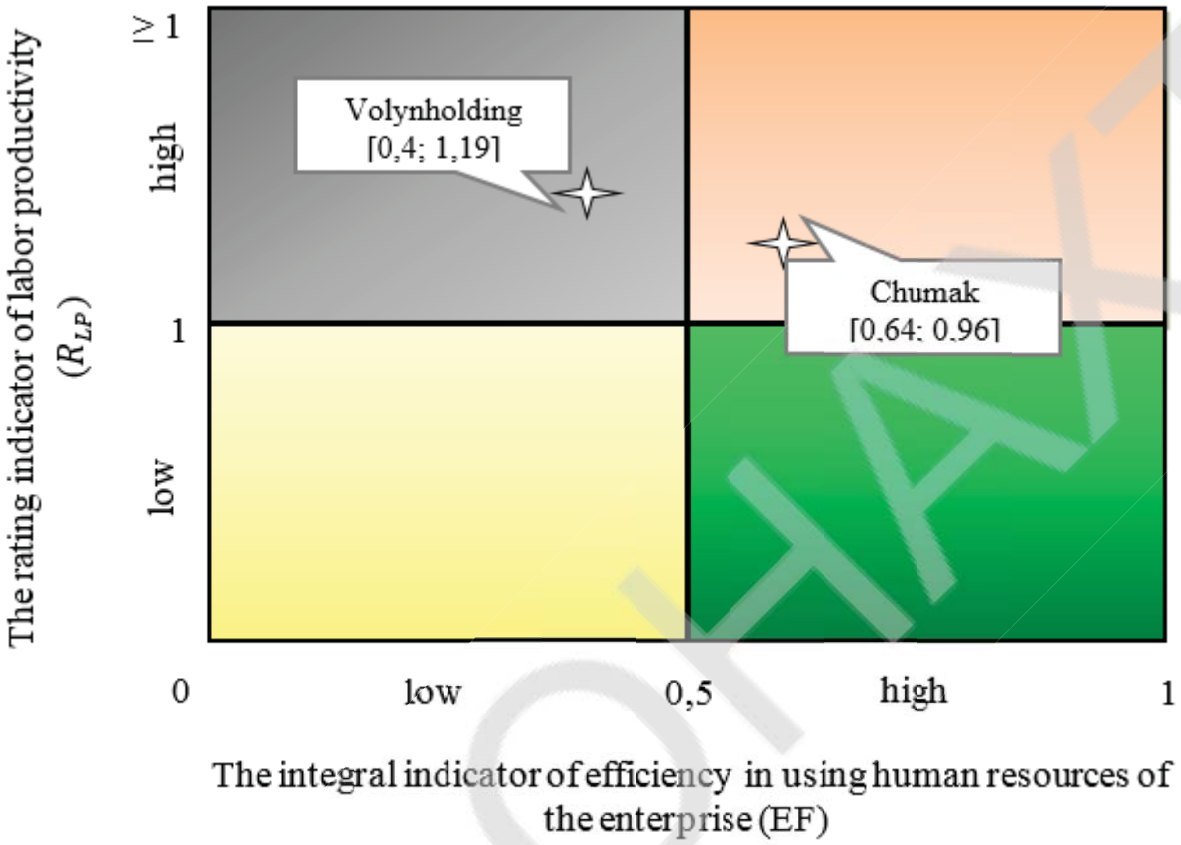

Fig. 4. Strategic position of surveyed enterprises in the matrix «the efficiency in using human resources – the rating indicator of labor productivity»

*The names and locations of the strategies in the quadrants correspond to fig. 3, the contents are specified in table 2

PJSC «Volynholding» get into the «Productive» quadrant. As the labor productivity indicator of the enterprise for several years exceeds its industry average value, thus providing a significant competitive advantage for the movement to the quadrant «Leaders», it is recommended to eliminate the weaknesses, identified during the assessment of the components of the dynamic standard of efficiency in using human resources, by paying the special attention to optimization personnel movement and reviewing the current system of work motivation. Instead, PJSC «Chumak», primarily, needs the reorientation to an innovative path of development: from the modifications to the product nomenclature, the technological upgrades, the implementation of Lean-management to re-engineering of HR processes – all that will allow it to identify and uncover potential reserves of labor productivity improvement, rising in the ranking to the leader position.

V. Conclusions

Dynamics of the market environment from outside the enterprise and permanent organizational transformations inside are reflected in the pace priorities of changes in

economical indicators of their activity, in particular, indicators of using human resources as a strategic asset and a source of future benefits from investments. With this in mind, the constructed dynamic framework can serve as a universal tool for integrated assessment and comparison of the efficiency in their using for manufacturing enterprises, regardless of industry, size, scale of production and ownership. Comprehensiveness of such estimation provides its combination with the rating, the symbiosis of which takes the form of a matrix of choice the strategy of efficient in using human resources, where as the vector lines are chosen its integral indicator, according to the normative-index model (nonlinear dynamic standard) and the rating indicator of labor productivity, weighted on the branch specificity. Each of the five strategies proposed is a program of basic recommendations that will allow to uncover potential reserves for improving efficiency in usng human resource and labor productivity at the enterprise. Logically, arises the question of determining the degree of difficulty individual indicators of the dynamic standard, which will signal to the executives on priorities in their decision (an opportunity for them not to waste efforts, but to concentrate on specific processes of personnel using), which determines the directions of further scientific research.

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