CHALLENGES AND PROSPECTS FOR THE DEVELOPMENT OF A NEW ECONOMY AT GLOBAL, NATIONAL, AND REGIONAL LEVELS

Collective monograph

CONTENTS

CHAPTER 1
IMPROVING THE SYSTEM OF INDICATORS
OF EFFECTIVE FINANCIAL SUPPORT
FOR SOCIAL PROTECTION

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INTRODUCTION

The result of any activity is linked to its purpose, which is interpreted as a planned result, an ideal, conceivable prediction of the end of the activity. The result of social protection of the population in the form of the beneficial effect of labor is to meet the social needs of vulnerable sections of the population, as well as to improve their social well-being, to solve the difficult life situation with the least cost (material, financial, labor, time). Any result should be evaluated in terms of achieving the goals. In economic science, the efficiency indicator is calculated as the ratio of achieved results to the resources used. How effective an activity has sometimes been can be judged by the results themselves, comparing them by year with similar indicators of other periods or other countries. The specificity of the assessment of financial support for social protection of the population is that, in addition to quantitative characteristics, the result should have a social effect, that is, a significant useful value for the individual and society. The result of financial support for social protection should be to raise the standard of living not only of those persons or social groups to whom social protection is provided, but of the whole population. The effectiveness of financial provision for social protection is ultimately manifested itself as a long-lasting positive trend in the well-being of the population. Therefore, this effectiveness should be assessed by determining its economic and social component. The latter is linked to the concept of externalities (external effects), which have no monetary dimension, are not taken into account by the market, but "cause deviations of private marginal products and costs from social marginal products and costs, breaking equilibrium". Arthur Pigou laid the basic understanding of the concept in 1920 in the book "The Economics of Welfare"[1]. The term "externalities" in

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[1] Pigou A.C. (1920). The Economics of Welfare. London: Macmillan. 953 p. URL: http://pombo.free.fr/pigou1920.pdf.; The Economics of Welfare. URL: https://www.britannica.com/ topic/The-Economics-of-Welfare

the 50's of the twentieth century was introduced by Paul Samuelsson into scientific circulation, he replaced the term "external economies or loss" of Alfred Marshall[2]. There are positive (improvement of health, growth of educational level of the population, etc.), and negative (pollution of environment, reduction of life expectancy) of externalities. The destructive influence of the latter is called upon by the state. Therefore, the activity of a state or economic entity is considered socially effective, if it will help to eliminate or minimize the negative effects of external effects or stimulate the expansion of positive externalities.

1.1. General information on social protection indicators

Specific characteristics are to indicate the effectiveness of social protection: social indicators and effective indicators. For example, the increase in the well-being of the population is an important indicator of social progress, and the indicators that express well-being may be several (increase in real wages, decrease in the share of food costs in the family budget, etc.). Social indicators mainly reflect the increase / decrease in the material and cultural development of society at the level of the "average individual", they allow medium-term planning to be carried out only by simple extrapolation from what has been achieved and are not able to give a differentiated characteristic of all complex changes in social processes. "In this sense, the system of social indicators is a necessary complement to social indicators and allows us to speak with scientific certainty about the specific working conditions and life of a person and their impact on his behavior and activity, people's attitude to living conditions and the like. The system of social indicators is capable of providing direct information about the mechanisms of action and the form of manifestation of social patterns in people's activities"[3].

It is necessary to distinguish between the indicators that characterize the work of the social protection system of the population and the indicators that indicate the effectiveness of the use of social protection funds. It is not the same thing. However, in fact, the success of social protection is a consequence of sufficient funding. We believe that social indicators, which symbolize the effectiveness of financial support for the social protection system of the population, can be grouped into these two groups and expressed by a number of indicators:

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[2] Samuelson P. (1955). Diagrammatic exposition of the theory of public expenditure. *Review of Economics and Statistics,* no. 37.

[3] Тропіна В.Б. Фіскальне регулювання соціального розвитку суспільства. Київ : НДФІ, 2008. 50 с.

Group 1 – "social security of the country", its indicators:

– The growth of the Human Development Index;

– Positive dynamics of the share of government spending on social protection of the population in the GDP structure;

– Positive dynamics of national per capita income;

– Gini coefficient;

– Significant reduction of property stratification;

– The level of unemployment within the norm or its significant reduction;

– Reduction of absolute poverty by international and combined criteria;

– Gradual reduction of poverty by structural criteria and caloric intake;

– Stable or reduced poverty situation;

– International ratings;

Group II – "social protection of the population", its indicators:

– Increase in the share of social protection expenditures in GDP, Consolidated Budget, State and / or local budgets;

– Positive dynamics of social standards, norms and norms;

– Positive dynamics of real wages;

– Low inflation;

– Subjective determination of a person's degree of self-protection, etc.

Of course, this list is not exhaustive. The first group of indicators is mainly used in international comparative studies; they are of a general nature. The second is usually used to analyze trends in the country or region.

Efficiency is the value of a variable and the idea of efficiency is a variable. Often, what was considered effective 40-50 years ago might not meet current criteria of efficiency and usefulness. For example, in world statistics, the increase in the share of government spending on social protection of the population in the gross domestic product is a major indicator. On the one hand, it is a fact of increasing state attention to the social protection of the population, and on the other – it can mean an increase in the number of those who need social support. Efficiency has different forms of manifestation and in each case, it is necessary to weigh carefully what was expected from an event and what was received.

Ukrainian statistics use a set of social indicators and social protection indicators. Therefore, the statistical collection "Social Protection of the Population of Ukraine" contains 114 indicators on general information at the macroeconomic level, information on the pension provision and on

social protection of certain categories of the population[4]. It provide a certain idea of different aspects of social protection. In our opinion, this collection needs to be improved through a number of points. First, in the State budget the item of expenditures on social protection of the population is called "Social protection and social security", but it does not reflect the real costs of social protection.

Secondly, in section 3 "Social protection of the population", besides general information (such as the number of persons with disabilities, etc.), information on social assistance, state content of the disabled categories and provision of social services is concentrated. That is, it is about social security. It would be appropriate to supplement the information on a number of indicators showing the results of social security separately by population groups and categories of citizens.

Third, the information in this section is limited because there are no data on social norms and regulations, for example, the amount of funds for the maintenance of one child in an orphanage, the cost of treatment or education of one child in a specialized boarding school, and the like. Section 2 "Pension provision" lacks information on non-state pension provision.

Fourth, there is no information on wages (except item 1.4. "Ratio of the average amount of the appointed monthly pensions and the average monthly wage"), which is one of the main social indicators of the living standards of the working population.

Fifth, the current state of society development also requires the provision of information on household self-defense capabilities. It would be advisable in a separate section together with the quantitative characteristics of households (the number of households in urban and rural areas, the number of families with two, three or more children and income per family member in such families etc.) to indicate some financial characteristics (dynamics of savings, the average cost of food per family member or medical care etc.).

Sixthly, there is no information about social assistance to victims of catastrophes of a man – made *disasters*, natural or other emergency nature.

Seventhly, the collection devoted to social protection of the population should include information on social insurance (it is advisable in a separate section).

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[4] Соціальний захист населення України. Статистичний збірник. Відп. за випуск І.В. Калачова. Київ : Державна служба статистики України, 2012. 119 с.

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A number of indicative indicators of the effectiveness of financial support for social protection should also be included in this collection. This is the proportion of citizens who have received a particular type of social assistance, the total number of those who need it or have applied to social protection bodies, as well as the proportion of those whose financial status has improved as a result of receiving one or another type of social assistance.

1.2. Scientific approaches to the essence of efficiency

There are several general criteria for determining effective spending: economically, without loss, within the specified amount with greater effect. In the first case, the result is achieved using the least money (the indicator is the amount of cost savings). In the second, there is a targeted use within the planned amount, so to speak, the utilization of the allocated amount (the indicator is the percentage of the plan implementation, the conformity of the expenses of the budget). In the third case, the best result is achieved by using the budgeted amount of funds (an indicator is the increase in the amount of expenses per one need while reducing those in need of protection, the amount from reducing unproductive costs, etc.). Sometimes the latter principle is implemented through a competition, where the evaluation of proposals is by different criteria and the purpose is to conclude a contract on the best terms.

According to Yu.D. Radionov, who notes that in economic science, efficiency is determined qualitatively and quantitatively by three principles: productivity, "resultivity" and economy[5]. The methods of evaluation are constructed on this basis. These are: 1) comparative analysis: the results achieved in the previous years are compared with the defined goals and alternative ways of solving certain problems are compared; 2) factor analysis: is a statistical approach, which is based on the impact of changing factors on the result; 3) data packet analysis: investigates the relationship between resources and results in terms of maximum performance achieved by the most progressive organizations.

In modern scientific studies, there is no single approach to defining the criteria and indicators of the effectiveness of the provision of social services, which in particular are the services of the social protection system. The recipient assesses the quality and accessibility of the services,

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[5] Радіонов Ю. Проблема ефективності використання бюджетних коштів. *Фінанси України*. 2011. № 5. С. 47 –55.

but the contractor assesses the adequacy of the funds and other protection parameters, and whether the process of providing social services to the end consumers is implemented as planned (comparing actual achievements with the planned ones). Therefore, for a qualitative assessment of the phenomenon of social protection, analytical, sociological, statistical, heuristic and other methods should be used.

The principle of cost savings does not always mean rational or optimal use. Thus, the optimization of the general educational schools in Ukraine during the entire of transformational period has led to some cost savings for these institutions. Since 1995, the number of schools in rural areas has decreased by more than two thousand. This was one of the reasons that many school-age children in rural areas lost the opportunity to attend comprehensive school. The damage to the socio-economic potential of this "economy" is difficult to determine. The emergence of such a number of people with low educational level in the labor market in the near future will significantly complicate their employment and require considerable funds for their "training", the value of which may exceed the costs saved from the enlargement of the network of comprehensive schools. In addition, this measure of "economy" entails the need to implement the social program "School Bus" and the problem of employment of released teachers.

The second example. The purchase of the well-known medical antiviral drug "Tamiflu" during the influenza epidemic in 2010 spent almost the annual budget of the Ministry of Health of Ukraine. However, the expected epidemic did not happen. The drug remained unclaimed. By the way, in Ukraine, about 20000 people die from seasonal flu annually, while over 400,000 die from cardiovascular disease (440.3 thousand in 2011, 384.8 thousand in 2017), from oncological diseases 80-90 thousand (89.0 thousand in 2011, 78.3 thousand in 2017)[6]. Consequently, such expenditure can unlikely be considered justified.

It can never say that maximum efficiency has been achieved and nothing else can be done. Circumstances change; requirements change, new opportunities, methods and technologies emerge. Performance evaluation should occur regularly through realistic evaluation cycles.

The effectiveness of financial provision for social protection needs can be determined by the factor of provision as a result of the ratio of allocated funds to the need. For example, a measure requires UAH 50 million,

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[6] Статистичний щорічник України за 2011 рік. За ред. О.Г. Осауленка. Київ : ТОВ «Август Трейд», 2012. 556 с.; *Населення України за 2017 рік. Демографічний щорічник. Державна служба статистики України.* С. 113.

UAH 35 million is allocated. That is, the event is funded by 70%. Coefficient of provision is 0.70. Of course, the closer it is to 1, the better the need is met. But, if the need is calculated according to outdated standards, even with its 100% funding, sufficiency will be pseudo-effective. Therefore, the problem must be solved comprehensively – using various indicators, or a set of indicators, or using different methods.

The common method of calculating the economic effect for the year by the formula:

$$EE_y = E_y - E_{nc} * C,$$

where E_y is the annual savings or results achieved through specific activities;

E_{nc} – normative coefficient of efficiency; a constant value that depends on the specific area of activity;

C – the cost of the specific activity for which the economic impact is calculated.

Ukrainian scientist O. A. Lanovenko proposes a formula for evaluating the effectiveness of social services[7].

$$E = (R / PA + C + CA) + (QS + AS + AHF), where$$

E – efficiency; R – result, PA – the purpose of the activity, C – the cost, CA – the conditions of activity, QS – quality of service, AS – availability of service, AHF – focus of service on activation of the vital forces.

The effectiveness index is calculated on a scale of 1 to -1. According to O. Lanovenko, the quality of service is a combination of characteristics that reflect the ability of the service provided to meet the needs and interests of its recipient. The accessibility of the service is characterized by the conditions of access to the territories, premises within which the services are provided; providing the population with information about the work of social institutions, types of services etc. Activation of the vital forces of the unprotected person in the process of providing social services should include an increase in the level of social activity of the client, the desire to seek a way out of a difficult situation themselves, etc.

In our opinion, the idea itself is interesting, but a number of components of this formula are difficult to quantify and therefore unsuitable for practical work.

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[7] Лановенко О.А. Социальная эффективность предоставления социальных услуг: критериальные показатели ее оценки. *Вісник Харківського національного університету імені В.Н. Каразіна*. 2010. № 889. С. 142–147.

Social effect is a kind of analogue of economic effect. It cannot be calculated on a cost-benefit principle. However, since the social effect is the result of transformations in the social sphere, its calculation must be aimed at a clear result. For this purpose, the effect indicators should be determined through the natural or value indicators of the investment activity, that is, in terms of investment.

The effectiveness of financial support for social protection depends primarily on the management of expenditures of a certain budget for social protection as a determining component of the process of using budget funds. The effectiveness of the use of budget funds should be understood as the achievement of goals and objectives in the framework of the implementation of state programs by correlating the result and costs (volume of expenses). The economic efficiency of social spending budget can be defined as the monetary value of the economic effect (increase in local budget revenues) in relation to the spent social expenditures, by the formula:

$$EE_{SELB} = \Delta BP_{LBi} / \Delta SE_{LBi-1}, \text{ where:}$$

EE_{SELB} – economic efficiency of expenditures of local budgets of social purpose;

ΔBP_{LBi} – increase in local budget revenues in the i -th period, caused by the effect of social expenditures in the previous period;

ΔSE_{LBi-1} – increase in expenditures of local social purpose budgets.

Let us illustrate with the example of the budget of one of the districts of the city of Dnipro, how the formula below can determine the economic effectiveness of spending on social protection and education (Table 1).

According to the results of the calculations, it can be concluded that the costs should be more cost-effective in the pre-crisis period, while in this area there is a tendency to reduce the efficiency of expenses in the most priority areas every year.

We propose a method of assessing the effectiveness of financial support for social protection of the population. It can be used to determine the effectiveness of the implementation of social programs or individual measures of social protection; it gives an opportunity to evaluate not only the nature of the use of funds for the event, but also the social effect of it. The method is to calculate the coefficient of efficiency of use of budgetary funds (KE_i) and is carried out in three stages:

Table 1

Calculation of economic efficiency of expenditures

Year	Expenditure on the social protection, thousand UAH ($SE_{LB\,soc}$)	Expenditure on education, thousand UAH. (SE_{LBedu})	Revenues, thousand UAH. (BP_{LBi})	Economic effectiveness of social protection expenditures (EE_{SEsoc})	Economic effectiveness of education expenditures (EE_{SEedu})
2005	5673,20	16337,70	74327,56	-	-
2006	6889,20	21560,50	76566,89	13,5	4,7
2007	20774,88	26476,70	78237,20	11,4	3,7
2008	27938,98	41226,83	79547,17	3,8	3,0
2009	44251,50	47247,43	105479,91	3,8	2,6
2010	57147,20	55573,65	127818,85	2,9	2,7
2011	63502,10	55402,00	132931,20	2,3	2,4
2012	70557,30	72059,30	159932,37	2,5	2,9

Source: calculated by the author

1) assessing the achievement of the target indicators for each line of expenditure (i); the indicator can be represented as the coefficient of the degree of achievement of the planned indicative (recommendatory) indicators for each direction of spending of budgetary funds (CD and PI), it can also be considered as the coefficient of social effect, and calculated by the formula:

$$K_{PI\,i} = \left(\sum_{1}^{k} F_i / P_i \right) / k, \text{ where:}$$

$K_{PI\,i}$ – the degree (coefficient) of achievement of the planned indicators;

F_i – the actual value of the indicator for N year;

P_i – the planned value of the indicator for N year;

k is the number of indicators for the direction of spending of budgetary funds;

2) assessing the completeness of the use of budgetary funds for each line of expenditure of budgetary funds (i); the estimated indicator can be represented as the coefficient of completeness of use of budgetary funds (K_{CBFi}) for each direction of spending of budgetary funds, and calculated by the formula:

$$K_{CBFi} = F_i / P_i, \text{ where:}$$

K_{CBFi} – the coefficient of completeness of the use of budgetary funds for each direction of spending of budgetary funds;

F_i – the actual expenditures of budgetary funds in the *i*-th direction of their spending in N year;

P_i – the planned expenditures of budgetary funds in the *i-th* direction of their spending in N year;

3) assessing the effectiveness of financial support for social protection of the population in the *i*-th direction in N year, which comes down to calculating the efficiency ratio of budgetary funds (K_{Fi}), and calculated by the formula:

$$K_{Ei} = K_{PI\,i} / K_{CBFi}, \text{ where:}$$

K_{Ei} – the coefficient of the effectiveness of the use of budgetary funds in the i-th direction in N year.

If $K_{Ei} = 1$, this indicates high cost-effectiveness. A consolidated estimate of the planned budgetary efficiency can be found as the sum of the estimates for each area. In some cases (depending on the purpose of the task), the resulting performance indicator can be adjusted to an additional calculated factor of social effect. The latter takes various forms (security of the needy, coverage of persons in need of protection, etc.). This method is simple enough and can be applied in the practical work of social protection bodies and institutions of social services.

1.3. Modeling of the integral indicator
of social self-protection of households

Efficiency is the result of a number of efforts to achieve these goals. Sometimes efficiency can be estimated by constructing an integral metric from several others. This is characteristic of assessing such an indicator of effectiveness as social protection; it focuses all efforts of the state (authorities) to improve the welfare of the population.

The use of different indicators to determine the level of socio-economic security creates the problem of their measurement and combination, which can be solved based on the use of relative indicators, in particular, it can be a score in points. We will show this using our research as an example. We tried to assess the importance of the factor or group of factors affecting the level of self-protection of households (LPH) for different population groups by questioning and calculating the integral coefficient for each group of respondents. Pupils, students, workers and pensioners attended the survey. Table 2 shows the data characterizing the

values of factors affecting the LPH, on a 100-point scale, residents of Dnipropetrovsk region. There are two groups of factors: "Material factors" F_1 (F11 – F20) and "Intangible factors" F_2 (F21– F30).

**Assessment of the factors affecting the level
of self-protection of households on a 100-point scale**

№ w/o	Factors	The average value of the factor by groups of respondents, points			
		Pupils (x_1)	Students (x_2)	Workers (x_3)	Pensioners (x_4)
Material factors F_1					
1	Income (salary, pensions, scholarships) (F_{11})	18,1	15,2	24,2	50,0
2	Taxes (F_{12})	12,3	10,8	10,8	7,8
3	Prices (F_{13})	11,4	10,7	10,0	10,5
4	Interest on loans (F_{14})	10,3	9,2	8,3	4,6
5	Savings ability (F_{15})	11,0	8,5	7,4	5,1
6	Opportunity to insure property, life, health (F_{16})	6,2	5,1	8,0	3,8
7	Availability of housing, land, car, etc. (F_{17})	7,7	7,2	9,6	6,9
8	Rich parents, relatives, friends(F_{18})	10,0	14,7	9,0	6,0
9	Lotteries, Legacy (F19)	4,0	7,2	5,7	1,9
10	Non-labor income (ability to steal, not pay tax) (F20)	8,9	11,4	7,1	4,3
Intangible factors F_2					
1	Education (F_{21})	21,5	20,3	19,0	20,5
2	Quality of medical care (F_{22})	12,0	18,0	16,0	22,0
3	State social guarantees (F_{23})	9,7	7,4	10,0	5,6
4	Effectiveness of the work of social protection authorities (F_{24})	7,5	5,2	8,1	8,1
5	Work of the Judiciary, Prosecutor's, Police (F_{25})	12,4	8,1	7,8	10,0
6	Political stability (F_{26})	9,0	9,9	11,9	7,2
7	Political system (Regime, Democracy) (F_{27})	6,8	9,3	5,0	5,1
8	Civil Society Institutions (F_{28})	6,0	6,7	7,0	2,1
9	Employment system (F_{29})	8,0	9,0	9,2	10,0
10	The loyalty of the company management (organization) (F_{30})	7,1	6,0	6,0	9,5

For the posterior sets of baseline statistics, 10 were selected for each group of factors. To construct a generalized index – an integral index LPH (I_{LPH}) on selected aspects one of the methods of multidimensional statistics is applied – the principal component method[8]. A necessary procedure for measuring LPH is the preliminary unification of the selected base indicators, i.e. the application to them of such a transformation, which will result in all of them being measured in an N – point scale. In this case, the zero value of the transformed indicator will correspond to the lowest level of LPH by the respondents, and the maximum value of N – to the highest. Such unification will ensure comparability and comparability of the created information base. For stimulus indicators, the growth of which contributes to an increase in the LPH index, the value of the corresponding unified variable was calculated by the formula (1):

$$F_{irj} = \frac{\tilde{F}_{irj} - \tilde{F}_{rj\min}}{\tilde{F}_{rj\max} - \tilde{F}_{rj\min}} N, \tag{1}$$

where F_{irj} – is the *i*-th value of the *j*-th base of the unified index of the *r*-th aspect LPH F_{rj} ($i = \overline{1, n}$, $r = \overline{1, 3}$, $j = \overline{1, m_r}$, n – the number of observations of the base indicator F_{rj}, m_r – the number of base indicators of the *r*-th aspect of the LPH, which were considered);

$\tilde{F}_{irj}$ – the *i*-th value of the *j*-th base is not unified indicator of the *r*-th aspect of the LPH $\tilde{F}_{rj}$;

$\tilde{v}_{rj\min}$ – the minimum value of the *j*-th base is not unified indicator of the *r*-th aspect of the LPH $\tilde{F}_{rj}$;

$\tilde{F}_{rj\max}$ – the maximum value of the *j*-th base is not unified indicator of the *r*-th aspect of the LPH $\tilde{F}_{rj}$.

The calculation of integral indicators X_r ($r = \overline{1, 4}$), which characterize certain aspects of the LPH, was carried out according to the formula:

$$X_r = \sum_{j=1}^{m_r} w_{rj} F_{rj}, \tag{2}$$

where w_{rj} – the weight with which the *j*-th indicator *r*-th aspect LPH is taken into account when calculating the integral index.

[8] Айвазян С.А. К методологии измерения синтетических категорий качества жизни населения. *Экономические и математические методы*. 2003. Т. 39. № 2. С. 33–53.

Weights w_{rj} were calculated by two methods. In the first case, the weights w_{rj} were defined as the part of dispersion $D(F_{rj})$ of the indicator F_{rj} in the total dispersion of all partial criteria of the *r-th* block:

$$w_{rj} = \frac{D(F_{rj})}{\sum\limits_{j=1}^{m_r} D(F_{rj})}.$$ (3)

The construction of the integral index of a particular aspect of the LPH is in the second way carried out using the method of factor analysis – modified first principal component.

The procedure for constructing the first principal component is based on the following basic idea. Among all the scalar variables characterizing a some aspect of the LPH, we are looking for the one with the most accurate values (using appropriate linear regression models) of the values of all partial criteria F_1, F_2,..., F_m, that are considered (hereinafter, the index r corresponding to the LPH aspect, is omitted). The construction of the first major component was by the following procedure:

1. Based on the original values of unified indicators of some aspect of LPH F_1, F_2,..., F_m, standardized values of these indicators are calculated F_1^*, F_2^*,..., F_m^* and the matrix F^* of standardized values of the output factors and the matrix of paired correlations were constructed:

$$R = \frac{1}{n} F^{*T} F^*.$$ (4)

2. To calculate the first principal component $F_1 = l_1 \mathbf{X}^*$ an optimization problem was solved:

$$\begin{cases} D(l_1 F^*) \to \max\limits_{l_1}; \\ l_1 l_1^T = 1, \end{cases}$$ (5)

System of equations to determine l_1 has the form:

$$(R - \lambda_1 I_m) l_1^T = 0,$$ (6)

where λ_1 – the largest eigenvalue of the matrix R, which we find by solving the characteristic equation $|R - \lambda I_m| = 0$;

I_m – unitary matrix of dimension m.

Thus, the first principal component F_1 is obtained as a linear combination:

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$$F_1(F^*) = l_1 F^*,$$ (7)

where l_1 – matrix eigenvector R, which corresponds to the largest eigenvalue λ_1 of this matrix.

As a measure of informativeness of the first major component F_1 the proportion k of the total dispersion of this component in the total dispersion of the initial indicators is determined:

$$k = \frac{D(F_1)}{D(F_1^*) + ... + D(F_m^*)}.$$ (8)

Since $D(F_1) = \lambda_1$, $D(F_1^*) = ... = D(F_m^*) = 1$, the criterion of informativeness can be represented as:

$$k = \frac{\lambda_1}{m}.$$ (9)

The disability area of a single scalar indicator of some aspect of the LPH is determined by the inequality:

$$k < k^*$$ (10)

According to the modified main component method, when calculating according to the formula (11) as weights w_{rj} used squares components j eigenvector l_1 covariance matrix of variables F_1, F_2,...,F_m.

Construction of generalized LPH index of higher level X was by the formula:

$$X = \sum_{r=1}^{2} w_r X_r,$$ (11)

where weights w_r are defined as parts of dispersions $D(X_r)$ of the integral indicators X_r in the total dispersion:

$$w_r = \frac{D(X_r)}{\sum_{j=1}^{2} D(X_r)}.$$ (12)

The calculation of the generalized LPH indicators was carried out using the SPSS statistical software package. It was assumed that N = 10. Note that in the calculations using the modified first principal component method, the variance explained by the first principal component was more than 50% for all aspects of the LPH considered, that is, in all cases the criterion efficiency of the method was performed.

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In the table 3 shows the calculation of the total dispersion, explained by the first principal component for constructing the matrix of components for the "Material factors" (Table 4).

<div align="right">Table 3</div>

The total variance explained by the first principal component (Total Variance Explained)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5,855	68,832	58,552	5,855	58,552	58,552
2	2,546	7,888	84,010			
3	1,599	6,052	100,000			
4	0	0	100,000			
5	0	0	100,000			
6	0	0	100,000			
7	0	0	100,000			
8	0	0	100,000			
9	0	0	100,000			
10	0	0	100,000			

Extraction Method: Principal Component Analysis.

<div align="right">Table 4</div>

Component Matrix(a)

Component	Value
$\tilde{F}_{11}$	-,780
$\tilde{F}_{12}$	-,803
$\tilde{F}_{13}$	-,965
$\tilde{F}_{14}$	,563
$\tilde{F}_{15}$	,980
$\tilde{F}_{16}$	,621
$\tilde{F}_{17}$	,867
$\tilde{F}_{18}$	,575
$\tilde{F}_{19}$	,560
$\tilde{F}_{20}$	-,783

Extraction Method: Principal Component Analysis

The table 5 shows the calculation of the integral LPH index, calculated according to the first and other methods.

Table 5

**Calculation of factor values for construction
of integral index of LPH by material factors**

Factor	$X_1^{(I)}$	$X_2^{(I)}$	$X_3^{(I)}$	$X_4^{(I)}$
F_{11}	0,83	0	2,59	10
F_{12}	10	6,67	6,67	0
F_{13}	10	5	0	3,57
F_{14}	10	8,07	6,49	0
F_{15}	10	5,8	3,9	0
F_{16}	5,71	3,1	10	0
F_{17}	2,96	1,11	10	0
F_{18}	4,60	10	3,45	0
F_{19}	3,96	10	7,17	0
F_{20}	3,52	0,0	6,06	10

Table 6

**The calculation of the integral index
of the LPH performed by the first and other methods**

Factor	$X_1^{(I)}$	$X_2^{(I)}$	$X_3^{(I)}$	$X_4^{(I)}$
Y_{11}	6,55	4,36	5,15	2,65
Y_{12}	6,47	4,28	4,09	2,58

The analysis of the table 5 and Table 6 shows the comparability of the results obtained by the first and second methods. Higher factor values were obtained by the modified principal method component, which shows the benefits of this method over the first one. In the table. 7 shows the calculation of the total variance, which is explained by the first principal component for constructing a component matrix by "Intangible factors".

The calculation of the values of the factors for the construction of the integral index of the LPH on the material factors is presented in table 8.

Table 7

**The total variance that is explained
by the first principal component (Total Variance Explained)**

Compo-nent	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,860	48,603	48,603	4,860	48,603	48,603
2	2,952	29,524	78,127			
3	2,187	21,873	100,0			
4	0	0	100,0			
5	0	0	100,0			
6	0	0	100,0			
7	0	0	100,0			
8	0	0	100,0			
9	0	0	100,0			
10	0	0	100,0			

Extraction Method: Principal Component Analysis

Table 8

Component Matrix(a)

Component	Value
$\tilde{F}_{11}$	-,780
$\tilde{F}12$	-,803
$\tilde{F}13$	-,965
$\tilde{F}14$	,563
$\tilde{F}15$	,980
$\tilde{F}16$	,621
$\tilde{F}17$	,867
$\tilde{F}18$	,575
$\tilde{F}19$	,560
$\tilde{F}_{20}$	-,783

The analysis of the table. 9 and table. 10 shows the comparability of the results obtained by the first and second methods. The higher factor values were obtained by the modified principal component method, which indicates the advantage of this method over the former. Based on the procedures of dimensionality reduction and construction of integral

indicators, the rating for each calculated integral indicator is calculated as a generalized estimate.

Table 9

The calculation of the values of factors for the construction of the integral index of the LPH by material factors

Фактор	$X_1^{(II)}$	$X_2^{(II)}$	$X_3^{(II)}$	$X_4^{(II)}$
F_{21}	10	5,2	0	6
F_{22}	0	6	4	10
F_{23}	9,32	4,09	10	0
F_{24}	7,93	0	10	10
F_{25}	10	0,7	0	4,8
F_{26}	3,83	5,74	10	0
F_{27}	4,19	10	0	0,23
F_{28}	7,96	9,39	10	0
F_{29}	0	5	6	10
F_{30}	3,14	0	0	10

Table 10

Calculation of integral index of LPH, conducted by the first and other methods

Фактор	$X_1^{(II)}$	$X_2^{(II)}$	$X_3^{(II)}$	$X_4^{(II)}$
Y_{21}	5,52	4,34	5,02	5,28
Y_{22}	5,46	4,26	4,69	5,19

Thus, the survey conducted and the application of the above methods made it possible to find out that by the first group of factors (F1), the pupils who rated material factors higher than the other groups of respondents received the highest value of the integral factor of 6.55 (tabl.6). The second highest value of 5.15 is the integral coefficient obtained by the workers; 4.36 received students and 2.65 pensioners. The highest value of the integral coefficient in the second group of factors (F2) 5.52 was obtained by students who ranked humanitarian factors above the other groups. 5.28 – by pensioners, 5.02 – by workers and 4.34 – by students. Students in the second group of factors (F2), who ranked humanitarian factors above the other groups, 5.28 – by pensioners, 5.02 – by workers and 4.34 – by students, obtained the highest value of the integral coefficient 5.52. The results of the calculations made by the second method are almost similar.

Among the material factors, the largest number of points 107.5 received "income", 42.6 – "prices", 41.7 – "taxes". Among humanitarian factors, the highest score was 115.1 for education, 68 for health care and 38.3 for the judiciary.

CONCLUSIONS

The concept of the effectiveness of those or other activities is often subjective. But there are generally accepted criteria that allow to evaluate the success of a case and talk about its effectiveness. This is especially important when it comes to evaluating social protection measures, since most of them are financed from local or state budgets.

The modern system of financing the social sphere in Ukraine is based mainly on estimated financing, which is based on the costly method. For market conditions, it is not entirely appropriate, since it does not contain mechanisms to stimulate the quality and quantity of services; creates interest in increasing costs (the size of financing next year depends on it); requires institutions and organizations in the social sphere to have a control mechanism at all stages of the process of creating a service. In addition, most importantly, it inhibits the development of market relations in the sectors of the social sphere, since it is oriented, when choosing a service provider, mainly to government organizations in this sphere. Over the past few years, the principle of cost saving has prevailed in social policy. However, this principle does not always mean rational or optimal use.

The proposed method for assessing the effectiveness of financing of social protection of the population (namely the coefficient of efficiency of the using budgets resources, which is conducted in three stages) can be used to determine the effectiveness of the implementation of social programs or individual social protection measures. It makes it possible to evaluate not only the nature of the use of funds for the event, but also the social effect of it.

Sometimes it is advisable to evaluate in relative indicators (in points). The example, shown by us, demonstrates how this can be done when processing the data of a sociological survey.

One of the prerequisites for effective financial support of social protection of the population is the use of real and scientifically sound norms and financial standards. In Ukrainian legislation, the classification of social standards is carried out according to two criteria: by the nature and degree of satisfaction of social needs; classification of social standards – according to the main spheres of human life: education, healthcare, culture,

etc. This means that the standards should reflect the provision of the population with everything necessary for the organization of everyday life. But the size of social norms established by the state in many cases is determined without sufficient justification and is revised depending on the inflation rate and available financial resources, and often for political reasons.

Prospects for further research in this direction. Therefore, to eliminate these problems, we need a transition from estimated financing of those activities that are related to the provision of social services, to more market mechanisms – normative per capita financing and financing based on a social order. The introduction of normative per capita financing allows optimizing the resources of the social sectors, increasing the transparency of the budget process, and evening out the budgetary provision of the territories. And financing on the basis of a social order means connecting social institutions to the system of competitive bidding and public procurement. True, the transition to normative financing of the social sphere is difficult due to the lack of standard methods for calculating per capita financial standards, which require a system of natural social standards.

SUMMARY

The article deals with scientific and methodological approaches to assessing the effectiveness of financing social protection measures. A number of approaches to determining the effectiveness of social service delivery have been generalized. It is noted that the principle of cost savings does not always mean rational or optimal use. The state policy of optimization during medical reform and in the sphere of education in Ukraine has been criticized. It is proved that in order to finally determine the effectiveness of financial support for social protection, it is necessary to calculate not only the economic efficiency of expenditures, but also the social effect of the measures carried out. A method of assessing the effectiveness of financing for social protection is proposed, which can be used to determine the effectiveness of the implementation of social programs or individual measures of social protection, which makes it possible to assess not only the nature of the use of funds for the event, but also the social effect of it. The method of the principal component was used to calculate the integral coefficient in determining the significance of factors of socio-economic security of households in the course of a sociological survey.

REFERENCES

1. Pigou, A. C. (1920). The Economics of Welfare. London: Macmillan, 953 p. URL: http://pombo.free.fr/pigou1920.pdf

2. The Economics of Welfare. URL: https://www.britannica.com/topic/The-Economics-of-Welfare

3. Samuelson P. Diagrammatic exposition of the theory of public expenditure. *Review of Economics and Statistics*. Vol. 37. No. 4 (Nov. 1955), pp. 350–356.

4. Тропіна В.Б. Фіскальне регулювання соціального розвитку суспільства. Київ : НДФІ, 2008. 368 с.

5. Радіонов Ю. Проблема ефективності використання бюджетних коштів. *Фінанси України*. 2011. № 5. С. 47–55.

6. Соціальний захист населення України. Статистичний збірник. Відп. за випуск І.В. Калачова. Київ : Державна служба статистики України, 2012. 119 с.

7. Лановенко О.А. Социальная эффективность предоставления социальных услуг: критериальные показатели ее оценки. *Вісник Харківського національного університету імені В.Н. Каразіна*. 2010. № 889. С. 142–147.

8. Айвазян С.А. К методологии измерения синтетических категорий качества жизни населения. *Экономические и математические методы*. 2003. Т. 39. № 2. С. 33–53.

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CHAPTER 2
VALUE ADDED IN THE SYSTEM
OF FINANCIAL INDICATORS OF THE CORPORATE
ENTERPRISES' BUSINESS ACTIVITY

Vakulchyk O. M.

INTRODUCTION

One of the main directions of the reforms taking place at the microeconomic level is a creation and development of corporate (joint-stock) ownership. The poorly performing economy of socialist enterprises having remained as Ukraine's inheritance, lack of a strategic program of economic transformation in the transition period as well as lack of managers' knowledge of corporate governance methods are the reasons for the unprofitable activity of numerous corporatized and privatized enterprises. Today, managers of joint-stock companies face the challenge of proper management, since such companies differ from those of other organizational and legal forms in separating capital owners from participation in management.

Corporate governance issues are being researched by scientists both abroad and in Ukraine. The most famous foreign researchers among them are R. Braille, Y. Brigham, Van Horn, R. Westerfield, B. Jordan, Davis Steven, Dumb Ada, Dubiel Stanley, S. Myers, S. Ross. Russian scientists who have contributed to the development of the corporate governance theory are V. Bocharov, A. Denisov, S. Zhdanov, A. Ivanov, V. Leontiev etc. The list of Ukrainian scholars includes L. Dovgan, V. Yevtushevsky, O. Karbovnik, M. Korolenko, O. Mendrul, S. Pishpek, N. Ryazanov, V. Sutormina, M. Sirosh, V. Tarnavsky, V. Fedosov, L. Venger, M. Gridchina, A. Denisov, D. Isaev, N. Kalach, T. Momot, G. Skudar, M. Chumachenko, M. Shkilnyak etc. deal with the improvement of the financial and economic mechanism of corporate management. However, despite a great deal of scientific works devoted to this issue, some its aspects are insufficiently studied in the economic literature.

The transition economy of Ukraine is marked by a large number of enterprises with low production efficiency. The main challenge of the business environment of Ukrainian enterprises is lack of sufficient profit, which leads to their insolvency and subsequent bankruptcy. The financial

results of various joint-stock companies both do not contribute to the growth of capital and do not even provide simple return on investment. Instead, capital is reduced due to losses, which points to downturn in the development of these companies' business. In today's economic conditions with a great deal of unprofitable enterprises, the indicators of financial results of performance, return on equity, return on assets, profitability of business activity are becoming more and more negative and their subsequent analytical decomposition gets more complicated. This problem may be resolved by implementing effective management based on a systematic approach in order to increase the efficiency of joint-stock companies' business activity.

At present joint-stock companies demand new criteria to evaluate the effectiveness of their operations, which would provide true information whether the goals of corporate governance are achieved or not, in particular, whether the interests of all their members are satisfied[1]. Yet so far this issue has not been properly addressed both in the studies of the related economic science and in the concepts and methodological developments of the relevant bodies of public administration dealing with economic issues.

The indicator for estimating corporate enterprises' performance should reflect the main levers of value creation and provide necessary information to make management decisions both by managers and shareholders of a joint-stock company. At the same time, this indicator should also reflect the contribution of all participants to the creation and distribution of value and be effective enough for analytical decomposition in the system of financial results of an enterprise's business activity.

2.1. Value added as a performance indicator of enterprises with corporate governance

The common financial indicator, which usually evaluates financial performance of an enterprise and is used both abroad and in domestic methods of analyzing an enterprise's business activity, is profit. However, according to many financial experts, it does not fully reflect the main levers of value creation.

The presence of a large number of unprofitable enterprises in Ukraine brings about methodological problems arising during the calculation and

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[1] Шкільняк М. Менеджмент у системі корпоративного управління. *Вісник Тернопільського національного економічного університету.* 2018. № 2. С. 7–20.

interpretation of economic indicators of their activities. These circumstances require a special approach to developing a technique for analyzing the activities of both profitable and unprofitable enterprises. The new requirements also highlight the need for appropriate indicators that would provide relevant and reliable information as to the performance results and financial status of corporate enterprises.

Such an indicator should make it possible to measure the results of corporate enterprises' business activity in the current conditions of transition economy and provide managers and, if necessary, shareholders of a joint-stock company with proper information as to the management of economic processes.

The indicator that addresses the mentioned requirements is value added created and distributed by an enterprise in the course of its activity. It basically reflects the efficiency of an enterprise's activity in terms of corporate governance due to the fact that value added is distributed among all participants of corporate relations in the form of wages, interest on attracted capital, dividends and taxes as well as some part of it may remain for further company's development.

Value added is a much deeper and more fundamental criterion for estimating the results of an enterprise's business activity than profit, since it does not only measure a company's performance as a whole, but also assesses its social contribution. In particular, the distribution of value added provides information as to a respective remuneration share of a corporate governance team. Figure 1 shows the main directions of value added usage and presents the elements into which it is distributed. Thus, the main participants in corporate governance, who determine the direction of value added distribution, include: company staff; state; suppliers of capital (own and attracted).

Value added is the reason why a company has been set up and, what is more, the financial results of its activity depend entirely on the proportions of value added distribution into its constituent elements. Value added marks the result of the company owners', managers' and employees' efforts and reflects a level of public benefits. From this point of view, value added can be seen as a criterion for estimating the results of the business activity of a corporate enterprise.

Therefore, to make a relevant and reliable estimation of the business activity of a company with corporate governance and further analytical decomposition of the selected criterion, it is advisable to use value added created by such a company.

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Value added is one of the most difficult economic categories. To understand its essence, it is necessary to study the history of value added paradigm as well as turn to the basics of economic theory.

Modern economic theory specifies that not only employees but also means of production are involved in the creation of value added and profit. This point of view is upheld particularly in the Western economic theory, which is based on four factors of production: land, capital, labor and entrepreneurial capability[2].

American scientists K. Cobb and P. Douglas analyzed the influence of factors of production on the rate of new created value (so-called production function). According to their calculations, which were carried out in the 50s of the 20th century in relation to the American economy, the contribution of labor to the growth of national income was ¾, while that of capital was ¼.

New created value is precisely called *value added*, considering the fact that an enterprise, during the process of production, adds new value to past materialized labor costs.

There are several ways to define value added, but all these definitions mean nearly the same:

– value added is an increase in the value created by an enterprise in the process of goods (works, services) production. It includes labor remuneration,

– profit and some other elements. In practice, value added is calculated as the difference between the cost of finished products sold and the cost of raw materials, supplies and semi-finished products used for their manufacture[3];

– value added (in economic theory) is the value of a product sold by a company with the subtraction of the cost of supplies used by this company for its production. Value added is equal to a part of revenue that includes equivalents of wages, rents, interest and profit [4] ;

– value added (in the measurement of GDP, which stands for the amount of value added created by all producers and residents) is the value of sectoral sales excluding the value of intermediate goods. Only the value

[2] Макконелл К., Брю С. Экономикс: принципы, проблемы и политика. Москва: Республика. 1992. 399 с.

[3] Абрютина Н.С. Добавленная стоимость и прибыль в системе микро- и макроанализа финансово-экономической деятельности. *Финансовый менеджмент*. 2001. № 1. С. 13–17.

[4] Макконелл К., Брю С. Экономикс: принципы, проблемы и политика. Москва : Республика, 1992. 399 с.

of finished products is taken into account for GDP calculation, which avoids double measuring[5][6].
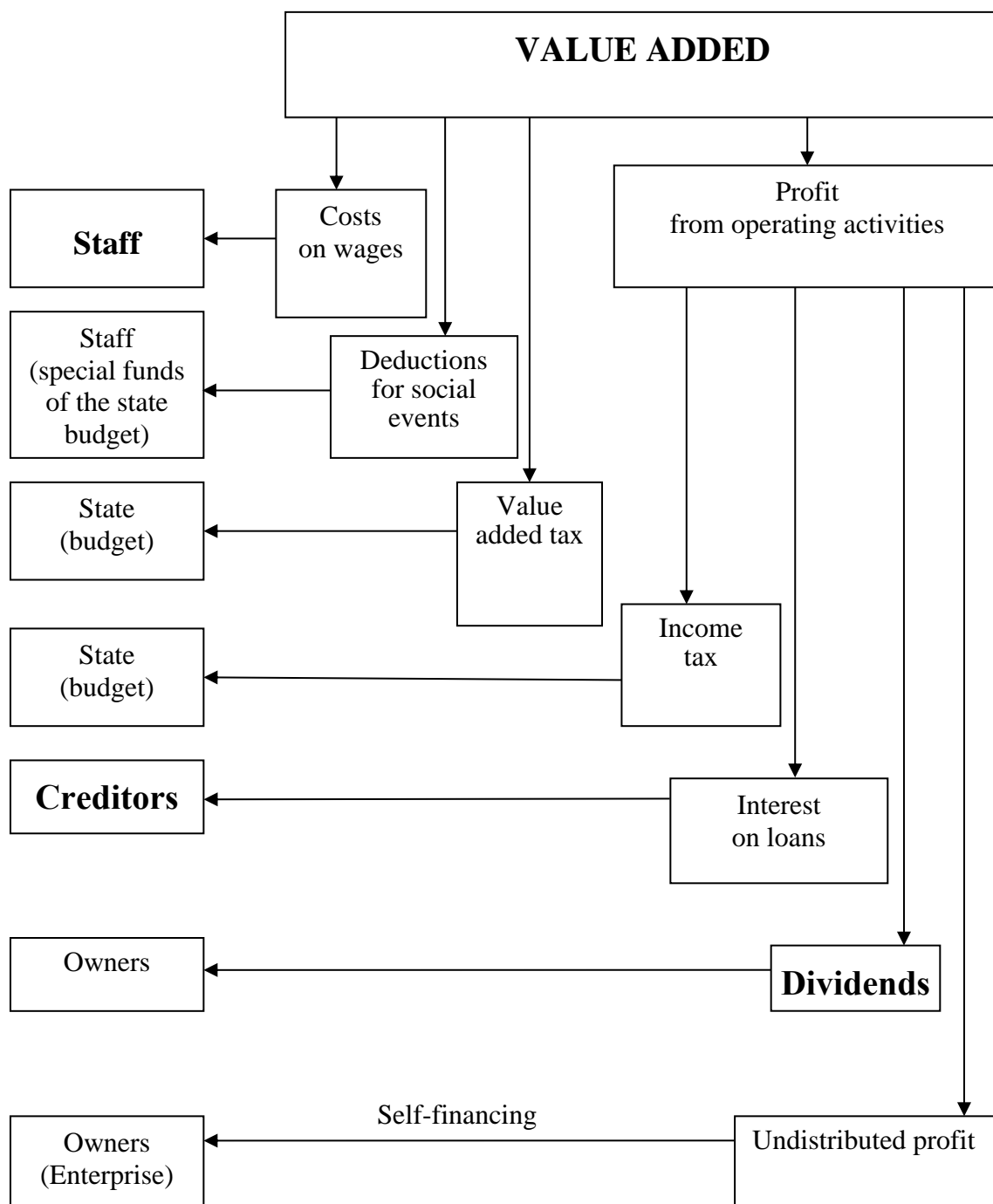
Figure 1. The main directions of value added distribution of a corporate enterprise

[5] Моторин Р.М., Моторина Т.М. Система національних рахунків : Навчальний посібник. Київ : КНЕУ, 2001. 336 с.

[6] System of national accounts of United Nations (SNA). URL: http://unstats.un.org/unsd/ sna1993/toctop.asp

The definition of value added implies the value generated directly by an enterprise in the process of production by living labor, which is added to the cost of intermediate consumption and, together with the latter, creates the value of a product. Intermediate consumption costs include costs of past materialized labor, particularly, a share of fixed capital (depreciation) spent and working capital spent.

Value added is conventionally perceived by modern economists only in connection with a tax paid on it. By contrast, value added as an economic category objectively exists in business, whether or not a value added tax is imposed by a government. In addition, experts believe that any economic unit is created just for the sake of value creation, which distribution is essential for financial results of any business and workers' wages.

As it has been mentioned above, value added marks the result of the efforts made by owners and employees of an enterprise and reflects a rate of public benefit created by a joint-stock company. The economic elements that make up value added are in line with all the participants of corporate governance. Therefore, from this point of view value added can be regarded as an indicator of a corporate enterprise's performance.

On the basis of the chosen criterion and by using an appropriate algorithm of its calculation as well as a special method of analysis, it is possible to obtain reliable information regarding the estimation of a joint-stock company's economic efficiency.

Before developing a model of calculation and choosing a methodological approach to the analysis of the selected indicator as well as creating any algorithm of appropriate measurements, it is necessary to identify a current role and place of value added in the economic processes running at the level of micro- and macroanalysis of the financial and economic activity of an enterprise.

Let us consider the relationship and features of the content and structure of value added when defining it at the micro- and macroeconomic levels.

In a country with market economy financial management of an enterprise is concentrated on profit, while the focus of government administration is on Gross Domestic Product (GDP), which consists of the total amount of all value added created by enterprises. In this context it means that the state economic policy is aimed at creating conditions for enterprises to obtain maximum profit, and the profit of an enterprise depends directly on the value added it has created. Conceptually, it is assumed that different interests at micro- and macro-level economies are in harmonious unity.

Yet in practice it turns out that in the system of national accounts (SNA) at the macro level there is no such an indicator as "total profit of enterprises". Also, among the indicators of accounting (financial) reporting and forms of state statistical reports completed by enterprises there is no such an indicator as "value added". This contradiction has been observed for quite a long time, but only a few experts raise this issue. For instance, N. S. Abryutina believes that through data of financial accounting are necessary primarily for "matching" micro and macro levels. To make it possible, she proposes to introduce national accounting indicators, first of all value added, into the Plan of company accounts[7].

Accounting in an enterprise is a mechanism for monitoring the correctness of accounting records. Within the SNA such control is absent, since it is unnecessary at the macro level. It exists, though, in the form of GDP calculation both by production and distribution methods as well as by end use[8]. Herewith, all three calculations should be relevant to one another.

Establishing a relationship between micro and macro levels includes creation of an enterprise's accounting system that would calculate value added. The emergence of the value added indicator among enterprise's financial indicators will solve not only the pressing issue of reporting discrepancy at the micro- and macroeconomic levels, but also serve as a tool for deeper analysis of the financial and economic activity of enterprises.

Value added is an indicator, which the national accounting system is based on, and it is implicitly hidden in accounting records. So, it would be beneficial to make it an object of the state statistical reporting of an enterprise and an indicator that would become a subject of the internal financial analysis. In today's market conditions businesses pay value added tax (VAT) and, at the same time, do not calculate directly the object of taxation. The contradiction is that the value added tax rate is tied to sales revenue, but not to value added itself.

2.2. The methodology for determining value added at the enterprise level

Despite the significance of the value added indicator in measuring and further analyzing a company's business activity, national accounting

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[7] Абрютина Н.С. Добавленная стоимость и прибыль в системе микро- и макроанализа финансово-экономической деятельности. *Финансовый менеджмент*. 2001. № 1. С. 13–17.

[8] System of national accounts of United Nations (SNA). URL: http://unstats.un.org/unsd/sna1993/toctop.asp

standards in Ukraine do not provide for completing a report on value added and its calculation.

So, let us take a look at the main methods of calculation and components of value added.

In general, the model of value added calculation is:

Added value = Production volume – Intermediate consumption.   (1)

If a company operates rhythmically, then the volume of sales is almost equal to the volume of production for the relevant period of time. Therefore, to simplify the

calculations, it can be assumed that the production output rate corresponds to the sales revenue.

Intermediate consumption is a part of total production costs, which includes production, management and commercial expenses including different elements. These elements are raw materials, supplies, fuel, energy, component parts, depreciation as well as wages costs, that is, all current expenses associated with manufacturing goods by a company with the use of goods purchased from third parties. The production of goods without attracting resources from third parties is not intermediate consumption.

There are several methodological difficulties in calculating value added at the enterprise level:

– enterprises' expenses are determined and grouped according to the volume of sales, not in relation to the amount of goods produced;

– depreciation is accounted for as a part of costs and in the SNA – as a part of value added, in other words, a part of income;

– VAT in the reporting of an enterprise is artificially separated from revenue and expenses and does not participate in sales turnover. Therefore, while calculating added value it is necessary to include VAT in turnover again.

More important thing for corporate enterprises at this stage is not so much the accuracy of calculation of value added as the selection and reasoning of its main constituent elements as well as identifying the principal model of its calculation and algorithm of analysis.

Let us consider the main methods of calculating value added. In economic science different approaches to its determination exist depending on the needs and requirements of information users.

Specifically, there are two fundamentally different methods of calculating added value at present:

– subtractive, which defines value added as the difference between the value of output and the value of intermediate consumption;

– additive (cumulative), which determines value added as the sum of elements that make up its distribution – profit, wages, taxes and interest on loans.

Therefore, the terms of residual value added (RVA) and additive value added (AVA) should be introduced according to the model of value added calculation.

According to the abovementioned principal model of calculation, residual value added is measured by the formula:

$$RVA = SR - IC, \qquad\qquad (2)$$

where SR is sales revenue from products (works, services) sold; IC – Intermediate consumption.

Next, it is necessary to clearly determine expenses related to intermediate consumption in the production of goods (works, services). It should be pointed out that there are some different approaches to this issue.

In the world practice, value added created by an enterprise is calculated at two levels – gross and net[9].

Unlike net value added, gross value added includes depreciation costs in addition to the abovementioned elements. Some Ukrainian experts attribute depreciation to value added believing that fixed assets thus transfer their value to a new created (added) value. However, as known, depreciation is a conditional attribution of the part of fixed assets costs to the cost of products and, accordingly, to the total cost of goods produced by an enterprise. What is more, fixed assets are produced outside an enterprise, belong to acquired tangible assets and are subject of production by other enterprises. From this point of view, it makes sense to attribute depreciation to intermediate consumption expenses. Consequently, for the purposes of using value added as an indicator that estimates the results of a corporate enterprise's business activity, its determination should be made based on the model of net value added indicator, i.e. excluding depreciation costs.

Thus, intermediate consumption (IC) costs should include all current expenses associated with the release of products (works, services) produced by an enterprise and which are also the subject of output of other enterprises:

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[9] Caby J., Couret A., Herigouyen G., Initiation a La Gestion. Montchrestien, Paris, 1998. P. 558.

$$IC = MC + DC + OC, \qquad (3)$$

where MC is material costs including production, management and commercial expenditure, in particular, raw materials, supplies, fuel, energy, component parts expenses; DC is depreciation costs; OC is other costs including manufacturing services expenses.

The model of calculating residual value added taking into account intermediate consumption costs is now as follows:

$$RVA = SR - (MC + DC + OC). \qquad (4)$$

If the volume of production and the volume of sales do not match, the calculation of value added becomes more complicated. Still, if a company's management makes a decision to know and analyze value added, its calculation at first can be exercised quite easily by making certain assumptions that do not significantly affect the result. After all, the basic analytical procedures and methods of information processing in economic analysis at the micro level are mainly a horizontal analysis involving the comparison of indicators of different time periods.

On the other hand, additive value added (AVA) calculates value added by adding elements into which it is divided: net profit, income tax, wages, deductions and interest on loans:

$$AVA = NP + IT + VAT + LC + DSE + IL, \qquad (5)$$

where NP is net profit; IT is income tax; VAT is value added tax; LC is labor costs; DSE is deductions for social events; IL is interest on loans.

It is worthwhile highlighting that value added calculated by the subtractive method is that actually created within an enterprise, while the second method of calculating value added (additive) sums up those costs, which do not belong to intermediate consumption, but are made directly in the process of production and sale of goods. Thus, additive value added, which is a sum of costs, is, by the nature of its calculation, a value not created but distributed to the relevant cost areas. Therefore, comparing the two results of value added calculation – RVA and AVA will show the same rate for enterprises that have a positive or zero financial result. For unprofitable enterprises, the rate of AVA will always exceed that of RVA by the amount of losses.

In fact, virtually created value added is RVA. In case of an unprofitable enterprise, AVA is a value distributed to cover costs that are only partially made up for by the added value created. The other uncovered part of RVA is a loss and can be usually covered by means of

immobilizing company's assets. Thus, a consistent assessment and analysis of value added calculated by the subtractive and additive methods will allow not only determining its rate, but also in case of loss-making activities assessing the degree of a company's deficit.

A necessary and at the same time important step at the preparatory stage of developing a framework and creating an algorithm for the value added analysis is also modeling of financial statements and working out an algorithm to determine RVA and AVA.

When developing a value calculation algorithm and modeling an appropriate financial reporting form, some difficulties may arise due to the discrepancy between the data contained in accounts and presented in the accounting (financial) reporting forms. The data presented in financial reporting forms are more subject to taxation than the financial analysis, despite the existence of separate mandatory forms of tax reporting in Ukraine. Still, all the necessary information for the financial and economic analysis is contained in the general ledger. On the other hand, in accounting there are two kinds of outcoming information: accounts and reporting forms. To that end, there should be introduced two methods of calculating value added: based on accounting records and based on reporting forms, respectively. Let us consider the approach to the determination of value added based on completing a relevant reporting form – the "Added Value Statement".

Generally, financial statements of an enterprise include two main documents of financial reporting – the "Balance Sheet" (Form № 1) and the "Income Statement" (Form № 2). The main purpose of these documents is to meet the information requirements of both external and internal users.

In today's business environment, management of a reporting company demands accounting information that would be beneficial in making right managerial decisions. The requirement to develop a managerial function of accounting raised the question of specifying definite users of this information and their information needs. An attempt to address this question was made by American professional accountants, who brought up for discussion a document about the content of additional information that should be provided by corporations. One of the necessary additional documents included in this list is the "Value Added Statement". The Accounting Standards Committee (ASC) published the "Report on Corporations", where value added was defined as "wealth that an entity could create through its own efforts and efforts of its employees". This

document stated that the reporting forms existing at that time did not fully meet the requirements of different users of accounts. It recommended that company reports should cover a wide range of information and this information should be provided to those with sufficient rights to access. In particular, users of information regarding the activity of corporate enterprises include not only the owners, but also employees, creditors, state, public etc. The document also indicates that the "Value Added Statement" reveals in detail a company's profits and expenses and may further be considered as a more convenient and informative means of presenting the results of corporate enterprises' business activity.

Obviously, compiling and presenting such additional information will result in additional costs and much deeper description of an enterprise's economy. On the other hand, it should be taken into account that joint-stock companies enjoy a protected limited liability status. That is why, corporations are believed to be prepared to publish additional information about their business activities.

The "Income Statement" provides information about profit and loss and, thus, presents a corporation's performance only from a shareholder side. But current management theories regard a corporate enterprise as an organization ruled by a stakeholder team for its own benefit. Such teams generally include employees, capital suppliers (shareholders and lenders) and government. While the "Income Statement" generally measures only profit or loss and does not provide any information on the distribution of this profit, the "Value Added Statement" is able to reflect the share of value received by the entire team of employees, capital suppliers and government and may also contain information regarding how it is distributed.

The author of the scientific paper has developed the project model of the "Value Added Statement" and defined the algorithm for calculating the indicators contained in the statement (Table 1).

In the first section of the "Value Added Statement" value added is calculated by the subtractive method – as the difference between a company's revenue and an amount of intermediate consumption and depreciation – a residual value added (net) – line 11.

In the second section of the document (Table 1) an additive value added, which includes costs it is used for, is calculated – line 29.

Value added is a much broader and less subjective concept than an accounting profit. It is quite easy to complete the "Value Added Statement", since it generally means regrouping the information already disclosed in the "Income Statement". Hence, this report can be considered

as a document that shifts the emphasis usually made on the declared profit of a joint-stock company to the information on the distribution of created value among all participants in corporate governance.

It should be underlined that the calculation of RVA and AVA allows not only determining the amount of value added actually created by an enterprise with a view to calculating the amount of costs to be covered by the value added created, but also, in case of unprofitable activities of an enterprise, to estimate the degree of its deficit.

Table 1

Value Added Statement
(The project model and algorithm of value added calculation)

Line number and algorithm for value calculation	Section 1. Creation of value added	Code	For the previous period	For the reporting period
1	2	3	4	5
1	Sales revenue (including VAT)	010		
2	(incl. VAT)	020		
3	Growth in finished goods in stock	030		
4 = 1+3	**Volume of production (including VAT)**	040		
5	Material expenses	050		
6	Other operating expenses (services)	060		
7 = 20% (5+6)	VAT on purchased and spent values	070		
8 = 5 + 6 + 7	**Intermediate consumption (including VAT)**	080		
9 = 4 – 8	**Residual value added (gross)**	090		
10	Depreciation	100		
11 = 9 – 10	**Residual value added (net)**	110		
12	VAT (paid to the state budget)	120		
13	Labor costs	130		
14	Deductions for social events	140		
15	Taxes included in the cost of production	150		
16 = 11-(12+13+14+15)	**Income from operating activity**	160		
17	Financial expenses	170		
18	Income tax	180		
19	Other taxes on income	190		

1	2	3	4	5
20 =16-(17+18+19)	**Net profit**	200		
21	**Dividends**	210		
22	Undistributed profit	220		
23	Other directions of profit distribution	230		
	Section II. *Value added distribution*			
24 = 13	Staff	240		
25 = 12+14+15+18+19	State	250		
26 = 17	Creditors	260		
27 = 21	Owners (dividends)	270		
28 = 22+23	Owners (enterprise)	280		
29 = 24+25+26+27+28	**Total amount of additive value added**	290		
30 = 11-29	**Absolute rate of unrecovered costs**	300		

As mentioned above, both value added indicators – RVA and AVA will only reach the same rate for businesses having a positive or zero financial result. For unprofitable businesses the rate of AVA will always exceed the value of RVA and the level of this excess, as can be seen from the models of RVA and AVA calculation, is equal to the amount of losses (L):

$$L = RVA - AVA. \tag{6}$$

The exceeding of RVA over AVA can be considered as a rate of unrecovered costs to be paid at the expense of value added created by an enterprise. In particular, in case of unprofitable enterprises, the amount of actually created value added is not enough to cover all necessary expenses, which leads to the immobilization of assets and loss of the capital of shareholders of a joint-stock company.

Therefore, the loss (L) is nearly equal to the absolute rate of unrecovered costs of additive value added (ARUC):

$$L = ARUC = RVA - AVA. \tag{7}$$

On the other hand, the relative share of loss in additive value added is equal to the relative rate of unrecovered costs (RRUC), which is calculated in percentage:

$$RRUC = ARUC / AVA \times 100\%. \tag{8}$$

The information on the absolute rate of unrecovered costs is undoubtedly worth including in the "Value Added Statement" of a joint-stock company in the appropriate form of financial reporting (line 30, Table 1).

Thus, the proposed project model of the "Value Added Statement" contains the following important information for analysis:

– the amount of actually created value added – RVA;

– the amount of costs to be paid at the expense of created value added – AVA;

– profit or loss as a result of operating activities of an enterprise – P, L;

– the size of shares of value added distribution among the participants in corporate governance: staff, state, creditors, enterprise;

– the absolute rate of unrecovered costs of additive value added – ARUC.

2.3. The integration of value added into the Balanced Scorecard of an enterprise

The additional information included in the "Value Added Statement" gives analysts more opportunities to evaluate and analyze the performance of corporate enterprises. In particular, such analysis can be carried out based on the relative indicators calculated by the following models: *a share of value added in sales revenue* (SVA); a ratio of intermediate consumption costs to sales revenue – *unit costs of intermediate consumption* (UIC); a ratio of intermediate consumption to value added – *a cost capacity of value added* (CCVA).

It should be pointed out that the proposed indicators do not contradict to those traditionally used for the financial analysis and can be integrated naturally enough into the current systems of financial and non-financial indicators.

One of such systems is the Balanced Scorecard (BSC) and Economic Value Added (EVA), which integration was attempted by foreign economists[10].

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[10] Ampuero M., Goranson J., Scott J., Solving the Measurement Puzzle; How EVA and the Balanced Scorecard Fit Together. *The Cap Gemini Ernst & Young Center for Business Innovation. Issue "Measuring Business Performance"*, 1998. P. 45–52.

It is anticipated that the integration of EVA into the BSC structure will allow it to be used as a fundamental indicator to transform BSC from a set of useful but unstructured metrics into a system with a well-defined performance benchmark.

However, the EVA concept is based on a comparison between profits and expenses that recover the cost of capital. Thus, this calculation cannot be made for unprofitable enterprises and its use in the conditions of transition economy becomes limited. The idea of integrating this economic indicator into the system of non-financial indicators of BSC can be implemented by applying value added proposed above in this paper as a financial indicator to measure the results of corporate enterprises' business activity in the conditions of emerging market.

The principle of calculating one of the efficiency indicators for corporate governance, which is the share of value added in sales revenue (SVA), allows it to be applied in the model of financial analytical decomposition ("Du Pont Model") to determine the impact of individual factors on the level of value added created for a certain period of time per one monetary unit of equity (Figure 2). Impact factors in this model include the following: the share of value added in sales revenue (VA / SR); assets turnover ratio (SR/A); debt ratio (assets (A)/ shareholders' equity (E)).

Further analysis of these indicators can be carried out by means of the traditional scheme in accordance with the character of each of them, in particular:

– analysis of performance indicators in terms of corporate governance (SVA, UIC, CCVA and their elements);

– analysis of capacitive performance indicators;

– analysis of assets turnover (total value of assets and elements);

– analysis of capital structure and solvency of the enterprise.

Value added is a deeper and more fundamental criterion for measuring the performance of corporate enterprises than profit analysis, since value added estimates the results of a company's business activity as a whole and thus makes it possible to analyze and understand its social contribution. In particular, the information on the distribution of value added among stakeholders makes the participants in corporate governance aware of the respective share of remuneration of different team members.

The proposed indicators for assessing the performance of companies with corporate governance, in contrast to traditional estimates calculated using a profit indicator, can also be applied to unprofitable enterprises, since the probability of negative index of value added in modern market

conditions is much less than the probability of unprofitable activities of enterprises. Thus, the use of value added as a performance indicator of corporate enterprises helps to prevent identified drawbacks of existing methods based on profit analysis.
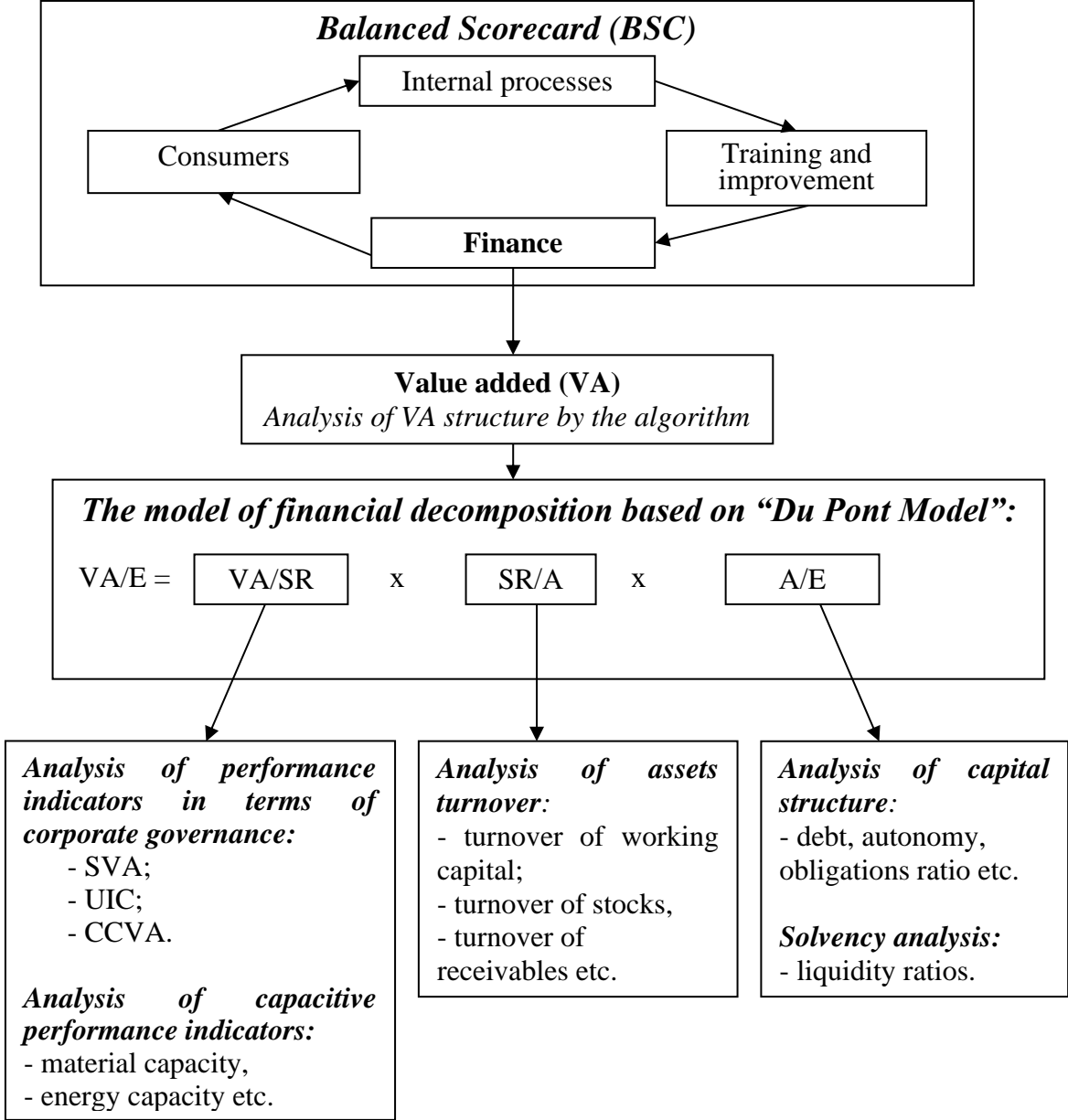
Figure 2. The integration of the performance indicator of corporate enterprises into the system of financial and non-financial indicators

CONCLUSION

With a view to presenting the profit and expenses of a joint-stock company in the form that is consistent with the interests of all participants in corporate governance, it is recommended to complete the "Value Added

statement", the model of which is offered in this study. This document discloses in detail all relevant information and can be considered as the best option for presenting the results of business activity of corporate enterprises achieved through joint efforts of capital, management and employees.

The value added indicator calculated by means of subtractive and additive methods allows not only determining value added actually created by an enterprise as well as calculating the amount of expenses to be covered by the created value added, but also estimating the degree of its deficit in case of loss-making activity.

The analysis of the performance of corporate enterprises based on the study of the composition and structure of value added, identifying the impact of certain financial factors on its amount and using value added as a financial indicator in the balanced system of non-financial indicators will contribute to obtaining a much greater amount of new and much more proper information than while using conventional research methods. The results of such analysis are interesting to all participants in corporate governance and, in addition, such information may be particularly beneficial for capital owners.

SUMMARY

A new approach to evaluating and analyzing the performance of joint-stock companies has been presented based on the indicators that define the results of business activity of a company with corporate governance and can be integrated into the modern systems of financial and non-financial indicators. The relevance and necessity of using value added, which is created and distributed by an enterprise in the course of its activity, as a performance indicator have been proved. Value added marks the result of a company's owners, managers and employees efforts as well as reflects the rate of public benefit and allows evaluating the degree of achievement of the goals of corporate governance.

It has been proposed to supplement the financial and management reports of a joint-stock company with the Value Added Statement, the form of this document has been developed and the algorithm for calculating its indicators has been drawn out. A consistent assessment and analysis of value added, calculated by the subtractive and additive methods, provides information on its total amount and structure, and, in case of unprofitable operations of an enterprise, makes it possible to measure the rate of unrecovered costs covered by the immobilization of assets.

To analyze the effectiveness of corporate governance it is worthwhile involving relative indicators calculated on the basis of value added: the share of value added in sales revenue; unit costs of intermediate consumption; cost capacity of value added. The given indicators do not contradict to those traditionally used for the financial analysis and can be easily integrated into the current systems of financial and non-financial indicators.

The analysis of the business activity of corporate enterprises based on the use of value added as a financial indicator in the model of financial analytic decomposition (Du Pont Model) and in the balanced system of financial and non-financial indicators (Balanced Scorecard) will allow obtaining new and much more proper information in comparison with traditional research methods. The results of such analysis are useful for all participants in corporate governance.

REFERENCES

1. Ampuero M., Goranson J., Scott J., Solving the Measurement Puzzle; How EVA and the Balanced Scorecard Fit Together. *The Cap Gemini Ernst & Young Center for Business Innovation. Issue "Measuring Business Performance".* 1998. P. 45–52.

2. Caby J., Couret A., Herigouyen G., Initiation a La Gestion. Montchrestien, Paris, 1998. P. 558.

3. System of national accounts of United Nations (SNA). URL: http://unstats.un.org/unsd/sna1993/toctop.asp

4. Абрютина Н.С. Добавленная стоимость и прибыль в системе микро- и макроанализа финансово-экономической деятельности. *Финансовый менеджмент.* 2001. № 1. С. 13–17.

5. Макконелл К., Брю С. Экономикс: принципы, проблемы и политика. Москва : Республика. 1992. 399 с.

6. Моторин Р.М., Моторина Т.М. Система національних рахунків : Навчальний посібник. Київ : КНЕУ, 2001. 336 с.

7. Шкільняк М. Менеджмент у системі корпоративного управління. *Вісник Тернопільського національного економічного університету.* 2018. № 2. С. 7–20.

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CHAPTER 3
SYSTEM-TARGETING AND PROCESSING APPROACHES IN THE MANAGEMENT OF FINANCIAL-ECONOMIC SECURITY OF THE ENTERPRISE

Kovalenko O. V.

INTRODUCTION

Management is a process of formation and realization of will. It is also considered as a process of problem solving in the achievement of the goal and distinguishes six complexes of operations: the phase of constructing the problem, the phase of finding alternative solutions, the phase of evaluation, the phase of decision making, the phase of implementation, the phase of control. Management process depends, on the one hand, on the type and number of problems that need to be addressed; on the other hand, on the people who participate in it, as well as their interpersonal information and social connections, therefore, it is expedient to study the process of managing financial and economic security on the basis of system-purpose and process approaches, particularly if it concerns an industrial enterprise. Management of the financial and economic activity of the enterprise is a multifaceted, complex process, which involves the presence of a market management mechanism, adaptive management tools, professional, skilled and appropriately trained staffing in the areas of activity, resource potential, which collectively provides the opportunity to take into account factors of influence of internal and external competitive environment on financial performance and competitive position of the company in the market.

The lack of a holistic science-based approach to the design and creation of systems for managing the financial and economic security of an industrial enterprise leads to the prevalence of spontaneous or highly specialized management decisions that do not have the necessary development potential. The logical consequence of this is the emergence of forms of menage and management, which consist of elements of heterogeneous, often mutually exclusive approaches, containing a host of internal contradictions and connections that are redundant or not functioning. All this doesn't improve the quality of financial and economic

security management, but also forces companies to attract additional resources to support inadequate management systems.

3.1. Analysis of recent research and publications

Today, no enterprise can feel economically safe if its products are not in demand by the market; No one enterprise producing the means of production can feel safe if there is a long decline in the technological development of the country. Increasing the aggressiveness of the external and, partly, of the internal environment has led to an increase in the impact of negative factors on the performance of enterprises. Therefore, in the context of the acute economic crisis, which put the majority of domestic industrial enterprises, which until recently were considered successful and stable, on the border of survival, the question of financial and economic security has become very urgent. Theoretical and methodical aspects of the development of the process of management of financial and economic security of the company require further scientific research in the application of system-purpose and process approaches.

Domestic scientists such as O. I. Baranovsky, A. O. Yepifanov, O. M. Roasting, M. M. Yermoshenko, T. G. Vasil'tsev, O. V. Arefyeva, O. B. Vukchyk, I. V. Chibisova, I. P. Moiseenko, N. Yu. Podolchak, O. V. Ivashchenko, L. I. Donets are paying considerable attention to studying the problems of financial and economic security management, the formation of a mechanism for ensuring, assessing the level of security, and organizing indicators of financial and economic security. They detail the problems and suggest ways to prevent and overcome them.

The purpose of the article is to develop the process of management of financial and economic security of the enterprise on the basis of system-purpose and process approaches.

3.2. Presentation of the main research material

It is expedient to investigate the financial and economic security management system based on the system-purpose approach and divide it into two subsystems – the subsystem of economic security and the subsystem of financial security. The division into a subsystems is related to the possibility of isolating the totality of interrelated elements (components) capable of performing relatively independent functions, sub-goals aimed at achieving the overall purpose of the system. The subsystem, as part of the system, must have the properties of the system, in particular, the property of integrity. It is she that distinguishes the subsystem from a

simple group of elements for which no sub-target is defined and the integrity property is not executed. Its occurrence and preservation provide connections that characterize the construction (statics) and the functioning (dynamics) of the system. Elements of the system, entering into ties with each other, lose part of their individual properties, which they potentially owned in a free state. Communications are characterized by directions, strength, character, type, place of use, orientation of processes in the system as a whole or in its individual subsystems. The behavior of the system in advance is determined not so much by functional connections, but by their causative orientation. [1]

Under financial and economic security N.A. Dehtyar[2] understands a rather complex system, which includes a certain set of internal characteristics, aimed at ensuring the effectiveness of the use of material, labor, information and financial resources. The system of financial and economic security is a set of elements aimed at identifying and neutralizing financial and economic threats to the functioning and development of the enterprise, providing economic independence, competitiveness, financial independence and stability, optimality of the organizational structure, protection of the information environment, personnel safety, commercial secrets and interests. In terms of the system approach, the "security" itself is defined as the property of a system that ensures its stady, stable functioning and development in the conditions of various types of external and internal threats. That is, this property of the system allows to minimize, and ideally, neutralize the negative influence of destabilizing factors.

The organization of the investigated system of financial and economic security, the stable ordering of its elements and relationships are characterized by the structure of the system (from lat. Structura – structure, arrangement, order).[3] Structural connections have a relative independence from the elements and can act as an invariant in the transition from one system to another, passing regularities discovered and disclosed in the structure of one of them, to others. The same system of financial and economic security can be represented by different structures depending on:

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[1] Akimova, T. A. (2003). Teorija organizacii: uchebnoe posobie dlja vuzov [Theory of the organization: a manual for universities]. Moscow : JUNITI-DANA. P. 64.

[2] "Management of financial security of economic entities: Chapter 2. Management of financial and economic security of enterprises: the essence and mechanism of provision", available at http://pidruchniki.com/78180/finansi/upravlinnya_finansovoyu_bezpekoyu_ekonomichnih_subyektiv (accessed 18 September 2018).

[3] Ivanova, T. Ju., & Prihod'ko, V. I. (2004). Teorija organizacii [Theory of the organization]. Piter, SpB. P. 24.

the stages of knowledge of the system, the aspect of its consideration, the purpose of its knowledge, the influence of internal and external factors that significantly violate the balance of the system. The system of financial and economic security is an open system. The peculiarity of such systems is the ability to share information with the external environment.

In the study of open-source systems, a class of purposeful and non-focused systems is distinguished.[4] Classification of systems by the level of organization was first developed by G. Simon and A. Nyella, and then V. Nalimov distinguished class of well-organized and class of diffusion systems. By adding a class of self-organizing systems, we obtain a classification that allows the different methods of formalized representation of systems and means of representing them to be brought into conformity with different classes. The distinguished classes can be considered as approaches to display an object or task, which are chosen depending on the stage of knowledge of the object and the possibility of obtaining information about it.[5] The first class – well-organized systems, the second class – diffusion systems, the third class of systems – systems that are self-organizing (developing). The main features of the third class of systems are stochastic behavior; instability of individual parameters; unpredictability of behavior; the ability to adapt to conditions of a changing environment; the ability to change the structure, while preserving the property of integrity; the ability to withstand entropy trends, to formulate possible behaviors and to choose the best of them. This class includes the system of financial and economic security of an industrial enterprise. R. Fatkhutdinov gives a sufficiently complete classification of systems[6] and grouping their properties according to the following features: the essence and complexity of the system, its connection with the external environment, the methodology of goal setting, the parameters of functioning and development that, in our opinion, is the most appropriate in applying a systematic approach to the management of financially – economic security as a system. Thus, in our opinion, in the simulation of complex processes occurring in the system of financial and economic security, the mechanism of self – organization can be most effectively implemented through the method of system analysis and system-purpose approach.

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[4] Chernjak, Ju. I. (1975). Sistemnyj analiz v upravlenii jekonomikoj [System analysis in economic management]. Moscow: Ekonomika.

[5] Valuev, S. A., Volkova, V. N., & Gradov, A. P. (1991). Sistemnyj analiz v jekonomike i organizacii proizvodstva [System analysis in economics and production organization], Leningrad : Politehnika, pp. 47–49.

[6] Fathutdinov, R. A. (2000). Organizacija proizvodstva: uchebnik [Organization of production: textbook]. Moscow : INFRA-M., pp. 66–76.

In the course of studying the peculiarities of the functioning and development of complex open systems with active elements, a number of regularities of systems have been identified which enable to form adequate models for making managerial decisions.

With the help of a systematic approach to the study of the behavior of the system of financial and economic security and its subsystems, it is possible to reflect problem situations with uncertainty, while sharing the "big" uncertainty with smaller ones that are easier to learn, which helps to identify the causes of qualitative changes in the formation of the whole. The division of the system of financial and economic security into separate subsystems makes it possible to analyze the causes of the emergence of integrity on the basis of establishing the causal relationships of different nature between different parts of the system, between the part and the system as a whole, between the system and the external environment. Any system is always between two extreme states – absolute integrity and absolute addiction. That is, the system always strives to become more and more independent variables, and at the same time to reduce the independence of elements, that is, to a greater degree of integrity.

The regularity of integrity (emergence) is manifested in the system when there are "new integrative qualities" in it, not inherent to its components. On the one hand, the properties of the system are not a simple algebraic sum of the properties of the elements, but on the other – the properties of the system are in a functional dependence on the properties of its elements. Combined elements of the system may lose a number of properties that are characteristic of them outside the system, that is, the system "suppresses" some of the properties of its elements. Thus, on the one hand, the law of integrity characterizes the change in the relations of the system as a whole with the environment, in contrast to the interaction with the system of individual elements; on the other – leads to the loss of elements of some properties, when they become elements of the system. The property of integrity is connected with the purpose for which the system is created.

An integral part of the system is the integrity of the system, which is expressed in the heterogeneity and contradiction of the elements of the system, on the one hand, and in the quest for them to join the coalition – on the other.

Any open system is not isolated from other systems, it is connected with a lot of communications with the external environment. The complex unity of the system with the external environment is characterized as a

regularity of communicative, which makes it possible to determine the hierarchy as the pattern of construction of the whole world and the system isolated from it.

The pattern of hierarchy is one of the first laws that was studied by Academician V. Engelhardt, who pointed out the need to take into account not only the outside of the hierarchy, but also the functional relationship between its levels.[7] Hierarchical representations help to better investigate and understand the phenomenon of complexity, therefore the integrity, integrability, communicative and hierarchical patterns are the basis for developing a mechanism for managing financial and economic security as a system consisting of two subsystems – financial security subsystems and subsystems of economic security that are components of the overall enterprise security system.

For all phenomena (this also applies to the socioeconomic systems that are developing and to which the system of financial and economic security of the enterprise belongs), a fair second law of thermodynamics, that is, the desire, on the one hand, to entropy (collapse), and on the other – to negentropy (evolution and development). In these systems, depending on the predominance of entropy or nonentropic tendencies, the subsystem of any level of the hierarchy can develop in a direction towards a higher level or move to a lower level (destructive phenomena).

The authors of various methods of system analysis form a sequence of stages, preferring different stages of analysis. In some techniques, more attention is paid to the development and research of alternatives to decision-making, in others the definition and structuring of goals, and in the third, the implementation of the already adopted decision.[8] [9] [10] However, all these methods agree that the first stage is the research process, related to the analysis of the existing system and the identification of the problem. For a more in-depth analysis it is necessary to detail the listed stages, dividing them into sub-stages.

Summarizing the results of the substantiation of expediency of the system-purpose approach to management of financial and economic

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[7] Jengel'gardt, V. A. (1976). On some attributes of life: hierarchy, integration, cognition. *Voprosy filosofii*, vol. 7, pp. 65–81.

[8] Optner, S. (1969). Sistemnyj analiz dlja reshenija delovyh i promyshlennyh problem [System analysis for solving business and industrial problems]. Moscow : Sovetskoe radio.

[9] Golubkov, Je. P. (1975). Sistemnyj analiz v upravlenii narodnym hozjajstvom [System analysis in the management of the national economy]. Moscow : MINH.

[10] Jang, S. (1972). Sistemnoe upravlenie organizaciej [System management of the organization]. Moscow : Sovetskoe radio.

security of the enterprise, it should be noted that it is the system-purpose approach that allows to offer consideration of the system of financial and economic security as two interconnected and complementary subsystems.

The concept of "financial and economic security" is complex and requires a comprehensive, systematic approach to understanding the essence in order to create a system for managing the financial and economic security of the enterprise. We believe that the system of financial and economic security of the enterprise (hereinafter SFESE) is a collection of interconnected in time and space subsystems and their components that are integrated into a certain integrity, have a specific structure and interact with each other and the external environment for achieving the goal. The purpose of such a system is to ensure the financial balance, sustainability of the economic development of the enterprise and adaptability of the mechanism of its functioning to threats that can impede the process of achieving the strategic and current objectives of the company, which operates under conditions of uncertainty of the competitive environment. It is precisely the uncertainty of the competitive environment that generates threats that are difficult to predict and poorly managed. Let us dwell in more detail on the notion of "threat" in the system of financial and economic security.

The concept of "threat" with regard to financial and economic security is associated with the emergence of certain barriers to activities, financial and economic losses, that is, a factor that endangers the sustainable functioning and development of the socio – economic system. The most successful studies of the nature of the classification of threats can be considered research M. M. Yermoshenko and K. S. Goryachoy [11] who believe that the threat is an existing or potentially possible phenomenon or a factor that endangers the realization of the financial interests of the enterprise. However, summarizing the views of many domestic authors and expressing their own views, it is advisable to formulate an understanding of the concept of "threat" – a phenomenon or factor that destructively affects the socio-economic system as a whole, has a destructive force of different orientations, impedes the realization of the overall purpose of the enterprise and can lead to irretrievable loss and termination of activity. The identification of the threat is a precondition for timely response of the

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[11] Yermoshenko, M. M., & Horyacheva, K. S. (2010), Finansova skladova ekonomichnoyi bezpeky: derzhava i pidpryyemstvo: naukova monohrafiya [Financial component of eco-nomic security: state and enterprise: scientific monograph], NAU, Kyiv, Ukraine. P. 56.

SFESE to a threat in order to select the most effective mechanism for its neutralization.

From the definition of the concept of "threat" it is clear that, in particular, the system of financial and economic security of an enterprise operates as a result of the implementation of a certain set of processes that accompany economic activity, therefore, when constructing the SFESE it is expedient, along with the system-purpose approach, to use a process approach.

Most domestic enterprises have a linear-functional or functional management structure, which assumes that each management authority specializes in the performance of individual functions at all levels of management.[12] A kind of functional depreciation is the grouping of work on the process. The complexity of process management arises as a result of the fact that enterprises operate in a market-changing, external environment, which, as it develops, leads to complications of both processes directly related to production and those that accompany the production process.

Let us dwell in more detail on the concept of "process". In terms of ISO 9000: 2000 process – a set of interconnected activities that interact and transform "inputs" into "outputs". One of the means of improving the management of industrial enterprises with functional varieties of organizational structures is the process approach to management. The term "process approach" is finally approved in the international standard ISO 9000: 2005 "Quality Management Systems", which states: "In order to function effectively, organizations must identify and manage the numerous interconnected processes that interact. Often the output of one process directly forms the input of the next. The systematic identification and management of the processes used by the organization, and especially the interaction of such processes, can be considered a process approach".[13] The desired result is achieved more effectively when the activity and related resources are managed as a process.

A complex of technological processes of producing the product forms a system that gives an effect in the form of a product by which a particular enterprise is identified in society. To implement these

[12] Kane, M. M., Ivanov, B. V., Koreshkov, V. N., & Shirtladze, A. G. (2008). Sistemy, metody i instrumenty menedzhmenta kachestva : uchebnoe posobie [Systems, methods and tools of quality management: a tutorial], Piter, SpB. P. 542.

[13] Harrington, Dzh., & Voul, F. (2008). Sovershenstvo upravlenija znanijami [Knowledge Management Excellence]. Moscow : Standarty i kachestvo, pp. 70–72, 157–170.

processes, a certain set of technical means is used. They are ordered (structured) and ensure the correct course of the system of processes. The technical means become the material components of the enterprise. An enterprise is an open system that sells through the exchange processes (goods, resources, money), that is, it constantly exchanges with the external environment with all components from which it is composed. The main systems that are part of it, or subsystems, are: a system of processes that ensure the transformation of resources into the product (for example, technology); the control system or the signal-regulating system and the system of social relations (personnel actions, distribution of responsibilities and responsibilities, motivation necessary).

A leading subsystem, which determines how other subsystems of an industrial enterprise will be formed, is a subsystem of production processes. The operation of the enterprise is a complex of relatively stable processes of the transformation of resources, the course and support of which is provided by the operational actions of managers and performers. To the zone of each process that takes place at the enterprise, a given set of resources is directed to be used to obtain the planned results. The results of the process can be new resources, which are directed to "inputs" of the following processes. Given such sequence of actions, it is possible to logically construct a system of enterprise processes, examining all transitions between processes.

We see that the logic of the process approach in no way excludes the possibility of its implementation in the presence of any organizational management structure. The process approach does not exclude the possibility of the existence of any type of organizational management structure, but, according to the author, a prerequisite for its implementation is the formation of a structure that reflects the totality of processes in the context of which management is carried out.

Thus, the expediency of use of system-purpose and process approaches in the construction of a system of management of financial and economic security of the enterprise is substantiated. Let's dwell on the techniques and methods of system analysis that can be used in the construction of the SFESE. To solve complex problems using system analysis it is necessary to formally present the organization of the process of solving the problem in this way:[14]

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[14] Orehov, N. A., Levin, A. G., & Gorbunov, E. A. (2004). Matematicheskie metody i modeli v jekonomike : uchebnoe posobie dlja vuzov [Mathematical methods and models in economics: a textbook for universities]. Moscow : JUNITI-DANA, p. 261.

$$R:\{\{M\},\{x\},F\},\tag{1}$$

Where $\{\grave{I}\;\}$ – a set of actions to solve a task;

$\{\tilde{o}\}$ – a set of links between actions;

F – ormulation of the task (goal).

The element $\{\grave{I}\;\}$ is defined as an action, the scheme of the organization of action is as follows: purpose – description – the way of execution, that is, we deal with the three levels of organization of the decision.

In each process infrastructure subsystem, local goals are solved, and the concept of a local goal refers to both operations and individual procedures performed in the subsystem. Let's select a set of local goals $\left\{g_j^s\right\}$, hich ensure the implementation of goal G_j of operation j:

$$\left\{g_j^s\right\} \rightarrow G_j,\; s=\overline{1,\sigma.}\tag{2}$$

The goal G_j can also be achieved by performing more simple goals, namely $g_j^1, g_j^2, ..., g_j^n$. Achievement of goal G_j through goals g_j^s can be provided in different ways, depending on what links exist between goals (operations, procedures). Therefore, there are related goals, unrelated goals, and difficult goals. The way to achieve each of the goals can be discrete or continuous. The construction of an action system is facilitated by the use of typical action schemes that are developed for particular classes of tasks. The development of such typical schemes is important for enterprises, because they are characterized by the complexity of organizational management, functioning in a changing external environment, changing the conditions of the internal environment, which necessitates continuous improvement of the schemes and complicates management. Such typical schemes are called operating models, they consist of a set of interrelated operations (procedures) and is a description of typical ways of solving problems. Operating models may include methods, instructions, programs and action algorithms that reveal the sequence of operations (procedures). Decisions on each of the operations or procedures are defined as the choice of alternative. The choice of alternatives involves two fundamental

concepts: the set of alternatives (action options) $\{x\}$ and the principle of choice $(\hat{O})$. hen the task of decision-making has the form:

$$\{\{x\}, \hat{O}\} \rightarrow \tilde{o}^*, \qquad (3)$$

where $\tilde{o}^*$ – selected alternatives (one or more).

Depending on the degree of formalization, that is, the possibility of constructing operational models, there are three variants of tasks:

– the task of optimal choice – if the set $\{x\}$ is uniquely determined (fixed), and the principle of choice $\hat{O}$ is formalized(in operating models);

– the task of choice – if the set $\{x\}$ is uniquely determined, but the principle of choice $\hat{O}$ can not be formalized. In this case, the choice depends on who and on the basis of which information makes choices;

– the general task of decision-making – if the set $\{x\}$ does not have defined limits (may be supplemented and varied), and the principle of choice $\hat{O}$ is not formalized. In this case, different actors can choose alternatives that others have not even considered.

CONCLUSIONS

The construction of SFESE on the basis of system – target and process approaches should be associated with the formation of strategic financial objectives, which are determined taking into account the threats of enterprise security loss and ways to neutralize them. In accordance with the main dominant areas of financial and economic security, the company organizes the process of forming its strategic goals, which are appropriate to include the following: maximizing the level of financial profitability; optimization of the volume of financial resources; providing the necessary level of financial stability and sustainability; full satisfaction of the investment needs of the enterprise; minimize the level of financial risks; providing financial stability in the event of crisis situations.

The system approach involves the study of as many connections between the elements of the SFESE and the objects of the environment as possible to identify and analyze the most significant of them. One of the main problems of using the system approach to building a SFESE is the proper formalization of the components and processes of the system (operational models), the identification of all its essential elements and the establishment of the whole set of relationships between them.

Thus, the basis for building a system for managing the financial and economic security of an enterprise should be a concept that takes into account the following individual characteristics:

– each enterprise has its own set of processes, procedures, operations, that is, the elements by which operating models are built; formalization of operational models highlights areas of activity within the scope of economic activity (personnel, sales, purchases, finance, economics, technology, technology, construction, etc.); operating models are unique within a specific enterprise and are grouped in a process approach;

– the construction of operating models, which are the organizational basis of the SFESE, should be grouped on the principles of leadership, which are the main provisions of management science and relate to the management of people in the process of joint activities to achieve the goals of the enterprise;

– the establishment of a relationship between operations and procedures that collectively represent operational models of the SFESE is the basis for using the systemic and objective approach to managing financial and economic security.

To organize the system of actions for solving problems that are included in the subsystem of the system of financial and economic security of the enterprise, one must strive for the maximum formalization of processes, which will reduce the influence of the subjective factor on making managerial decisions in the process of achieving goals by any subsystem.

SUMMARY

The article deals with the problems of management of financial and economic security of the enterprise, the appearance of which is caused by an increase in the aggressiveness of the external and internal environment and the increase of the influence of negative factors on the performance of domestic enterprises. It is substantiated that it is expedient to build a system of management of financial and economic security of the enterprise on the basis of system-purpose and process approaches. The term "threat" under which the authors understand the phenomenon or factor that destructively affects the socio-economic system as a whole, has a destructive force of various orientations, impedes the realization of the overall goal of the enterprise and can lead to irreversible losses and termination of activity. The characteristic features, on which the concept of construction of the system of financial and economic security should be grouped, is formulated.

REFERENCES

1. Akimova, T. A. (2003). Teorija organizacii: uchebnoe posobie dlja vuzov [Theory of the organization: a manual for universities]. Moscow : JUNITI-DANA.

2. Management of financial security of economic entities: Chapter 2. Management of financial and economic security of enterprises: the essence and mechanism of provision. Available at http://pidruchniki.com/ 78180/finansi/upravlinnya_finansovoyu_bezpekoyu_ekonomichnih_subye ktiv (accessed 18 September 2018).

3. Ivanova, T. Ju., & Prihod'ko, V. I. (2004). Teorija organizacii [Theory of the organization]. Piter, SpB.

4. Chernjak, Ju. I. (1975). Sistemnyj analiz v upravlenii jekonomikoj [System analysis in economic management]. Moscow : Ekonomika.

5. Valuev, S. A., Volkova, V. N., & Gradov, A. P. (1991). Sistemnyj analiz v jekonomike i organizacii proizvodstva [System analysis in economics and production organization]. Leningrad : Politehnika.

6. Fathutdinov, R. A. (2000). Organizacija proizvodstva: uchebnik [Organization of production: textbook]. Moscow : INFRA-M.

7. Jengel'gardt, V. A. (1976). [On some attributes of life: hierarchy, integration, cognition]. *Voprosy filosofii*, vol. 7, pp. 65–81.

8. Optner, S. (1969). Sistemnyj analiz dlja reshenija delovyh i promyshlennyh problem [System analysis for solving business and industrial problems]. Moscow : Sovetskoe radio.

9. Golubkov, Je. P. (1975). Sistemnyj analiz v upravlenii narodnym hozjajstvom [System analysis in the management of the national economy]. Moscow : MINH.

10. Jang, S. (1972). Sistemnoe upravlenie organizaciej [System management of the organization]. Moscow : Sovetskoe radio.

11. Yermoshenko, M. M., & Horyacheva, K. S. (2010). Finansova skladova ekonomichnoyi bezpeky: derzhava i pidpryyemstvo: naukova monohrafiya [Financial component of eco-nomic security: state and enterprise: scientific monograph]. Kyiv : NAU.

12. Kane, M. M., Ivanov, B. V., Koreshkov, V. N., & Shirtladze, A. G. (2008). Sistemy, metody i instrumenty menedzhmenta kachestva : uchebnoe posobie [Systems, methods and tools of quality management: a tutorial]. Piter, SpB.

13. Harrington, Dzh., & Voul, F. (2008). Sovershenstvo upravlenija znanijami [Knowledge Management Excellence]. Moscow : Standarty i kachestvo.

14. Orehov, N. A., Levin, A. G., & Gorbunov, E. A. (2004). Matematicheskie metody i modeli v jekonomike : uchebnoe posobie dlja vuzov [Mathematical Methods and Models in Economics: A Textbook for Universities]. Moscow : JUNITI-DANA.

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CHAPTER 4
BUDGETARY DECENTRALIZATION: THE STATUS
AND PROSPECTS OF IMPLEMENTATION IN UKRAINE

Lysiak L. V.

INTRODUCTION

Over the years of independence, the budget system of Ukraine evolved under conditions of increased centralization of budget funds in the state budget. Despite the constitutional and legislative status of national self-government, this important social institute in Ukraine was in fact formal in nature and functioned inefficiently for years of independence.

The lack of institutional, organizational and financial conditions for exercising the right and ability of local governments to resolve local issues at their own expense has led to high dependency of local budgets on intergovernmental transfers, low efficiency of state and local budgets expenditures. Self-government bodies' financial failure, their passivity and irresponsibility in managerial decisions affected the deepening of the uneven development of Ukrainian regions, exacerbated social and economic risks and led to the necessity to look for the ways of the budget system functioning efficiency improvement.

The budgetary decentralization issue with different intensity has been raised during all the years of Ukraine development, simultaneously it has been given priority status since 2014. Formed and legally approved conceptual foundations for reforming local self-government, issues of redistribution of powers between levels of government and proper financial resources to fulfil them were the beginning of fundamental changes in the administrative and territorial units at local/locative levels development.

Budgetary decentralization problems complication and complexity, local budgets strengthening, intensification of their influence on regions socio-economic development prompted scientists to search the ways to improve the quality of financial support for the functions of the state and self-government bodies, to increase the efficiency of managing budget funds in order to reduce regional disparities, to increase financial disparities and governing bodies responsibility. The theoretical foundations of decentralization in general and financial decentralization in particular, financing/providing public services at different levels of government, local

budgets development were laid out in foreign scientists' works: A. Wagner, W. Oates, V. Tanzi, C. Tiebout, R. Musgrave. Problems of realization of budgetary policy at the state and local levels, formation of financial potential of administrative-territorial units development, local budgets strengthening, optimization of their expenditures in the conditions of decentralization and European integration aspirations of Ukraine are devoted to the works of domestic scientists: O. Vasylyk, T. Bogolib, G. Voznyak, O. Grabchuk, O. Kyrylenko, M. Krupka, M. Kuzhelev, L. Lysiak, I. Lunina, I. Lukyanenko, V. Oparin, Y. Pasichnyk, Y. Radeletsky, I. Chugunov, V. Fedosov, S. Yuriy and others.

At the same time, public finances decentralization and the intergovernmental Ukraine budget system reforming continues and is accompanied by several problems. Budgetary decentralization processes in the aspect of local budget development, the extension of tax potential of generating budget revenues of the united territorial communities, and the expenditure planning improvement require further scientific research.

The purpose of this study is to analyze the budgetary decentralization theoretical foundations, to evaluate its practical implementation process and to outline the ways to strengthen local budgets in the context of deepening financial decentralization and increasing financial autonomy of local self-government in Ukraine.

The set of methods and techniques was applied in the work, which made it possible to realize the conceptual unity of research: analysis, grouping, systematic, comparative and others.

4.1. Budget decentralization as a necessary condition for territorial development

Centralization and decentralization are the basic principles of government formation. Decentralization is interpreted as the abolition/weakening of centralization; it is a system of governance in which part of the central government functions is transferred to local self-government bodies[1]. The theory of decentralization implies the distribution of all administrative and managerial powers to those that are either within the national competence or the competence of locative/local communities. At the same time, along with part of the functions from the central government to the local also the resource for their performance must be

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[1] Novyi tlumachnyi slovnyk ukrainskoi movy (2006) [A new interpretative dictionary of the Ukrainian language]. Kyiv: AKONIT, Tom 1. 535 p.

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transferred, so the delegation of powers should be accompanied by adequate financial support.

In the hierarchy of decentralization signs "financial decentralization" is a generic, system-forming concept that encompasses budgetary and fiscal types that aim to strengthen and effectively budgetary potential usage as a result of budgetary system decentralization.

The provision of public goods and services at different levels of government that best meet the needs of the population of a country or a certain territory contributes to improving the efficiency of the functioning of the state budget system. According to W. Oates decentralization theorem, efficient spending of public funds on public goods and services can provide the level of power closest to the consumers of budget services, and the benefits of them cover the cost they are prepared to pay in society[2].

Budget decentralization refers to the powers (functions, competences, responsibilities) and financial resources delegation process for their execution from central authorities to local ones. Several scholars believe that fiscal decentralization is a significant mechanism of budgetary federalism. Budgetary federalism, the basic principles of which are laid down in the works of C. Tiebout[3], W. Oates[4], R. Masgrave[5], and others, is a complex multifaceted concept. Despite the lack of consensus among researchers, everyone agrees that the decision of the authorities to provide public goods must satisfy local/locative needs. This means that in the context of local budgets independence, financial and budgetary relations organization between the centre and local authorities must coordinate and reconcile their interests, coordinate the provision of public goods and services of proper quality, ensure the territories development.

Reconciling and combining the interests of central and local authorities involves ensuring fairness and transparency in the allocation and redistribution of public finances, the organization of intergovernmental budgetary relations, the consideration of territorial disparities in the development of regions, the potential and opportunities / conditions of its disclosure.

Budget decentralization is the balancing of the state budget system by coordinating the volume of all types of local budget revenues and the

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[2] Oates, W. E. (1972). Fiscal Federalism. Harcourt Brace: New York, 318 p.

[3] Tiebout, C. M. (1956). A Pure Theory of Local Expenditures. *Journal of Politicai Economy*, Vol. 64 (5), pp. 416-424.

[4] Oates, W. E. (1972). Fiscal Federalism. Harcourt Brace: New York, 318 p.

[5] Masgrave, R. A. (1959). The Theory of Public Finance. New York: McGraw-Hill Book Company, Inc., pp. 628–526.

expenditures amount for the implementation of delegated by the state functions, solving of certain territory social and economic development problems. Shifting revenues and lower-level expenditures while maintaining financial responsibility requires an optimal, appropriate distribution of powers between authorities and local governments, and increasing the of regions financial self-sufficiency.

In the context of fiscal decentralization, complex issues of financial autonomy and financial responsibility are being solved. The financial autonomy of the local self-government body is enshrined in the Budget Code of Ukraine and characterized as the right of autonomous, independent formation (including legally allowed formation of rates and conditions of payment of local taxes and fees), approval of local budgets, implementation of borrowing, execution of the assigned functions and administration of subordinate administration-territorial formation[6]. The basis for the financial autonomy of local self-government bodies is the sufficiency of funds to fulfil their own and delegated powers by local budgets types. Therefore, an integral aspect of budgetary decentralization is to strengthen its financial base – local budget revenues and enhance their impact on social and economic development. In this context, the role of budgetary policy as a system-forming institution of budgetary relations in influencing social and economic processes in the country and regions and its forms – income, expenditure, transfer, debt – Is increasing. I. Chugunov notes that budget policy is developed in budget process course, it provides for the definition of goals and objectives in finance, the development of a mechanism for the budget funds mobilization, the choice of directions for their use, the management of finances in the budget sector, budgetary instruments for regulating economic and social processes[7].

Budget policy is becoming an active, important tool for the realization of strategic goals of social development and administrative-territorial entities, solving current problems, stimulating socio-economic development of territories. A prerequisite for sustainable development is usage of budgetary policy as one of the levers to promote territorial entities development, strengthen their financial, budgetary, tax potential, create conditions for its implementation, taking into account the economic, social and cultural status of administrative and territorial formation and maturity

[6] Biudzhetnyi kodeks Ukrainy vid 08.07.2010 [Budget Code of Ukraine from 08.07.2010]. № 2456-VI. URL: http://zakon0.rada.gov.ua/laws/show/2456-17

[7] Chugunov I. Ya. (2005). Teoretychni osnovy systemy biudzhetnoho rehuliuvannia [Theoretical foundations of the system of budgetary regulation]. Kyiv: NDFI, 96 p. (in Ukrainian)

of the institutional environment. In addition, budgetary policies at the local level should contribute to the structural adjustment and improvement of inter-regional, inter-sectoral and sectoral proportions.

An indispensable condition for effective budgetary decentralization is the extension of the competence of local governments to independently implement the budget process at the local level. Effective and reasonable forecasting, planning, formation, execution, control and audit of the local budget will promote compliance with budgetary discipline, budget process transparency and increase the responsibility of self-government bodies for achieving the planned results. D. Wildasin points out that the effectiveness of decentralized redistribution of budget resources is largely determined by the ability of local governments to provide effectively certain public services to people[8].

Local budget revenues under conditions of budgetary decentralization are increasingly dependent on the tax potential of a territory. Strengthening tax potential because of significant component of fiscal decentralization – tax decentralization, requires the transfer to the local level of authority to establish, administer, collect, dispose of a legislatively designated share of tax revenues and fees – the financial basis for local budgeting. That is, local taxes and fees should be the main source of local budget expenditures, since public services must be paid for by their customers. At the same time, all members of society should be equal in the right to social welfare not less than the level of minimum social standards established in the country. In this context, the extension of financial autonomy and autonomy of local self-government bodies implies the fulfilment at the territorial level of both own and delegated (state-delegated to the local level) functions.

Budget decentralization implies not only a complex process of allocation of functions, powers, financial resources, but also compliance with the principle of responsibility for their use. Regarding financial (fiscal) responsibility, it should be noted that it should concern both self-government bodies and citizens. The latter should understand (and the authorities – to demonstrate) the close relationship between the amount of taxes and fees paid to the budget and the amount and quality of public goods and services received at budget expense. To do this, it is necessary to increase people financial literacy, to develop tax culture (in particular, the

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[8] Wildasin, D. E. (1996). Comment on "Fiscal Federalism and Decentralization: A Review of Some Efficiency and Macroeconomic Aspects" by Vito Tanzi. *Annual World Bank Conference on Development Economics*. Washington: World Bank, 323 p.

obligation to pay taxes, avoid tax evasion due to shadow activity/employment), to increase the budget process transparency, to inform the community in a timely and accessible manner about the state and results of budget execution projects and programs implemented through local budgets and partnerships.

In addition, in view of foreign experience, territories development under conditions of budgetary decentralization implies active participation of the community in public sphere, creation of conditions and implementation of the policy of joint decision-making, which is integrated in the implementation of institutional changes for the purpose of conscious participation of citizens in cooperation with local authorities formulation, provision and implementation of responsible targeted solutions to address top priority local problems. It also involves public scrutiny, monitoring and evaluation of budgetary resources efficient usage. According to the researchers, community-based initiation of community-based development projects is particularly appropriate in the context of the immaturity of the institutional environment, institutional distortions (lack of competence, corruption, low levels of responsibility, passiveness of the authorities, etc.), post-crisis period[9], and at the same time carries with it the dangers and threats to participatory democracy[10]. T. Alberich and A. Espadas, examining this issue on the example of Spain, point out that the reduction of community development projects and participation programs that took place during the crisis should be stopped, with education/knowledge and professional experience of citizens[11].

The "Concept of reforming local self-government and territorial organization of government in Ukraine" identifies the following priority areas of budgetary decentralization: ensuring budgetary autonomy and financial autonomy of local budgets; encouraging communities to unite and form capable territorial communities; securing for local budgets stable sources of revenue and expanding the existing revenue base of local budgets; decentralization of expenditure powers and a clear division of competences, formed on the principle of subsidiarity; providing new types

[9] Tanaca, S., Singh, J., Songeo, D. (2006). A review of community-driven development and its application to the Asian Development Bank. 100 p. URL: http://www.estudislocals.cat/wp-content/uploads/2017/01/AreviewCDDtoADB.pdf

[10] Voznyak, H., Pelekhatyy, A. (2017). Participatory budgeting as a tool for the implementation of the fiscal policy of regional development of Ukraine. *Economic Annals-XXI*, Vol. 167(9-10), pp. 53-56.

[11] Alberich, T., Espadas, M. Angeles (2014). Democracia, participation ciudadana y funciones del trabajo social [Democracy, citizen participation and funciones of social work]. *Trabajo social global,* Vol. 4 (6), pp. 3-30. URL: file:///D:/%D0%9C%D0%BE%D0%B8%20%D0%B4%D0%BE%D0%BA%D1%83%D0%BC%D0%B5%D0%BD%D1%82%D1%8B/Downloads/GlobalSocialWork20144%20(1).pdf.

of transfers and strengthening the responsibility of line ministries for implementing public policy in the respective sectors; definition of a new mechanism of budgetary regulation and alignment.

State budget system decentralization, contributing to the real autonomy of local self-government, implies the improvement of forecasting and planning, the use in the budget process of the program-target method of planning tools. Its progressiveness and advantages over other planning methods in the budget sphere allow to concentrate on the results of use of budgetary means, to ensure clarity and transparency of the budget process, to increase the managerial responsibility of executors while expanding the possibilities for decentralization of management and delegation of powers, to adapt, flexibly and responsibly and make timely adjustments.

Thus, for effective budgetary decentralization implementation, the following prerequisites are required:

– territorial communities, territories, regions consolidation;

– central and local authorities powers separation;

– ensuring the financial capacity of territorial communities and regions;

– financial responsibility of territorial communities, regions, population formation;

– implementation and use of progressive management and planning methods in the budget process, widening the budget planning horizon.

Creating a financial foundation for local self-government in the context of the redistribution of power in the financial sector should also consider the potential risks of local budgets associated with economic transformations and economic instability.

4.2. Financial aspects of deepening budgetary decentralization in Ukraine

Active reform of power decentralization in Ukraine, which is based on budgetary decentralization, has begun since the beginning of 2015. For this purpose, several changes were introduced to the Budget Code of Ukraine (BCU), the Tax Code of Ukraine (TCU) and some legislative acts of Ukraine on ensuring the budget revenues balance. The reform process intends to strengthen local self-government bodies role and capacity to promote sustainable development of the regions and increase the well-being of citizens, which implies the formation and implementation of responsible and effective budgetary policies at the regional level,

determining the directions of its influence on the promotion of balanced social and economic development. As a result of the decentralization reform, the capacity of local self-government bodies of Ukraine should be increased independently, at the expense of their own resources, to resolve issues of local importance, which is ensured by transferring additional budgetary powers and securing stable sources of revenue for their implementation.

Increasing sources of local budgets revenue base formation is enshrined in legislation by transferring certain types of revenues from the state budget, introducing changes and expanding the tax base, etc.[12] Local governments are empowered to increase their fiscal independence, by setting local tax rates and levies, benefits. In addition, the system of balancing of all local budgets was changed by introducing a system of horizontal levelling of taxability of territories, depending on the level of income per capita. Educational and medical subsidies from the state budget have been introduced to cover expenditures on state delegated powers in education and health care[13]. The analysis shows that the level of budgetary decentralization in Ukraine is gradually increasing, with about 15% of gross domestic product distributed through local budgets (Table 1).

Analysis of local budgets for 2015-2018 implementation suggests that the results of budgetary decentralization reform in Ukraine four years implementation produce some positive results. Thus, changes were made to the composition and structure of tax revenues to local budgets.

In fact, they were reformatted, consolidated and the proportions of distribution between the state and local budgets and between the local budgets themselves changed. During 2015-2018, tax revenues increased by the following types of taxes: PIT, single tax, and environmental tax (Table 2).

The data in Table 2 show that, despite directing the PIT share to the state budget, it remains the most important component in the structure of local government tax revenues. The volume of PIT income for 2018 amounted to 138 064,4 mln. UAH, the level of performance of the annual indicator approved by local councils is 101,1%. Land tax is a significant

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[12] Pro vnesennia zmin do Podatkovoho kodeksu Ukrainy ta deiakykh zakonodavchykh aktiv Ukrainy shchodo zabezpechennia zbalansovanosti biudzhetnykh nadkhodzhen u 2016 rotsi [On Amendments to the Tax Code of Ukraine and Certain Legislative Acts of Ukraine on Balancing Budget Revenues in 2016]: Zakon Ukrainy vid 24.12.2015 № 909-VIII. URL: http://zakon2.rada.gov.ua/laws/show/909-19

[13] Pro vnesennia zmin do Biudzhetnoho kodeksu Ukrainy shchodo reformy mizhbiudzhetnykh vidnosyn: Zakon Ukrainy vid 28.12.2014 [On Amendments to the Budget Code of Ukraine on Intergovernmental Relations Reform: Law of Ukraine of 28.12.2014] № 79-VIII. URL: http://zakon2.rada.gov.ua/laws/show/

part of the revenue structure of local budgets (till 2015 – payment for land). After a sharp fall in 2013, its share increased and fluctuates in the next years within 15%.

<div align="right">Table 1</div>

**Dynamics of the state and local budgets
of Ukraine revenues share in GDP[14], %**

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
National budget	24,5	23,0	24,4	24,7	22,2	24,2	24, 5	23,4	22,8	27,1	25,9	30,4	30,0
Local budgets	13,4	14,4	13,8	13,9	13,9	13,1	15,1	14,4	14,6	14,9	15,4	15,0	15,6
Own income	6,8	7,6	7,1	6,9	6,6	5,8	6,3	6,4	5,1	5,1	6,2	6,5	7,1
Intergovern-mental transfers	6,6	6,8	6,7	7,0	7,3	7,3	8,8	8,0	8,3	8,8	8,2	7,7	8,6

<div align="right">Table 2</div>

Structure of tax revenues of local budgets in Ukraine[15], 2014-2018

Income	2014	2015	2016	2017	2018
Total tax collections, including:	100	100	100	100	100
Personal Income Tax (PIT)	68,0	55,9	53,8	55,1	60,3
Excise tax	-	7,7	7,8	6,6	6,3
Corporate income tax	0,4	4,4	4,1	3,2	3,0
Land tax and rent	13,8	15,1	15,9	13,6	13,9
Single tax	8,5	11,2	11,7	11,1	14,1
Environmental tax	1,4	1,6	2,3	1,3	1,6
Other taxes and fees	7,9	4,1	4,4	9,1	7,1

Revenues from the land tax for 2018 amounted to 27 319,1 mln. UAH, the level of implementation of the annual indicator approved by local councils – 99,1%. In 2018, out of 18 regions of Ukraine, only 5 regions provided more than 10% increase in land tax, which is above the national average (3.6%), a decrease compared to the previous year –

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[14] The author calculated according to the data: Derzhavna kaznacheiska sluzhba Ukrainy. Zvitnist pro vykonannia biudzhetiv Ofitsiinyi sait. URL: http://www.treasury.gov.ua/main/uk/doccatalog/list?currDir=146477

[15] The author calculated according to the data: Derzhavna kaznacheiska sluzhba Ukrainy. Zvitnist pro vykonannia biudzhetiv [State Treasury Service of Ukraine. Budget Execution Reporting]. Ofitsiinyi sait. URL: http://www.treasury.gov.ua/main/uk/doccatalog/list?currDir=146477

Dnipropetrovsk (-6.4%), Zakarpatska (-3.2%) and Zaporizhzhia (-0.7%) regions. In general, the share of land tax in local government tax revenues is decreasing, indicating the need for improved planning and reviewing benefits feasibility. Excise tax receipts are volatile and change as a result of changes in legislation and several other factors. The share of the single tax, which since 2011 has been included in the local budgets, is increasing. Its actual receipts for 2018 amounted to 29487,7 mln. UAH, an increase of revenues against 2017 is 26,5% or 6 186,2 mln. UAH more. The potential of the real estate tax other than land is not fully realized today, despite the tax base expansion. We see the main reason in its administration shortcomings[16].

A significant result of decentralization is the overall increase of local taxes and fees share in local budget revenues, which together with intergovernmental transfers contributes to improving their financial sustainability. If before the reform began – in 2014, the share of local taxes and fees was 9.2% in the structure of local budget revenues, in 2015 due to changes in the budget and tax legislation – 27.5%, in 2016 – 28.8 % in 2018 – 30%. In addition, the structure of non-tax revenues of local budgets shows an increase of administrative fees and payments share – from 13.8% in 2014 to 22.0% in 2018 (8.2%).

Thus, a significant increase of local taxes and levies share in local budget revenues is an achievement of budgetary decentralization, while at the same time, an increase of intergovernmental transfers share in local budget revenues indicates a low level of local budgets financial autonomy. Thus, in 2018, intergovernmental budget transfers to local budgets amounted to 298.9 bln. UAH (in terms of own revenues – 263.5 bln. UAH), whereas in 2014 – UAH 130.6 bln. (own revenues – 101.1 bln. UAH). That is, local budgets are still heavily dependent on financial support from the centre, and this problem needs to be addressed. The budgetary practice of implementing measures for budgetary decentralization of foreign countries shows that legislative regulation of intergovernmental relations and responsibilities of the central government and local self-government, clearer and justified separation of their powers, creating preconditions for their financial security, involvement of the community, and compliance positive trends in local budgeting and spending accordingly.

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[16] Lysiak, L. V., & Hrabchuk, O. M. (2018). Zmitsnennia biudzhetnoho potentsialu mistsevykh biudzhetiv Ukrainy v umovakh finansovoi detsentralizatsii [Strengthening the budgetary potential of Ukraine's local budgets in the context of financial decentralization]. *Problems of economy*, 1, 294–299.

Effective fiscal decentralization requires the consolidation of territorial communities, territories, regions, the pooling of local budget resources, the real increase of local taxes and fees, which will contribute to the financial capacity of the united territorial communities (UTC) in solving local development problems. I. Lunina notes that in most territorial communities of Ukraine, especially those with a small population, about 80% of the budget's expenditures go to management[17]. The researcher estimated that out of 12 thousand territorial communities, 40% had a population less than 1000 and 10% – less than 500. That is, community unification will also solve the problem of reducing administrative costs, but most importantly – it will contribute to financial capacity accumulation, creation of conditions and opportunities for stimulating territorial entities development.

The process of forming an UTCs in the country has been intensified due to a number of financial and institutional factors, including the legislative regulation of community associations, changes in tax legislation, financial incentives, and in addition, non-economic factors, among which are psychological, socio-cultural and other. In 2015, 159 united communities were formed, and the following year received direct intergovernmental budgetary relations. In 2016, the first elections were held in 207 UTCs, which is 1.3 times more than in 2015. As a result, in 2015–2016, 366 UTCs were formed, and in 2017, another 299 UTCs. The 665 UTCs united in 3180 territorial communities. In 2018, the number of UTCs increased to 874, bringing together 4004 territorial communities. Revenues of 665 UTCs in 2018 increased by 62.5% compared to 2017 (in monetary terms – by 6.5 bln. UAH) and amounted to 17 bln. UAH. Due to the active integration of territorial communities in 2015-2018, their income base has expanded. The process of unification of territorial communities is ongoing and the opportunity to summarize their financial activities has emerged (Table 3).

The data grouped in Table. 3 provide an opportunity to draw the following generalizations and preliminary conclusions. The own revenues of local budgets for one resident per capita have the highest and lowest values in group 4 (compared to all groups of UTC). Despite the fact that the upper limit of own income per capita is lower in group 1, at the same time it has the lowest level of subsidy, and in terms of expenditures for the maintenance of the management apparatus in the financial resources of the UTCs, it is inferior to group 2.

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[17] Lunina, I.O. (2014). Biudzhetna detsentralizatsiia: tsili ta napriamy reform [Budget decentralization: goals and directions of reform]. *Ukraine economy*, 11, 61-75.

Table 3
Selected financial performance indicators of 665 UTCs in 2018[18]

Indicators (range [max÷min])	UTC with population, thousands of inhabitants			
	>15000 (group 1, 87 UTC)	10000-15000 (group 2, 103 UTC)	5000-10000 (group 3, 227 UTC)	< 5000 group 4, 248 UTC)
Own income per inhabitant, thousand UAH	6,04÷0,94	21,69÷0,74	17,58÷0,63	25,50÷0,60
Budget subsidy level, %	47,6÷(-8,0)	52,9÷(-21,1)	57,9÷(-24,0)	60,3÷(-28,3)
Share of expenditures for maintenance of management apparatus in financial resources of UTC, %	58,9÷22,8	49,3÷8,6	87,3÷6,8	76,6÷9,5
Capital expenditures per capita, UAH	3,27÷0,43	9,76÷0,46	6,65÷0,20	11,56÷0,24

The upper and lower limits of the range of the level of subsidy the budgets are the highest in group 4, so the budgets of the UTCs with the smallest population depend most on the state budget. At the same time, they are investment active. Thus, the upper limit on capital expenditures per capita is the highest in group 4, the lowest in group 1. The upper boundary of the share of expenditures on the management of the UTCs financial resources is the highest in group 3 (which is 10.7 percentage points higher than in group 4), the lowest – in group 2 (which is 9.6 percentage points lower than in group 1). Groups 1 and 2, combining respectively 87 and 103 UTCs with the largest population (more than 10,000 people each), have the best thresholds compared to groups 3 and 4, where the population is smaller. It should also be noted that the comparative assessment of individual financial performance indicators of an UTCs does not allow the full identification of deeper financial problems (considering the grouping UTCs by quantitative characteristics). Thus, UTC population is important and the enlargement of territorial communities allows, under all other things being equal, to reduce administrative costs, at the same time it requires effective budgetary policy formation, determining the priorities of development, taking into account the characteristics and problems of territorial communities, the state of development of real sector, entrepreneurial activity, institutional factors, etc. Given that budgetary equalization is now based on revenue estimates

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[18] By the author according to the data: Initsiatyvy "Detsentralizatsiia". Derzhavnyi portal [Decentralization Initiatives. State portal]. URL: https://decentralization.gov.ua

rather than local budget expenditures, this encourages territorial communities to develop the local economy and business sector[19], thus strengthening the local budgets' revenue base.

Budget decentralization reform has led to change in the structure of local budget expenditures. The share of expenditures for the exercise of self-governing powers has increased, which testifies to the increase of spending autonomy of local budgets and creates prerequisites for ensuring the efficiency of the use of budgetary resources at the local level, provided their optimal distribution. Traditionally, the dominant share of local budget expenditures is social and cultural expenditure. Expenditure on social protection and social welfare accounts for the largest share. Expenditure on education, health care, economic activity, housing and communal services has increased[20]. However, the issue of lack of financial resources to local budgets for their own and delegated powers retained. Ensuring that the financial resource is in line with the actual needs of local budgets to spend on their own and delegated powers requires additional transfers from the state budget. In order to ensure budgetary balance, targeted subventions and basic local budget subsidy were introduced in the context of fiscal decentralization reform. The new system of budgetary balancing made it possible to leave most of the funds in the field, and local governments gained more independence when making management decisions. In 2017 and 2018, an additional grant for education and health care facilities is provided for all local budgets that have direct intergovernmental budgetary relationships. The urgent issue in this regard is the development and approval of scientifically grounded state social standards for education, health care, etc., which will optimize the number and structure of budgetary institutions, will ensure the efficiency of planning and use of local budgets, compliance with standards budget sector security to meet the real needs of consumers, reduce the budget deficit to finance the delegated powers. An important aspect is the introduction of an effective mechanism for social benefits targeted provision.

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[19] Analitychna dopovid do shchorichnoho Poslannia Prezydenta Ukrainy do Verkhovnoi Rady Ukrainy "Pro vnutrishnie ta zovnishnie stanovyshche Ukrainy v 2018 rotsi" [Analytical Report to the Annual Message of the President of Ukraine to the Verkhovna Rada of Ukraine "On Internal and External Situation of Ukraine in 2018"]. Rozdil 3. Kyiv: NISD, 1289. URL: http://www.niss.gov.ua/articles/3143/

[20] Pro vnesennia zmin do Podatkovoho kodeksu Ukrainy ta deiakykh zakonodavchykh aktiv Ukrainy shchodo zabezpechennia zbalansovanosti biudzhetnykh nadkhodzhen u 2016 rotsi [On amendments to the Tax Code of Ukraine and some legislative acts of Ukraine on ensuring the balance of budget revenues in 2016]: Zakon Ukrainy vid 24.12.2015 № 909-VIII. URL: http://zakon2.rada.gov.ua/laws/show/909-19

Local self-government bodies also have the right to freely manage balances of educational and medical subventions. The new budgetary equalization system has increased the balance of local budgets (about 13% of local budgets have become fully balanced in 2018). The number of local donor budgets has increased to 17%, which indicates a strengthening of their financial, and fiscal, capacity. It should be noted that the new equalization system is stimulating, since only 50% of donor budget funds are withdrawn, and in order to equalize the capacity of other territories, not for the benefit of the state budget[21].

An important positive factor in the implementation of fiscal decentralization reform was an increase in local budget investment resources. Along with increasing the amount of capital expenditures of local budgets, an important factor in ensuring regional development is the State Regional Development Fund (SRDF) funds, which are used to implement investment programs and regional development projects (including projects of cooperation and voluntary association of territorial communities). The total number of projects today – 19038, the scope of which are: energy (gas, heat, electrical) provision, major road repairs, modernization of heating systems for schools and kindergartens, sports infrastructure (construction of sports grounds, stadiums), improvement and more[22]. The problem that arises from the regional programs and projects implementation is the poor quality of their preparation, which leads to decrease in the efficiency of the funds from the ERDF usage. Preparation and implementation of investment projects and programs should not take place spontaneously, but in line with the socio-economic strategy and priorities of territorial development, be discussed by the public, and for their implementation – to involve socially responsible business based on partnership.

CONCLUSIONS

Ensuring real decentralization processes, granting broad powers to local governments, whose implementation will be ensured on a financial basis, and powers delegated to local governments, should be provided with financial resources. To improve the condition of local budgets and increase

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[21] Lysiak L.V. (2009).Biudzhetna polityka u systemi derzhavnoho rehuliuvannia sotsialno-ekonomichnoho rozvytku Ukrainy [Budget policy in the system of state regulation of socio-economic development of Ukraine]. Kyiv: DNNU AFU, 600 p.

[22] Perelik proektiv Derzhavnoho fondu rehionalnoho rozvytku [List of projects of the State Regional Development Fund]. URL: http://dfrr.minregion.gov.ua/Projects-list.

their financial stability and autonomy, it is necessary to formulate and implement effective budgetary policies in the area of income and expenditure.

In the current context of deepening decentralization through sound budgetary policies, local budgets can ensure their financial sustainability and autonomy. Currently, there is dependence on intergovernmental transfers of local budgets, there is a discrepancy between revenues and expenditures of budgets, the powers entrusted to local budgets and their financial support, which shows that there is practically no autonomy. Local taxes and levies should be introduced at the same time as reducing unemployment and improving economic dynamics, involving communities in discussing such measures and justifying decisions.

Implementation of budgetary decentralization reform and ensuring the effectiveness of the mechanism of budgetary regulation of socio-economic development requires further expansion of self-government bodies' rights, strengthening their budgetary autonomy and determining responsibility. This requires the development and approval of scientifically grounded state social standards for the social sectors, which will increase the efficiency of planning and use of local budgets, compliance with the standards of budgetary sectoral security to the real needs of consumers. An important aspect is the introduction of an effective mechanism for targeted provision of social benefits, hence their financial evaluation.

In the context of modern reforming (decentralization of budgetary relations, extension of budgetary rights of local authorities and granting autonomy in budgetary powers to self-government bodies) more detailed planning and control, budgetary policy measures are needed, that will help to increase the responsibility of self-government bodies for efficient spending of budgetary funds, implementation of properly justified investment projects and programs on the basis of partnership, improve the quality of administrative and social services to people.

SUMMARY

Budgetary decentralization processes in the aspect of local budget development, expansion of tax potential of generating budget revenues of the united territorial communities and expenditure planning improvement are relevant at the current stage of social transformation and reform.

The purpose of this study is to analyse the theoretical foundations of budgetary decentralization, to evaluate the process of its practical

implementation and to outline the ways to strengthen local budgets in the face of deepening reforms and economic transformation in Ukraine.

The essence of decentralization, financial decentralization, including budgetary and taxation is revealed. It is shown that effective budgetary decentralization implementation requires the formation of certain preconditions in the country. The level of budgetary decentralization in Ukraine has been determined. The analysis of tax revenues as the most important source of local budgets formation and identified the reserves of territorial entities tax potential strengthening.

Achievements and problems of budget decentralization in Ukraine are shown. The financial indicators of the united territorial communities, grouped by population, are estimated. The peculiarities of budgetary decentralization in Ukraine and factors affecting the financial capacity of the united territorial communities are revealed.

The problems that arise in connection with the implementation of local investment projects and programs and the possibilities of their solution are outlined. Budget policy measures have been identified in the light of improving budgetary efficiency.

REFERENCES

1. Novyi tlumachnyi slovnyk ukrainskoi movy (2006) [A new interpretative dictionary of the Ukrainian language]. Kyiv : AKONIT, T. 1. 535 p. (in Ukrainian)

2. Oates, W. E. (1972). Fiscal Federalism. Harcourt Brace : New York, 318 p.

3. Tiebout, C. M. (1956). A pure theory of local expenditures. *Journal of Politicai Economy*, vol. 64 (5), pp. 416–424.

4. Masgrave, R. A. (1959). The theory of public finance. New York: McGraw-Hill Book Company, Inc., pp. 628–526.

5. Biudzhetnyi kodeks Ukrainy vid 08.07.2010 [Budget Code of Ukraine from 08.07.2010]. № 2456-VI. URL: http://zakon0.rada.gov.ua/laws/show/2456-17

6. Chugunov, I. Ya. (2005). Teoretychni osnovy systemy biudzhetnoho rehuliuvannia [Theoretical foundations of the system of budgetary regulation]. Kyiv: NDFI, 96 p. (in Ukrainian)

7. Wildasin, D. E. (1996). Comment on "Fiscal Federalism and decentralization: a review of some efficiency and macroeconomic aspects" by Vito Tanzi. *Annual World Bank Conference on Development Economics*. Washington: World Bank, 323 p.

8. Tanaca, S., Singh, J., & Songeo, D. (2006). A review of community-driven development and its application to the Asian Development Bank. 100 p. URL: http://www.estudislocals.cat/wp-content/uploads/2017/01/AreviewCDDtoADB.pdf

9. Voznyak, H., & Pelekhatyy, A. (2017). Participatory budgeting as a tool for the implementation of the fiscal policy of regional development of Ukraine. *Economic Annals-XXI*, vol. 167(9-10), pp. 53–56.

10. Alberich, T., & Espadas, M. Angeles (2014). Democracia, participation ciudadana y funciones del trabajo social [Democracy, citizen participation and funciones of social work]. *Trabajo social global,* vol. 4(6), pp. 3–30.

11. Pro vnesennia zmin do Biudzhetnoho kodeksu Ukrainy shchodo reformy mizhbiudzhetnykh vidnosyn [On Amendments to the Budget Code of Ukraine on Intergovernmental Relations Reform]. Zakon Ukrainy vid 28.12.2014 № 79-VIII. URL: http://zakon2.rada.gov.ua/laws/show/79-19 (in Ukrainian)

12. Pro vnesennia zmin do Podatkovoho kodeksu Ukrainy ta deiakykh zakonodavchykh aktiv Ukrainy shchodo zabezpechennia zbalansovanosti biudzhetnykh nadkhodzhen u 2016 rotsi [On Amendments to the Tax Code of Ukraine and Certain Legislative Acts of Ukraine on Balancing Budget Revenues in 2016]. Zakon Ukrainy vid 24.12.2015 № 909-VIII. URL: http://zakon2.rada.gov.ua/laws/show/909-19 (in Ukrainian)

13. Derzhavna kaznacheiska sluzhba Ukrainy. Zvitnist pro vykonannia biudzhetiv [State Treasury Service of Ukraine. Budget Execution Reporting]. Ofitsiinyi sait. URL: http://www.treasury.gov.ua/main/uk/doccatalog/list?currDir=146477 (in Ukrainian)

14. Lysiak, L. V., & Hrabchuk, O. M. (2018). Zmitsnennia biudzhetnoho potentsialu mistsevykh biudzhetiv Ukrainy v umovakh finansovoi detsentralizatsii [Strengthening the budgetary potential of Ukraine's local budgets in the context of financial decentralization]. *Problems of economy*, vol. 1, pp. 294–299. (in Ukrainian)

15. Lunina, I. O. (2014). Biudzhetna detsentralizatsiia: tsili ta napriamy reform [Budget decentralization: goals and directions of reform]. *Ukraine economy*, vol. 11, pp. 61–75. (in Ukrainian)

16. Initsiatyvy "Detsentralizatsiia". Derzhavnyi portal. [Decentralization Initiatives. State portal]. URL: https://decentralization.gov.ua (in Ukrainian)

17. Analitychna dopovid do shchorichnoho Poslannia Prezydenta Ukrainy do Verkhovnoi Rady Ukrainy "Pro vnutrishnie ta zovnishnie

stanovyshche Ukrainy v 2018 rotsi” [Analytical Report to the Annual Message of the President of Ukraine to the Verkhovna Rada of Ukraine “On Internal and External Situation of Ukraine in 2018”]. Rozdil 3. Kyiv: NISD, 1289. URL: http://www.niss.gov.ua/articles/3143 (in Ukrainian)

18. Lysiak, L. V. (2009). Biudzhetna polityka u systemi derzhavnoho rehuliuvannia sotsialno-ekonomichnoho rozvytku Ukrainy [Budget policy in the system of state regulation of socio-economic development of Ukraine]. Kyiv : DNNU AFU, 600 p. (in Ukrainian)

19. Perelik proektiv Derzhavnoho fondu rehionalnoho rozvytku [List of projects of the State Regional Development Fund]. URL: http://dfrr.minregion.gov.ua/Projects-list (in Ukrainian)

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CHAPTER 5
DEVELOPMENT OF METHODOLOGICAL PROVISIONS
OF AUDIT OF FOREIGN TRADE ACTIVITIES
OF RELATED ENTERPRISES

Fesenko V. V.

INTRODUCTION

The international business globalization as well as Ukraine's integration into the world economic relations foster an increase in business activity of foreign corporations in the Ukrainian market and, accordingly, domestic entities engaged in foreign trade activities abroad. This leads to a growing number of audits both at the level of independent professional audit and government tax control. The European integration processes in Ukraine during recent years have accelerated a gradual implementation of the EU standards into the global business concerning taxation, control and audit approval of public financial statements of certain enterprises engaged in foreign trade activities as well as groups of international companies.

Transformational changes in the global and national economic practice require the improvement of methodological approaches to the analysis of foreign economic activity of enterprises, which will raise the efficiency of audit at different organizational levels of its conducting. Thorough scientific researches aimed at developing the areas of application of methods of analysis while carrying out the audit of foreign economic activity are essential to reinforce the economic security of certain entities engaged in foreign economic activity and a country as a whole.

The gradual implementation of the Organization for Economic Co-operation and Development roadmap to counteract tax base erosion and profit shifting is held through adapting the provisions of the Tax Code of Ukraine concerning transfer pricing control to the European standards. This demands an accounting and analytical support to draw up a report on controlled transactions and submit it to the State Fiscal Service of Ukraine. One of the types of foreign trade transactions, which are defined as controlled in accordance with the requirements of the Organization for Economic Co-operation and Development and the Tax Code of Ukraine, are foreign trade transactions with related parties. Their nature elevates the risk of substantial deviations of financial statements as well as creates the

possibility of manipulating the terms of foreign trade agreements in order to obtain illegal benefits. Taking the abovementioned into consideration, in the context of the implementation of the European standards in regards to conducting and controlling business the research in the field of audit and analysis of foreign economic activity of related enterprises is becoming a mainstream.

5.1. Theoretical foundations for the development of audit and analysis as a type of information interaction

In the current conditions of globalization and much wider participation of Ukrainian enterprises in international business relations, audit is increasingly becoming an effective tool for ensuring the quality and reliability of financial and non-financial information reflected in the reports of enterprises. At the same time, the importance of tax audit is growing, especially concerning the results of foreign economic activity (hereinafter – FEA) of enterprises. Thus, the updating of the audit as a form of financial control by various audit entities requires a thorough research into this area and clarifying the role of audit in the current business environment.

Overall, the term "audit" in modern researches is studied by representatives of various scientific directions of both macro- and micro-levels, among which there are researches into public administration, company management as well as accounting and auditing.

Studies of the practical aspects of audit in Ukraine as a control process confirm the existence of audit at different organizational levels and its enforcement by relevant agencies at these levels, including:

– at the level of control over the use of government funds – by the State Audit Service of Ukraine;

– at the level of state tax control over entities – by departments of auditors of the State Fiscal Service of Ukraine;

– at the level of state Customs control – by Customs auditors of the State Fiscal Service of Ukraine;

– at the level of independent professional financial control over entities – by certified independent audit firms and individual private auditors;

– at the enterprise level – by internal auditors.

The aim of their activity is different, so it is important to distinguish an objective and subjective level, at which further scientific research will be conducted.

Over the past quarter century, several Nobel Prizes in economics have been awarded to scientists whose studies from different sides deal with the information interaction of objects of various economic systems:

– in 1994 – to John Harsanyi, John Nash, Reinhard Selten– for their pioneering analysis of equilibrium in the theory of non-cooperative games;

– in 1996 – to James Mirrlees, William Vickrey – for their fundamental contributions to the economic theory of incentives under asymmetric information;

– in 2001 – to George Akerlof, Michael Spence, Joseph Stiglitz – for their analyses of markets with asymmetric information (founders of information economic theory);

– in 2016 – Oliver Hart, Bengt Holmstrom – for their contributions to contract theory;

– in 2017 – Richard Thaler – for his contributions to behavioral economics.

The analysis of researches by Nobel Prize winners confirms that the world economic science is more and more directing towards the behavioral aspects of the development of economics as a science, which are known to be based on information interaction.

This points to the relevance of scientific research into accounting, analysis and, in particular, audit, which is still unreasonably considered as a research field with a low scientific innovation potential.

In the course of audit information interaction is made among the largest number of persons including accounting staff, auditors, business owners, potential shareholders, creditors, representatives of state control agencies, investment companies, international donor organizations etc.

While exploring the works of European scholars, P. Welt[1] emphasizes that the quality of external audit should prevent accounting scandals observed in past and reduce the level of fraud at the management level, thereby positively affecting corporate governance effectiveness, which virtually results in greater efficiency of capital market. P. Welt considers three key aspects of contemporary audit development as a field of research: the quality of audit; audit costs; the concentration of the audit services market.

To improve the quality and reduce the cost of audit P. Welt offers a joint audit to decrease an auditor's dependency and bias as well as

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[1] Velte, P. (2017). What do we know about empirical joint audit research? A literature review. *Accounting and Financial Control*, 1(1), 4–14.

information asymmetry. In his opinion, the theory of a chief economic agent (auditor) and a shareholder as a dominant concept of audit development still remains the most relevant.

The enforcement of joint audit, which is to carry out audit procedures by several auditors, is a prospective field of research in this area.

The discussion on joint audit and its impact on the quality of audit reports and the volume of audit costs is presented in many researches. Scientists say that exercising audits by several experts from different firms can improve its quality and reliability, which will positively affect public confidence in the financial statements of enterprises and the reputation of auditors as economic agents. However, the issue of the costs of such an audit and the its impact on the market concentration of audit services remains debatable[2].

The introduction of joint audit into auditing practices of Ukrainian enterprises can have an ambiguous effect. On the one hand, it is required to reinforce the credibility of the financial statements approved during such audits, yet on the other hand, due to rising costs, businesses subject to statutory audit can counteract it.

In the international practice joint audit is abundantly used to approve the reports of multinational corporations. The benefit and effectiveness of joint audit is achieved through:
– distribution of responsibilities between several auditors;
– possibility of two-sided verification of the results of joint work;
– increased independence of auditors and unbiased audit.

At the current stage of audit development in Ukraine it should be pointed out that domestic researches into audit are influenced by the US and the EU experience. Ukrainian scientists study audit generally in alignment with the scientific publications of the US scholars, in which audit is considered as a form of independent professional control and evaluation of reliability of the financial information of enterprises (especially of corporate type).

A variety of concepts and theories of the occurrence of audit is conditioned by the nature of information interaction between the participants in the audit process (subjects of audit, users of audit findings and other stakeholders dealing with the results of enterprises' activity). For example, according to the theory of owner the role of an auditor is to

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[2] Baldauf, J., & Steckel, R. (2012) Joint Audit and Accuracy of the Auditor's Report. An empirical study. *International Journal of Economic Sciences and Applied Research*, 5, 7–42.

provide appropriate guarantees to current and potential investors, which is made through information interaction between CEOs and capital owners. The latter can set expected levels of return on capital for managers to evaluate management activities, while managers provide owners with retrospective information on the results achieved and prospective information on the projected results of transactions, expected risks and other necessary information.

In addition, the theory of audit adequacy should be mentioned, which implies that the main function of audit is to verify the compliance of the subject of audit with the specific requirements of legislation or regulatory provisions. With reference to the theory of adequacy, an auditor also represents the interests of an owner (like in the theory of owner), but with a greater focus on assessing the relevance and accuracy of data.

There is an idea about the existence of the theory of controlling as one of the elements of the theory of audit. However, in our opinion, it is more appropriate to consider controlling as a function of an entity's management. Still, control and controlling functions are closer to the managerial ones.

The theory of agents is more popular in modern scientific researches, as it is consistent with current trends of considering corporate reporting as the main information tool to ensure public confidence in economic data of entities. Therefore, according to the theory of agents the list of potential users of audit findings significantly increases due to an expanded range of users of modern public corporate reporting, in which all economic information is presented in view of the influence on the social-economic development of society as a whole. In particular, reports of numerous public enterprises already include the information on compliance of their activity with environmental requirements, social responsibility and other non-financial characteristics of enterprises' activity (Table 1).

Several studies of Ukrainian scientists devoted to the development of concepts and organizational elements of the completion of corporate financial and non-financial reporting have been published recently, which also increases the relevance of research into auditing of reports. Among all other reasons for occurrence of audit as a professional independent control special attention should be paid to the territorial branching of business. Due to the globalization processes and integration of the Ukrainian business into the European and world space, audit is especially required for international corporations, where the control of owners is weakened by the geographical remoteness of the individual branches of corporations.

Table 1

**Features of information interaction in the context
of the theories of audit occurrence**

Indicators	The theory of owner	The theory of agents	The theory of incentives
The role of an auditor as an information agent	An audit or guarantees the integrity and reliability of management	An auditor acts as an economic agent for a wide range of users	An auditor acts as a controlling body
The nature of information interaction	An audit or confirms the information interesting for an owner	An audit or confirms the information contained in public reporting	An auditor verifies the compliance of the reporting data with legal provisions
The subject of audit	Activity	Public reporting	External reporting

Source: completed by the author

The annual reports of the United Nations Conference on Trade and Development (UNCTAD) confirm the fact that the internationalization of the world economy is high, which results in the appearance of a significant proportion of foreign assets and foreign profits of multinational corporations (Table 2).

The analysis of the statistical indicators of internationalization of the world's 100 largest non-financial TNCs shows that within the structure of their assets more than half of them (62-63%) are assets located out of the country of registration of a controlling enterprise. At the same time, the main part of the income of such TNCs is also generated abroad, in particular, the share of foreign revenues in total sales was 63% in 2015, 64% in 2016, 65% in 2017. A slightly smaller share of foreign assets and revenues of TNCs from emerging and transition economies was noticed.

The data presented highlight the need for a modern audit concept that would take into account the process of economic internationalization and ensure the reliability of economic information in the context of its growing role in the social-economic development of the world.

Since the requirements for audit quality are generally determined by public needs, the scientific task is to identify specific socially relevant characteristics of audit itself and other auditing services, the level of auditors' responsibilities as well as specify audit tasks of public importance.

Considering the concept of joint audit as a modern form of verification and approval of financial statements of enterprises for a wide

range of information users, it is possible to specify several more forms of joint audit (Figure 1).

Statistical indicators of internationalization of the world's 100 largest non-financial TNCs, emerging and transition economies

Statistical indicators of internationalization	The world's 100 largest TNCs			Growth index (2017/ 2015)	100 largest TNCS from emerging and transition economies		
	2015	2016	2017		2015	2016	2017
Foreign assets, billion US dollars	8015	8337	9004	1,12	1716	1886	x
Internal assets, billion US dollars	4875	4894	5491	1,13	4289	4511	x
Total assets, billion US dollars	12891	13231	14495	1,13	6004	6397	x
Share of foreign assets in total assets,%	62	63	62	1	29	29	x
Foreign sales revenue, billion US dollars	4802	4765	5170	1,08	1734	1559	x
Domestic sales revenue, billion US dollars	2851	2737	2793	0,98	1903	1965	x
Total sales, billion US dollars	7653	7502	7964	1,04	3638	3524	x
Share of foreign revenues in total sales,%	63	64	65	1,03	48	44	X

Source: completed by the author on the basis of the World Investment Report 2018 of the United Nations Conference on Trade and Development[3]

Joint corporate audit is based on information interaction between internal auditors of an enterprise and external auditors, which confirms the reliability of public reporting. The exchange of information on an entity's activities to be verified should ensure the effectiveness of external audit and reliability of independent audit. Hence, the effectiveness of an audit is viewed as achieving a sufficient level of confidence in an entity's public reporting with minimum involvement of external auditors. The result of audit is a reasonable and correct conclusion of an external auditor regarding the outcomes of independent audit of the reporting.

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[3] World International report 2018. New York and Geneva, 2018. Investment and new industrial policies. Retrieved from: http://unctad.org/en/pages/PublicationWebflyer.aspx?publicationid=2130

Joint corporate audit	Joint government audit	Joint integrated audit	Joint international audit
Exercised jointly by internal and external auditors considering the owners' interests	Conducted jointly by auditors of different government agencies (e.g. auditors from Tax and Customs Services)	Enforced jointly by independent auditors and auditors from government control agencies	Exercised jointly by the auditors of the great four international audit firms
Reduction of information asymmetry between owners and managers of an enterprise	Reduction of information asymmetry between a state and managers of an enterprise	Reduction of information asymmetry between society and managers of an enterprise	Reduction of information asymmetry between owners, society and managers of an enterprise

Figure 1. Forms of joint audit as a tool to restrict information asymmetry

Source: completed by the author

Joint government audit is recommended to be exercised as a form of state financial control with the involvement of experts from different agencies of the State Fiscal Service of Ukraine, which will allow raising the efficiency of control over the correctness of taxes calculation and payment by entities, including an exchange of audit findings between Customs officials, who carry out Customs control, and representatives of the Taxation Service of the State Fiscal Service of Ukraine, which enforces tax control (audit).

Joint corporate audit and joint government audit have slightly different goals. In particular, corporate audit is focused on taking into account the interests of investors, owners, creditors regarding the reliability of financial data and results of business activities of entities. Accordingly, audit enforced by public authorities is aimed at checking the correctness of taxes calculation and payment. So, various directions of the abovementioned controls are governed by polar goals of information users, which causes the risk of information asymmetry in the economic decision making process based on the results of such audits.

The concept of information asymmetry was studied by George Ackerloff, Michael Spence and Joseph Stiglitz within the researches into information economics. The idea of information asymmetry is that during information interaction participants in economic activities have an

inappropriate amount of information, which leads to the information superiority of some participants and lack of information for other ones. The scientists mostly investigated market exchange of goods, however, they also noticed that information asymmetry could occur during any interaction of subjects of different economic systems, in particular, between public authorities, between entities etc. Information asymmetry can also arise during information interaction between managers, auditors as well as current and potential users of company reporting.

The use of different forms of joint audit will reduce the level of information asymmetry due to the information interaction of representatives of different types of audit. Therefore, joint integrated audit is proposed to be enforced on the basis of information interaction between independent auditors and auditors of government control authorities through the exchange of audit findings, which will allow increasing the effectiveness of audits.

A joint international audit is based on information interaction between the auditors of the great four international audit firms (Pricewaterhousecoopers, Deloite, ErnstandYong, KPMG), which ensures the efficiency of independent auditing of companies, especially international ones.

The introduction of joint audit into the system of independent professional audit of an enterprise's reporting requires defining the characteristics of such an audit task (service), the level of auditors' responsibility and the conditions of information interaction of auditors involved in joint audit. In our opinion, all these forms of joint audit can be exercised as a task of giving an assurance, which determines the highest degree of auditor responsibility in performing it and requires the highest level of auditors' sufficient assurance.

Information interaction between subjects of different economic systems is based on the idea of "information" and "value of information". The validation of information on the results of an enterprise's activity for external users demands an auditor's competent approach, which means understanding the essence of information and responsible attitude to information interaction with company managers, users of public reporting data of enterprises and other auditors.

5.2. Methodology of audit of foreign economic activity of related enterprises

The audit of foreign trade activities of enterprises is gradually being transformed into a new form, which is an integrated system of interaction

between different types and subjects of audit. The main strategic goal of such integration is to ensure the transparency of international business operations and reliability of the reporting of entities involved in foreign economic activities. The result of integration in the short run can be the creation of a unified methodology for auditing foreign economic transactions and information interaction between audit agencies – the State Tax Service of Ukraine, independent auditors, internal corporate auditors, Customs auditors and auditors of foreign enterprises. Improving the quality of all types of audit of foreign trade operations and widening information interaction between audit agencies will help to reduce the level of information asymmetry and increase the effectiveness of audits.

Therefore, the audit of a company involved in foreign trade is a form of information interaction between the principals of economic information (state, owners, society, investors, creditors) and agents of audit activity (tax auditors, independent professional auditors, internal corporate auditors) regarding tax, independent external and internal audits.

Determining the priority areas for audit of foreign trade operations is primarily based on specifying the abovementioned companies' areas with the highest risk of errors and intentional accounting violations (frauds). Such frauds can be committed through a variety of ways and with different purposes, which essentially distinguishes fraud schemes by the criterion of influence on entities' reporting and consequences of their implementation. However, not only the nature of fraud impacts on audit procedures of the companies involved in foreign trade activities, but also audit goals create the key directions of control. Hence, it is necessary to distinguish the audit of foreign trade operations as a part of independent audit of financial statements in order to confirm their reliability. The main feature of this audit is to create an independent opinion on the reliability of the data for users of financial statements – owners, potential investors, creditors etc. Therefore, the audit is exercised to identify those risks of fraud that may lead to hiding the facts of assets embezzlement or manipulating users' decisions.

For the last few years a so-called tax audit of foreign trade operations has increasingly gained significance as an integral part of state fiscal control. Such checks are already focused on the interests of a state and are carried out by government authorities. The purpose of tax audit of foreign trade transactions is to reveal the cases of tax evasion and moving national assets out of a state.

While analyzing the priority directions of audit of companies involved in foreign trade, purposes of fraud schemes and accounting violations should be taken into account. The goals, which companies breaking legislative and regulatory requirements pursue, determine the ways of their commitment and concealment. Accounting violations within accounting of foreign trade transactions are generally committed with the aim of:

– tax evasion;

– concealment of assets embezzlement;

– manipulation of economic decisions of users of the financial reporting of entities involved in foreign trade activities;

– concealment of illegal withdrawal of national assets (Figure 2).
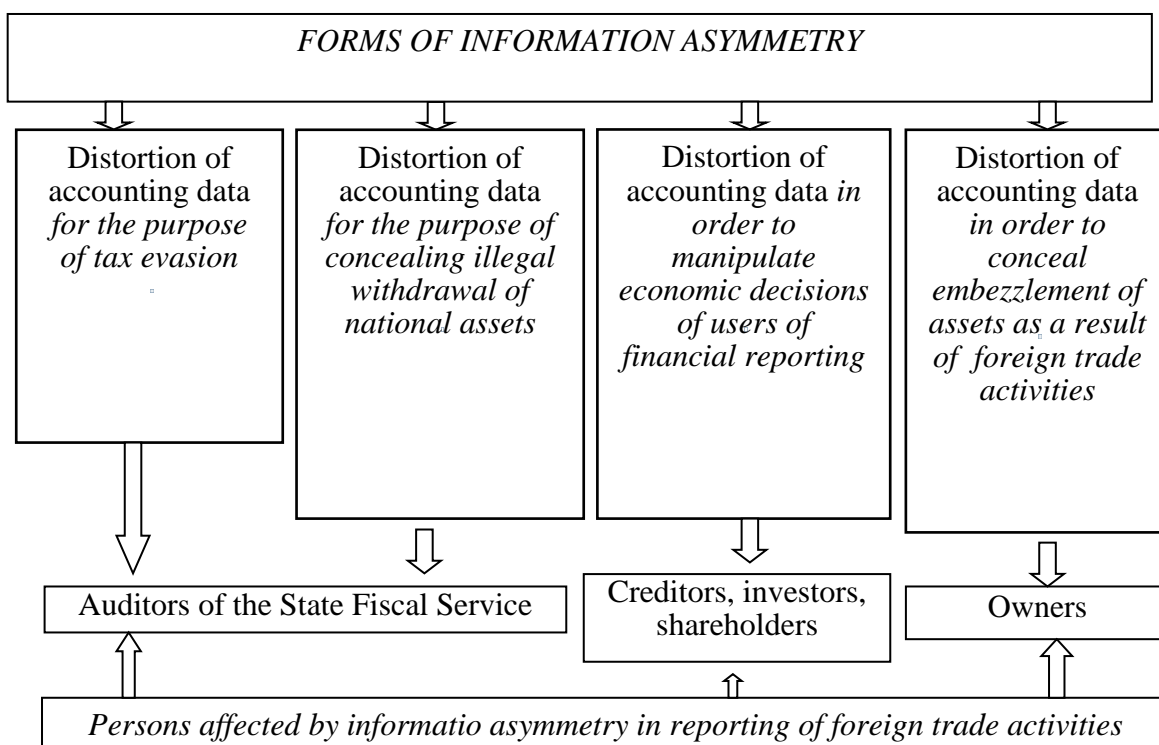
Figure 2. Types of information asymmetry between management and users of financial statements of enterprises

Source: completed by the author

Such violations lead to information asymmetry between different persons, which should be subject to audit of enterprises involved in foreign trade activities exercised by different audit agencies.

Different goals result in the use of different fraud schemes and mechanisms and, therefore, can be identified by using appropriate indicators. Establishing a system of indicators will allow audit agencies to identify risks of fraud through specific indicators and direct audit

procedures specifically to the company's activities that are suspicious, high-risk and ambiguous.

The occurrence of the fraud in the field of foreign trade transactions with related parties results in significant losses and economic harm to both Ukraine and certain entities involved in foreign trade activities.

The experience of individual countries in the field of financial control of foreign trade operations of enterprises is diverse and, above all, related to Customs audit.

Customs control and control of transfer pricing are different elements of the overall system of financial control of foreign trade operations. In Ukraine the control of Customs duties is divided into: control at the border crossing points by Customs inspectors respectively; further control over the accrual and payment of Customs duties and other taxes is exercised by tax authorities.

The control of transfer pricing is linked to the operations of multinationals, whose activities allow their managers to negotiate foreign economic transactions on terms that are favourable for them, but not for the countries where they operate in terms of taxation. In addition, a transfer price itself has a greater impact on the corporate income tax, which is not included in Customs duties.

The abovementioned facts confirm that the development of the audit of foreign trade activity of Ukrainian enterprises is currently happening due to strengthened tax audits of foreign economic transactions, expansion of independent external and internal audits of enterprises involved in foreign trade activity, which requires improving the methodology of audit of foreign trade activity of enterprises.

The category of methods is key in determining the nature of the methodology of audit of foreign trade activities of related enterprises. Researchers specify the following special techniques and methods of audit: observation, questioning, confirmation, analytical review, scanning, recalculation, cross-checking, generalization, inspection, analysis etc.

The conventional structure of the methodology of audit incorporates relevant audit hypotheses, which are used as axioms of audit science and build the basis of the methodology of audit in general.

In order to outline a specific methodology for the audit of foreign trade activities of related enterprises additional claims should be specified:

1. The information on foreign trade activities of related companies is of public interest and should therefore be monitored by various control

agencies (government, independent audit, owner) and be accessible to all audit agents.

The financial statements of the entities involved in foreign economic activities are of interest to a large number of agents as they are shaped by globalization and integration processes.

2. Foreign trade transactions between related enterprises include high risk of distortion and therefore require a greater number of audit procedures compared to foreign trade transactions between unrelated enterprises.

The risk of affecting related enterprises' business transactions involves additional risks for minority shareholders who have own shares in an enterprise's capital, but limited influence on control and management of the business.

3. The reliability of foreign trade operations results, their efficiency and compliance with the tax legislation are core factors for reinforcing the economic security of a state, entities and capital owners.

Offshore zones, expansion of international trade, globalization of international business bring about additional risks of national capital tax evasion as well as national enterprises' equity erosion.

The additional claims proposed for the audit of foreign trade operations of related enterprises are consistent with current principles of transparency, reliability and integrity of economic information within the theory of agents.

The main methodological principles for the audit of foreign trade operations of related enterprises are the "arm's length" principle, the principle of consistency, transparency, efficiency and the principle of risk targeting.

Enforcing an audit according to the "arm's length" principle involves reviewing the terms of foreign trade transactions to ensure that they are market-relevant (transactions between related parties must be conducted on the same terms as those between independent parties), which guarantees integrity and fairness of the transactions.

The principle of consistency involves the audit of foreign trade operations of related enterprises as a single entity consisting of various interrelated elements. The "risk targeting" principle is an integral part of contemporary audit of any field and involves appropriate audit procedures to check areas of accounting with high risk of distortion.

Based on the application of the abovementioned claims for external, internal and tax audit, such kind of the methodology for audit of foreign trade operations of related enterprises can be outlined (Figure 3).

Basic claims of the audit of foreign trade activities of related enterprises:
➢ Information on foreign trade activities of related companies is of public interest;
➢ Foreign trade transactions between related companies are characterized by high risk of distortion and require a greater number of audit procedures;
➢ The credibility of the results of foreign trade activity, the efficiency of foreign trade transactions and their compliance with the tax legislation are core factors for reinforcing the economic security of the state, entities and owners of capital.

Audit as a kind of government financial control	Audit as a kind of independent financial control made for owners	Audit as a form of assurance for external stakeholders

Tax audit	Customs audit	Internal corporate audit	External independent audit

The purpose (defined by the Tax Code of Ukraine and the Customs Code of Ukraine) is to promote the development of international trade and pump up the country's budget by controlling the correctness of accrual and payment of taxes by enterprises involved in foreign economic activities

The purpose (defined by an owner) is saving and multiplying owners' equity and minimizing losses due to business risks

The purpose (defined by ISA) is to increase the level of confidence of users of financial statements in the accuracy of the presentation of the results of foreign economic activities and their impact on the financial condition of an enterprise

- Methods of transfer pricing
- The method of calculating price range (profitability)
- Methods of cost-effectiveness analysis of the value of export products
- Methods of grouping and classifying expenditures of foreign trade activities

- Methods of price difference
- The matrix method of analyzing exchange differences from foreign trade activities with related enterprises
- The method of integrated scoring of the integrity of a related enterprise
- The method of parameterizing the financial and non-financial characteristics of a related company
- The method of ratio analysis of foreign trade activities
- The method of system-oriented analysis of foreign trade activities

- The method of determining the specific risks of distorting an entity's financial statements as a result of foreign trade transactions with a related
- The method of costs and benefits comparison for analyzing audit effectiveness for principals and audit
- The method of documentary formalizing the audit procedures according to their international classification

Figure 3. Methodology of audit of foreign economic activities of related enterprises

Source: completed by the author

The application of different methods of audit and analysis of enterprises involved in foreign trade activities is dependent on the purpose of certain types of audit, whether it is an external independent, internal corporate or external tax one. In particular, the structural elements the methodology for audit and analysis of foreign trade activities of related enterprises include the principles (arm's length, transparency, efficiency, consistency, risk-targeting); the claims of the audit of foreign trade

activities of related companies (Figure 3); levels of enforcement (international, state, corporate); audit agents (tax auditors, independent auditors, internal corporate auditors); types (tax, internal, independent); principals (shareholders, owners, state, representatives of foreign tax inspections); forms (operational, strategic, external, internal); methods (analytical methods are consistent with the purpose of the audit of foreign trade activities).

Audit as a form of government financial control is currently exercised through tax and Customs audit of foreign economic activities of enterprises by representatives of the State Fiscal Service of Ukraine and aims to control the compliance of accrual and payment of taxes by enterprises involved in foreign trade activities with the requirements of the Customs and Tax Codes of Ukraine. The audit agents are government representatives who have an appropriate level of dependence on the orders of their managers and the use of control methods recommended by the regulatory documents. The nature of the methodology of this type includes a consistent application of analytical methods to confirm the feasibility of transfer prices in foreign economic transactions through the calculation of the price range (profitability) in accordance with the principle of "arm's length". In order to ensure that this type of foreign trade activity of related enterprises is in compliance with the abovementioned claims, we consider it reasonable to develop a methodological approach to the transfer price feasibility based on an analysis of the enterprise costs closely connected with foreign trade operations.

CONCLUSIONS

In the conditions of developing the behavioral world economic science the issue of information interaction of a large number of persons including accounting staff, auditors, business owners, potential shareholders, creditors, representatives of government control agencies, investment companies, international grant organizations etc. is becoming more and more up-to-date. The nature of information interaction between them leads to information asymmetry, which should be reduced through the introduction of audit of financial and non-financial information. Due to the globalization processes and integration of domestic business into the European and world economic space, characterized by a significant share of foreign assets and foreign revenues of multinational corporations, the audit of foreign trade operations of international corporations is becoming more and more important, since the control of owners is weakened due to

the geographic remoteness of individual branches of corporations. This highlights the need for defining a modern audit concept for taking into account the internationalization of the economy aimed at ensuring the reliability of economic information in view of its growing role in the social-economic development of the world. It has been proved that joint audit exercised by several auditors decreases the level of information asymmetry between principals and agents of audit services. This conclusion allowed offering several forms of joint audit as a modern state-of-the-art form of the process of verification and approval of enterprises' financial statements for a wide range of users of information, including joint corporate audit, joint government audit, joint integrated audit and joint international audit.

The analysis of theoretical research into audit makes it possible to claim that the audit of foreign trade activities is studied according to several conceptual directions: as an element of fiscal policy in the field of public financial control or as an element of independent financial control made in the interests of the owners of enterprises involved in foreign trade activities by means of external and internal audit. The types of audit of foreign trade activities of enterprises according to information inquiries and purposes of users of information on an enterprise have been specified and distinguished by purpose and audit agents. The audit of foreign trade activities in the current economic conditions of Ukraine is one of the essential factors for improving the level of economic security of both the country and individual companies engaged in foreign trade. This implies identifying a range of new scientific and practical tasks of the audit of foreign trade operations, including the development of a methodological basis of audit and analysis of transfer prices within controlled transactions with related parties as a part of tax audit exercised by the State Fiscal Service of Ukraine; building the methodology of internal audit and analysis of foreign trade operations of enterprises within the activity of the group of international companies; improving the methodology of external independent professional audit of financial reporting of companies making transactions with related parties.

SUMMARY

The specific nature of the audit of foreign economic activities of related enterprises requires a clarification of methodological approaches to carrying out such inspections, since foreign economic transactions appeal to different auditors from several areas of financial control. To outline a

specific methodology for the audit of foreign economic activity of related enterprises, additional audit principles have been specified in this area as well as the methods of three types of audit of foreign economic activity as a complex of analytical methods of audit research have been identified.

The essence of an audit of foreign economic activity of an enterprise as a form of information interaction between principals of economic information (such as a state, owners, a society, investors, lenders) and audit agents (tax auditors, independent professional auditors, internal corporate auditors) in terms of a tax, independent external and internal audit has been studied and specified. It has contributed to substantiating a role and offering forms of joint audit of foreign economic activity of an enterprise, which provides for conducting an audit by independent, public, domestic and international auditors on the ground of a company's integrated database that reduces information asymmetries as well as decreases audit costs.

The current trends in the field of providing audit services to enterprises – subjects of foreign economic activity have been identified, which allows for supplementing the current classification of audit services with specific services in the field of foreign economic activity of related enterprises, characterized in compliance with the International Auditing and Assurance Standards Board's (IAASB) International Framework for Assurance Engagements. The study of the fundamental distinctions between the types of audit tasks consistent with the requirements of the International Standards on Auditing and clients' requests for audit services has made it possible to classify audit tasks in the field of foreign economic activity into the following: an assurance engagement on the results of foreign economic activity of an enterprise, an assurance engagement on transactions with related parties, review of a report on controlled transactions, preparation of a report on controlled transactions, consulting on transfer pricing substantiation within a controlled foreign economic operation.

REFERENCES

1. André, P., Broye, G., Pong C., & Schatt, A. Are Joint Audits Associated with Higher Audit Fees? *European Accounting Review,* 25, 245–274.

2. Baldauf, J., & Steckel, R. (2012) Joint Audit and Accuracy of the Auditor's Report. An empirical study. *International Journal of Economic Sciences and Applied Research*, 5, 7–42.

3. Bédard, J., Piot, C., & Schatt, A. (2016). An evaluation of the French expertise with joint auditing. Working paper.

4. Bisogno, M., & De Luca, R. (2016). Voluntary Joint Audit and Earnings Quality. Evidence from Italian SMEs. *International Journal of Business Research and Development*, 5, 1–22.

5. Clifford, S. (2019). Taxing multinationals beyond borders: Financial and locational responses to CFC rules, *Journal of Public Economics*, 173, 44–71. https://doi.org/10.1016/j.jpubeco.2019.01.010

6. Corporate Tax Haven Index (2019). Retrieved from: https://www.corporatetaxhavenindex.org/introduction/cthi-2019-results

7. Customs Code of Ukraine. (2012). Retrieved from: http://zakon3.rada.gov.ua/laws/show/4495-17

8. Deng, M., Lu, T., Simunic, D., & Ye, M. (2014). Do Joint Audits Improve or Impair Audit Quality? *Journal of Accounting Research*, 52, 1029–1060.

9. Dischinger, M., T., Riedel, N., (2012). Corporate Taxation and the Location of Patents within Multinational Firms, *Journal of International Economics*, 88(1), 176–185. https://doi.org/10.1016/j.jpubeco. 2010.12.002

10. Eccleston, R., & Smith, H. (2016). The G20, BEPS and the future of international tax governance. In P. Dietsch & T. Rixen (Eds.), Global tax governance: What is wrong with it and how to fix it (pp. 175–198). Colchester: ECPR Press.

11. El Assy, M. G. (2015). The Effect of Joint Audit on Audit Quality. Empirical Evidence from Companies Listed on the Egyptian Stock Exchange. *International Journal of Accounting and Financial Reporting*, 5, 195–207.

12. Elitzur, R., & Mintz, J. (1996). Transfer pricing rules and corporate tax competition, *Journal of Public Economics*, 60 (3), 401–422.

13. Francis, J. R., Richard, C., & Vanstraelen, A. (2009). Assessing France's joint audit requirement. Are two heads better than one? *Auditing*, 28(2), 35–63.

14. Highlights of the 2015 Index of Economic Freedom: Promoting Economic Opportunity and Prosperity. Retrieved from: http://irr.org.za/ reports-and-publications/occasional-reports/files/index-of-economic-freedom-2015-ighlights.pdf.

15. Holm, C., & Thinggaard, F. (2014). Leaving a joint audit system: conditional fee reductions. *Managerial Auditing Journal,* 29, 131–152.

16. Marques, M., Pinho, C., Montenegro, T. (2019). The effect of international income shifting on the link between real investment and

corporate taxation. *Journal of International Accounting, Auditing and Taxation,* 36. https://doi.org/10.1016/j.intaccaudtax.2019.100268

17. Velte, P. (2017). What do we know about empirical joint audit research? A literature review. *Accounting and Financial Control*, 1(1), 4–14.

18. World International report 2018. New York and Geneva, 2018. Investment and new industrial policies. Retrieved from: http://unctad.org/en/pages/PublicationWebflyer.aspx?publicationid=2130

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CHAPTER 6
FEATURES OF INTERCONNECTION
AND INTERREACTION OF PARADIGM SHIFTS
IN THE MODERN ECONOMY AND THE FORMATION
OF NEW THEORETICAL APPROACHES
TO THE FIRM ANALYSIS

Horniak O. V.

INTRODUCTION

Shifts in the modern economy occur in the face of various factors that have a contradictory impact on economic processes. But it is unconditional that the shift is a result of the action of certain forces, as well as a factor influencing all elements of the economic system at different levels. At the micro level, it is seen when, by contributing to paradigm shifts in the economy to improve efficiency and increase profits, the enterprises are creating new conditions of competition and a new environment for their activities, which, in turn, completely change them. The latter are forced to use innovation (technological, product, organizational) in order to provide their competitive advantages.

The firm often faces the dilemma: to buy the necessary goods, to use outsource services, or to produce them by its own efforts? By asking this question, we turn to the works of R. Coase and O. Williamson, as well as to the incomplete contracts theory. According to these approaches, market deficiencies mainly explain the use of the firm's mechanism as well as vertical integration. However, in the early 1970s G. Richardson[1], the forerunner of the competency-based approach to the firm, questioned the Coase's dichotomy "market-to-firm" by introducing an intermediate category of "inter-firm cooperation". This theoretical issue has become more practical over time as firms' strategies have changed since the 1990s. A Fordist firm, relatively integrated and maintaining traditional subcontracting relationships with its major suppliers, begins to focus on its core competencies and modify its coordination mechanisms with

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[1] Richardson G. The organization of the Industry. The Economic Jornal. 1972. Vol. 82.

suppliers. Over time, the company-network is preferred. The development of this new organizational form restores theoretical questions about the firm's boundaries.

The study of changes in the economy and the theoretical justification of their impact on the firm are important and relevant, because they provide an opportunity to uncover the relationships between processes and phenomena that occur at different levels of the economy and are crucial for the prospect of development of all elements of the economic system. The formation of new methodological and theoretical approaches in modern theory is based on the fact that processes occurring at the micro level have priority values, and the firm is at the center of modern research areas

6.1. Organizational forms of economic activity and their theoretical justification

When setting up the co-operation problem in the economy, G. Richardson distinguished two types of market relations: on the one hand, the market transactions, and, on the other hand, co-operation transactions. The first is interpreted by the hypothesis proposed by neoclassical economics, according to this theory the relationship between firms is determined by the opposition of supply and demand for homogeneous products. The price information is only required under these conditions.

However, in reality, many client-to-supplier relationships are partly "outside the market", that is, fit into G. Richardson's category, which he called "cooperative transactions", since products under these conditions do not exist before exchange. There are two possible options: the product exists either in the form of an order from the client firm, and the supplier begins its production, or in the form of the demand expressed by the client, and then the manufacturer and the client together form its concept for production. In these two cases, the supplier must agree to certain contract liabilities to the customer, in particular, quality control. There is no confrontation between supply and demand, which is distinctive for standardized and homogeneous products. In accordance with the mentioned above, it is necessary to distinguish homogeneous activities and support that are represented as a set of knowledge, skills, experience and qualifications. Firms will strive to specialize in activities in which their competencies will provide competitive advantages. With

respect to complementary activities, they reflect the different phases of the production process and should therefore be coordinated.

The division of labor among market, firm and inter-firm cooperation under these conditions changes. From a theoretical point of view, if you do not require any specific competence, then there is no limit to the expansion of firm coordination. However, it does not work this way in reality, since the expansion of firm coordination is limited by the fact that complementary activities are not always homogeneous. With such activities, the firm faces a dilemma: do it by itself or involve the others. In this case, there are two options. For activities that do not require ex ante coordination, the appeal to the market is justified because it will ensure the coherence of the plans between the organizations due to the large number of potential suppliers. On the contrary, for very close complementary activities, ex ante coordination between organizations is necessary, and firms should cooperate.

G. Richardson's approach allows for a deeper analysis of economic reality, which makes it possible for the category of cooperation to distinguish two forms of its organization between the main firm and its suppliers. It is about vertical quasi-integration and indirect quasi-integration. In the case of vertical quasi-integration, the customer fully defines the concept of the product and the transmission of information takes place vertically. This complies with the conditions of subcontracting. Indirect quasi-integration is formed when the concept of the product arises in the process of cooperation between the customer and the manufacturer, during which the customer clearly defines the functional characteristics of the product and the manufacturer realizes his/her wishes in the production process. Until the 1980s of the twentieth century the model of vertical quasi-integration prevailed in the economy, and from the period of 1980s – 1990s the model of indirect quasi-integration began to change it. This meant the emergence of a new organizational form: a firm-network.

The theoretical understanding of these complex contradictory relationships between paragigm shifts in the economy and changes in entrepreneurial structures makes it possible to develop a theory of the firm that has been largely reworked and reconsidered in recent decades.

The impact of shifts on the firm can be traced by referring to the concepts that make up the theory of the firm. There are many different theoretical approaches, but traditionally there are three of them, since most

researchers agree that a single model of the firm is not yet built[2], but each approach has some gains in developing it.

The first approach combines the concepts that form the traditional (conventional, technological) theory of the firm. It is regarded as a manufacturing function, and its size is explained by the effect of scale and the benefits of integration. In this theory, the firm is managed by the owner, its purpose is to maximize profits in the conditions determined by the market. This approach has evolved in classical economic theory. It can be used to explain, to some extent, the effective size of production that are shaped by shifts in the modern economy, but not by changes in business structures. At the same time, this area of research has formed a stable theoretical construction of the firm, which consists of the following assumptions: the purpose of the firm is the profit maximization, which is a uniquely determined value; the firm is a "black box", the most important parameters in which are input (resources) and output (products), free access to information that is free of charge; rationality of behavior and decisions [3]. This theory of the firm is easy to mathematize, which provides it with supporters and gives the opportunity to constantly update by using the achievements of mathematical analysis, but its disadvantage is that it cannot explain the activities of real firms. It is an element of the partial equilibrium theory and provides an opportunity to predict changes in prices that result from changing conditions of their formation [4]. Therefore, its abstractness is both its strengths and weaknesses.

The second approach presents theories that consider the firm as a network of long-term contracts. It is being developed within the framework of a new institutional economic theory based on the study of transaction costs. Fundamental transformation of O.E. Williamson[5] is its core. It concerns the specific situation in trade (ex ante), which after a specific investment (ex post) becomes a bilateral monopoly. As a result, the interdependence of firms increases, which can lead to third-party benefits. As a result, the investment process is halted, it has a negative impact on firms. The way out is become a long-term contract that

[2] Furubotn EG, Richter R. Institutes and economic theory. Achievements of a new institutional economic theory. St. Petersburg. Ed. the house of St. Petersburg. state. Universities. 2005. 702 p.; Claude H. The New Economy: Forms of Discovery, Causes and Consequences. K. Tucson. 2006. 306 p.

[3] Горняк О.В. Теорії фірми. Навч. посібник. Одеса. Астропринт, 2010.

[4] Махлуп Ф. Теории фирмы: маржималистские, бихевиористские и управленческие. В кн. Вехи экономической мысли. Т. 2. Теория фирмы. Под ред. В.М. Гальперина. СПб.: Экономическая школа. 1999. 524 с.

[5] Вільямсон О.Е. Економічні інституції капіталізму. Фірми, маркетинг, укладання контрактів. К.: АртЕк, 2001. 472 с.

guarantees them a reasonable return and promotes specific investment. Shifts in the modern economy have provided flexibility in production and marketing, which has significantly reduced the specificity of investment, but on the other hand, increasing the value of human capital in the development of the modern economy requires increasing the specificity of investment, as the creative component of economic processes increases. This approach also has some limitations in explaining a truly functioning enterprise, since integrated units based on long-term contracts may be a legal entity (vertically integrated structures of the type of concerns, or horizontally integrated type of the Japanese keiretsu), and may not be of such a form (virtual organizations, clusters, strategic alliances).

The third approach combines theories that develop the idea of contracts imperfection, their incompleteness, which enables firms to evolve in the face of dynamic change and uncertainty. The so-called modern firm fits the context of these theories. Unlike the traditional one, it has such features[6] as a predominance of intangible assets in the capital structure; identifying human capital as a major element of assets; flexibility in relations with employees, partners and clients; staff mobility within the firm; abandoning tight control over consumers and suppliers of the firm.

In recent decades, the modern theory of the firm is very rapidly developing. Studies of the process of its formation and development are quite fully presented in the works of B. Holmstrom and J. Tirole[7], as well as D. Hay and D. Morris[8], but after their release, the dynamics of economic change has accelerated significantly, so there is a need for theoretical reflection and justification of the impact of these changes on the functioning of real firms and the theory of the firm.

Each of the approaches considered has its advantages and disadvantages, explores one or the other side of the enterprise, and in the end they do not confront, but complement each other, forming a holistic picture of the firm. But the impact of changes in the modern economy on the firm most is fully reflected by the approaches of the new institutional economics. Considering that the impacts are contradictory, they vary for different enterprises of different spheres and industries, it is difficult to determine the general development trends.

[6] Socio-economic efficiency: the US experience. Landmark for globalization. M. Science, 2002. 360 p.

[7] Holmstrom B.R. and J. Tirole. The Theory of the Firm. In: R. Schmalensee and R.D. Willing, ads., Hand book of Industine Organisation Amsterdam: North-Holland 1989, 1, 63-133.

[8] Хэй Д., Моррис Д. Теория организации промышленности. В 2-х томах. Т-2. СПб. ГУ экономики и финансов. Высшая школа экономики, 1999. 592 с.

Features of the development of the theory of the firm and its theoretical justification in the context of fundamental shifts in the economy can be presented in the form of a table.

**The development of the firm under the influence of changes
in the modern economy and its theoretical justification**

Characteristics of the modern economy	Priorities of modern production	Features of the firm's development	Theories and researchers
Servization	The dominance of the service sector in the structure of social production	The role of intangible assets is increasing. Human capital is a major element of assets. Outsourcing	E. Penrose's New Resource-Based Theory. The Theory of Core Competencies by C. Prahalad and G. Hamel
Individualization	Focusing on individual consumer requests and changing demand	Customer loyalty: building long lasting relationships with your most profitable customers. Trust between manufacturers and customers	The Behavioral Theory of the Firm by H. Simon, R. Cyert, J. March
Virtualization	Internet technology. Information Communication Technology	Flexible contracts with employees (freelancing), partners, structural units	The Agent Theory by A. Alchian, H. Demsetz. The Contract Theory of the Firm by O.E. Williamson.
Networkization	Organizational changes at the micro level. Formation of the inter-firm networks	Participation in the functioning of network structures: alliances, focal nets, clusters	The Evolutionary Theory of Economic Change by R. Nelson, S. Winter. The Transaction Cost Theory by R. Coase, O.E. Williamson.

Source: developed by the author

6.2. Servization and individualization of the modern economy and development of the theory of the firm

In the development of the modern economy, its directions are of particular importance, such as servization (increasing the role of services and changes in the structure of production and the product itself); individualization (orientation of productions to a specific consumer, to changes in consumer requests); virtualization (transfer of producer-consumer relations to the Internet network); networkization (functioning of enterprises as participants in network entities, which contributes to their competitiveness). These processes change social production significantly, bringing its structure and organizational forms in line with the objective processes of development of the modern economy.

The development of the service economy began in the United States in the 60s of the twentieth century, 1979 was considered as the year of its birth in France and the United Kingdom, it was marked by a sharp increase in employment in this field. In the 1990s, the servization of the economy began in Southeast Asia and gradually spread across the continent[9]. The material basis of the service processes and their acceleration was made by information technologies, development of satellite communications, computer networks. Changes in the structure of human needs, in professional specialization, in the skills and skills of employees also played an important role in this process. Servization of the economy is not only a quantitative change in the structure of social production (share of the service sector in GDP, in the number of the employed persons, in resources), but also qualitative changes due to the fact that the service sector becomes the main source and main driving force of economic growth and prosperity.

As the service sector is represented by a wide variety of activities, their contribution to its dynamization is different. According to research, the growth of the service sector is ensured by the professional services sector: financial, insurance, advisory. Their share in GDP is constantly increasing. In the group of developed countries it is 20-30%[10]. Empirical studies indicate a relatively high intensity of investment activity in this area. Due to this factor, as well as due to the intensive use of information

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[9] Вітренко А.О. Сервісна економіка: Теорія, сучасні виклики та глобальні тренди. Київ : Знання. 2016. 413 с.

[10] Вітренко А.О. Сервісна економіка: Теорія, сучасні виклики та глобальні тренди. Київ : Знання. 2016. С. 134-135, 140.

and communication technologies, the service economy provides a significant increase in labor productivity.

Within the service economy in a post-industrial society, the resource such as knowledge and information, which is an important element of intangible assets, is of particular importance to modern firms.

Servization of the economy transforms the activities of firms significantly and gives them new characteristics, among which there is the growing role of intangible assets in ensuring their competitive advantage. In the structure of the firm's assets intangible assets increase their share and begin to outweigh tangible assets. The main element of the company's assets is human capital. The firm's activity is organized around its core competencies, other activities are out of the company through outsourcing mechanisms. All these processes are explored by a new resource-based theory, initiated by E. Penrose[11]. An important component of this theoretical concept is the theory of core competencies. Its developers G. Hamel and C. Prachalad identified the main directions of development of firms in the new conditions[12].

They are related to value creation and to the management of performance gaps, adaptability and capabilities. The performance gap is an analysis of the firm's achievements over a period of time in improving quality, reducing costs, decreasing production and sales cycles, logistics, staff rightsizing, improving profitability, the administrative system. The restructuring is the necessary tool here. The study of changes in the industry, the formation of a brand portfolio, the choice of channels of product promotion, the directions of transformation and development of a new business model are necessary when there is the gap in adaptability. As a result, the organizational form is changed, which makes it possible to increase the adaptive capacity of the firm. The gap in opportunities is represented by the creation of new types of business, the development of new markets, the development of strategies and the search (creation) of the appropriate resource base[13].

This approach is particularly important in a time of fundamental paradigm shifts in various industries and fields. They testify to the growing role of gap management, in adaptability and capabilities above all. For

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[11] Penrose E. The Theory of the Growth of the Firm. Oxford Basil Black Well, 1959.

[12] Hamel G., Prachalad C.K. The Core Competence of the Corporation. Harvard Business Review. Mai-june. 1990.

[13] Прахалад С. К., Фаэй Л., Ренделл Р. Создание ключевых компетенций и их использование. В. кн. Портер М., Самплер Дж., Прахалад С. К. и др. Курс МВА по стратегическому менеджменту. Москва : Альмина Бизнес Букс, 2004. С. 358-359.

making a breakthrough in a particular industry, it is not enough to just outpace competitors in quality, cost, profitability, etc. The example of the computer industry confirms that gap management should be carried out in all three directions. It is known that for decades IBM has been the undisputed leader in this field. It is a vertically integrated structure from development to sales. In the early 2000s, the computer industry began to disintegrate, and as IBM did not anticipate these changes, Intel, Compaq and Microsoft became the first in new segments of the industry. As a result, Intel received dominance in producing of microprocessors, Microsoft in operating systems, Lotus in software applications. Distribution channels have changed, as well as the major retailers: Computerland, Sears[14].

Similar changes occur in most industries. Many of these changes are fundamental and even change the clearly defined boundaries of the industry. The multimedia business would be an example, where it is difficult to differentiate between consumer, office and professional products and generally draw lines of distinction between activities.

In today's context, the very paradigm of competition is changing, which is manifested in such forms as competition in commodity markets (price, market segment, quality), competition for dominance in key products (leadership in the development of new functional characteristics and speed of product development), and competition for key competencies (the ability to create new types of business based on a creative combination of skills and competencies). Winning the latter provides the strategic competitive advantage of the firm, so key competencies in modern business play a crucial role in its development.

The key competencies are combinations of different technologies, cooperative learning and the ability to disseminate information. The examples of such competencies include miniaturization at Sony, network marketing at AT&T, focus on usability at Apple, billing convenience at regional Bell companies[15].

The modern economy is characterized by individualization, focused on the needs of a particular consumer. As a result, the firm's main competitive advantage is customer loyalty. This applies especially to firms operating in the manufacturing industry, but is gradually expanding to

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[14] Прахалад С.К., Фаэй Л., Ренделл Р. Создание ключевых компетенций и их использование. В. кн. Портер М., Самплер Дж., Прахалад С.К. и др. Курс МВА по стратегическому менеджменту. М.: Альмина Бизнес Букс.2004, 360 с.

[15] Прахалад С. К., Фаэй Л., Ренделл Р. Создание ключевых компетенций и их использование. В. кн. Портер М., Самплер Дж., Прахалад С. К. и др. Курс МВА по стратегическому менеджменту. М.: Альмина Бизнес Букс, 2004. С. 363-364.

other industries and areas. The way to achieve this is to build a corporate strategy not in the direction of capturing the largest part of the market, but in winning the loyalty of the most profitable customers, which is ensured not only by the supply of goods of appropriate quality, but also by minimizing the costs associated with its operation. The firm must control the distribution channels and the post-sale service. Trust relations between producers and consumers play a special role in today's economy.

To increase trust through the control of distribution channels, some American companies have exclusive contracts with trading companies that sell the products under their brand. This is typical for manufacturers of home appliances, computers, cars, soft drinks, etc. This factor greatly increases the opportunities of the firm not only in terms of the sale of goods or services, but also in terms of increasing consumer confidence, which is supported by trust in trading firms, which operate with the customers and are close to them (Foxtrot, Eldorado, Epicentr, Metro).

The study of such a phenomenon of modern economy as individualization fits into the context of the behavioral theory of the firm, developed by H. Simon, R. Cyert, J. March[16]. The firm's interpretation as a coalition of agents, which also includes the firm's customers (clients), theoretically substantiates not only the firm's dependence on its customers, but also reveals mechanisms for building trust, adjustment of goals, and building long-term relationships.

Within the concept of a firm as a coalition, the individualistic behavior of its members is explored. If management school exponents have identified only two participants in the analysis of the enterprise (managers and shareholders), then behaviorists are significantly expanding the boundaries of the firm, including all those related to its activities in the coalition: employees, shareholders, managers, customers, suppliers, creditors, etc. Behavioral analysis clearly traces the approaches in terms of psychology and some separation from the economic concepts of individual behavior. At the same time, the concept of behavior reveals how the differentiated decisions of managers, who realize their own interests and different goals, shape the enterprise as a coherently organized system that functions effectively.

The main mechanism here is individual behavior, based on satisfaction with the result. The satisfaction principle is based on personal

[16] Саймон Г. А. Теория принятия решений в экономической теории и науке о поведении. В кн. Вехи экономической мысли. Т.2. Теория фирмы. СПб.: Экономическая школа, 1999. С. 54-72; Cyert R. M., March Jc. A Behavioral theory of the firm. Prenfice Holl, 1963.

or professional motives and takes into account the level of decision-makers' requests. In contrast to full rationality, which is a tool for the analysis of simple situations and forms a neoclassical approach to the firm, H. Simon substantiates the concept of bounded rationality[17], which is a more effective tool for studying the behavior of the firm, especially in the face of environmental uncertainty and interdependent enterprise behavior.

The motives for individual actions are based on the wishes, needs and knowledge of the manager. Actions to achieve the goal are taken after meeting the needs at one or another level of requests. It is determined, in turn, by the level of requests of this manager in the previous period; the level of requests of other managers in making such decisions; predicting the situation and getting out of it; effectiveness of previous decisions of the manager. By setting the level of requests in this way, the manager makes decisions, taking into account alternative decisions and their consequences, and almost does not consider decisions related to the enterprise strategy. And since the determination of levels of requests and satisfactory decisions is subjective, behavioral theory does not develop a methodology for summarizing the principles of enterprise behavior. Efforts to bring behavior models closer to the real enterprises significantly complicate these models and narrow their scope. But, despite these shortcomings, the behavioral theory played an important role in the development of the theory of thefirm and prepared the basis for the emergence of theories of the enterprise strategy.

6.3. The relationship between virtualization and networkization of the economy and its theoretical justification

The virtualization of the economy is associated primarily with the advent and implementation of computer technology, and, therefore, the creation of such concepts as a virtual object, virtual reality. In virtual reality, material substance is replaced by correlations and functions to which a person is "attracted by consciousness"[18]. As a result, the subject substance becomes unnecessary, in the process of virtualization material things are depreciated, become nothing. At the same time, virtual objects are generated by and interact with objects of reality. The virtual economy is related to the production of information and knowledge, its basis is formed

[17] Саймон Г.А. Теория принятия решений в экономической теории и науке о поведении. В кн. Вехи экономической мысли. Т.2. Теория фирмы. СПб.: Экономическая школа, 1999. С. 54-72.

[18] Скотний П.В. Економіко-теоретичне знання в парадигмі методології монографія. Дрогобич, 2011. С. 311.

by creative work that cannot be standardized, formalized or simplified. It is connected with self-development, with the production of itself. Value categories in the virtual economy are losing their value. Relationships and relationships in the virtual economy are realized in the process of convergence, not on the principles of competition. In addition, they are formed horizontally, not vertically. Virtual economy is formed in cybernetic space, in networks of information establishments. Its influence on the firm is reflected in the formation of horizontal management structures, in the atomization of the enterprise, when the units become autonomous in the flexibility of contracts with employees (development of freelancing) and partners. Representatives of the agent theory are engaged in theoretical substantiation of influence of these processes on the firm[19] and contract theory of the firm[20].

The theoretical substantiation of the firm as a nexus of contracts is based on the ideas of A. Alchian and H. Demsetz[21]. However, the real creators of the concept of the firm as the nexus of contracts were M. Jensen and W. Meckling, who developed the ideas of previous authors in their work[22]. The theoretical basis of this concept is the theory of motivation. It sets out to determine which organizational form maximizes the drive of individuals: firm or market.

According to A. Alcian and H. Demsetz, the market *a priori* is the most effective form of organization in terms of maximizing effort and labor intensity, given the high correlation between individuals' remuneration and their productivity, whereas a firm-like organization makes no sense of existence. So they ask the question: what is the difference between a business owner and his employees and buyers of products, i.e. market partners? The answer is: the difference in having a central contract agent in a collective production process, rather than in a larger authoritarian governing or disciplinary authority. This means that the only advantage of the firm over the market is the authors distinguish in the synergistic effect of teamwork, which is best provided by the firm due to the contractual structure.

[19] Алчиан А., Демсец Т. Производство, информационные издержки и экономическая организация. В кн. Истоки: экономика в контексте истории и культуры. Москва. Издат. дом ГУ ВШЭ. 2004. С. 166-207.

[20] Клодт Х. Нова економіка: форми вияву, причини і наслідки. К. Таксон. 2006. 306 с.

[21] Алчиан А., Демсец Т. Производство, информационные издержки и экономическая организация. В кн. Истоки: экономика в контексте истории и культуры. Москва. Издат. дом ГУ ВШЭ. 2004. С. 166-207.

[22] Jensen M. C., Mecling W. H. Teoty of the Firm: Managerial, Behavior, Agency Cocts and ownership Structure. Journal of Finansial Economies. 1976. N 4. P. 305-360.

The manager of the firm, as the central manager, in addition to the right to monitor income, profit, has some other rights: the right to contract with suppliers, including owners of labor, the right to monitor the behavior of members of the company, determine the remuneration, tasks, instructions, the right to change the composition of the team, etc.

Summarizing the approaches of A. Alchian and H. Demsetz, we can say that they define the firm as a system of assessment of individual capabilities and motives, which arises when the market is unable to provide the collective production and optimal form of organization, which corresponds to the classic managerial, entrepreneurial capitalist firm, which brings them closer to the theory of motivation.

M. Jensen and W. Meckling, when continuing the researches of A. Alchian and H. Demsetz, focused on contractual relationships that, in their view, shape the essence of a firm in its interractions not only with suppliers but also with customers, banks, governmental organizations, etc.

The study of such situations is conducted within the framework of the theory of motivation. It appeared in the 1980s and is based on two fundamental hypotheses. It assumes that agents are economically rational and that their ability to account for all possible options is endless as they have access to all the information they need. However, unlike neoclassical homo economicus, principals, due to the asymmetry of information, are under-informed compared to their potential agent partners.

As a result, agents, as in O.E. Williamson's works, become opportunists, i.e. those who are ready to deceive others for the sake of their own interests. However, the theory of motivation limits the role of opportunistic behavior, believing that it is neutralized by agents' desire to comply with the terms of the contract. Therefore, the future must be considered without surprises, given the oversight of contract performance (sometimes called "autoperformance"). In addition, the theory assumes the existence of a third party who oversees the performance of contractual obligations (courts). This contractual approach goes beyond the firm's disciplinary concept: the contract must force agents, employees, suppliers, etc. to fulfill their commitments made in advance (ex ante).

Based on the theory of motivation, some researchers (including P. Milgrom and J. Roberts) have developed their theory of the firm[23]. They tried to synthesize it from three approaches: the Coase's authority-based

[23] Милгром П., Робертс Д. Экономика, организация, менеджмент. СПб.: Экономическая школа. 1999. В 2-х томах. Т. 1. 470 с. Т. 2. 424 с.

approach, the theory of incomplete property-based contracts, and the the theory of motivation itself based on the reward system. In this view, the company uses a combination of tools that should encourage employees to act in the interests of the employer, that is, the search for the best possible combination of these three exposures of endogenous origin by the employee, also taking into account three factors of exogenous origin, capable to influence the previously mentioned combination: uncertainty about the future, the degree of specificity of the assets being exchanged, and the cost of evaluating employee performance.

This approach is typical for defining the virtual organization, in which partner companies use the skills and experience together to reduce costs. They also help one another to gain access to the markets they have mastered. Within the virtual organization there are both vertical and horizontal quasi-integrations. The concept of vertical quasi-integration involves the collaboration of teams consisting of specialists with different functions. Virtual teams work without restrictions in space and time, as well as in the company itself. Their connections are provided by technological networks. They are engaged in the development and management of products, services and processes in close collaboration, which results in the formation of a feedback system, which in turn becomes the basis of mutual learning and maintaining a high level of quality. Changes in the market modify the teams, so virtual corporations are flexible and "fluid", and they change their configuration quickly. At the same time, the ability to integrate and reformat without long negotiations quickly implies a constant search for companies that are close in terms of business processes, organizational culture and information systems[24]. It is provided by a virtual network platform, the formation and development of which reflects the processes of networkization.

Networkization of the modern economy is its important characteristic. Although in the broad interpretation of any human activity is a network interaction, it is the current stage of the network development as a mechanism for coordinating the interactions of economic agents. The formation of networks at the micro level has led to changes in organizational forms of network interaction: strategic alliances and clusters. Network cooperation in modern conditions is based on the widespread use of information and communication technologies and

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[24] Шерешева М.Ю. Форми сетевого взаимодействия компаний. Курс лекций. М.: Изд. дом ГУ Высшей школы экономики, 2010. С. 222.

provides high competitive advantages by reducing transaction costs, leveling opportunistic behavior, the use of specific assets, relational contracts, the benefits of cooperation and trust.

The theoretical basis for the processes of networkization of the modern economy was formed within the framework of the new institutional economic theory. R. Coase started researching the firm as an economic agent with a complex internal structure that has individual features that determine its position in the industry, competitive advantages and motives for cooperation with other firms[25]. R. Coase defined the firm and the market as alternative mechanisms for coordinating economic activity. The criterion for choosing one or the other is the amount of transaction costs. Network cooperation also reduces them, which is why transaction cost theory is an important tool for exploring networks and network economics. An important role in the comparative analysis of the effectiveness of different organizational forms was played by the study of O.E. Williamson, who deepened the analysis of transaction costs, structured them, introduced the idea of bounded rationality, which belonged to H. Simon, into the theory of transaction costs, developed the theory of asset specificity, distinguished varieties of contracts (classic, neoclassical, relational). It is the relational contracts that play a decisive role in establishing the interaction of economic agents, and therefore in the formation of the network.

An important contribution to the study of intercompany interaction was the evolutionary theory of economic change[26], which studies not a single firm, but a population of firms with different levels of competitiveness, interacting and developing. The level of the competitive advantages of each firm depends on the ability to use their competencies, as well as the competencies of other firms, which should gradually become routine and provide the best result. Research on the interaction of firms in the population indicates the possibility of using the achievements of the evolutionary theory of economic change to study the networks where this interaction and the mechanisms of its coordination are the basis.

In the economy, the process of forming networks is gradually performed in the process of disintegration and separation from the integral Fordist diversified firm. There are three stages of this process.

[25] Коуз Р. Природа фирмы. В кн.: Природа фирмы. Под ред. О.Е. Уильямсон и С. Дж. Уинтера. Москва. Дело. 2001. С. 33-52.

[26] Нельсон Р.Р., Уинтер С. Дж. Эволюционная теория экономических измерений. М.: «Финстатинформ». 1990.

At the first stage in the 70-80s of the twentieth century firms have begun to disintegrate to counteract the negative effects of integration and diversification strategies. At the second stage, firms began to carry out structural externalization, which required the identification of specific competencies that differentiated them from others. This is an offensive phase in which firms pursue an active policy across all lines of business and provide them with appropriate financial solutions that aim to save and increase profitability through the use of merger, acquisition and externalization processes[27]. The latter process provided them with an opportunity to pass some of the risks on to clients: the risk of overexpenditure associated with reinvestment and the risk of under-production associated with underinvestment. At the same time, customers can also reduce their costs by optimizing, since a supplier, while producing for multiple clients, provides economies of the scale and can reduce costs, which has a positive impact on the customer, and can also use cheaper labor in other countries. In addition, externalization enables the firm to realize the benefits of firm division of labor that provide a concentration of resources on those activities that require less cost and increase the competitiveness of the firm. It is about developing the competencies of a firm that externalize activities that are not close to the standard one.

CONCLUSIONS

Existing theories of the firm in the most general form can be represented by three trends: traditional, contractual, evolutionary (modern). Each of them explains different aspects of the firm's activity at certain stages of its economic development. The modern economy is taking on new features, so its every structural element is also changing. First of all, it concerns the firm. Servization of the economy implies an increase in the role of intangible assets in the structure of its capital. Human capital and competencies are a major factor in generating competitive advantage. Competencies that are removed from core competencies are outsourced. The individualization of the economy is based on the focus of production on individual customer requests and constant changes in demand. In such circumstances, the company is forced to build stable long-term relationships with the most profitable clients. In this regard, increasing trust

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[27] Нельсон Р.Р., Уинтер С. Дж. Эволюционная теория экономических измерений. М.: «Финстатинформ». 1990.

between manufacturers and consumers is a crucial prerequisite for successful operation.

Economy virtualization is ensured by the development of the Internet, information and communication technologies. Firms under these conditions enter into flexible contracts with employees, partners, structural units, which changes the firm, its organizational structure and form. Networkization of the economy is manifested in the growing role and importance of various inter-firm and inter-organizational networks, participation in which provides significant competitive advantages for firms.

The tendencies of development of modern economy and their influence on the firm are theoretically grounded in the concepts of new resource-based theory, transaction costs theory, behavioral theory, core competencies theory, the agent theory, contract theory and evolutionary theory of economic change. The combination of methodological principles and theoretical approaches of these theories provides an opportunity to form a modern theory of the firm, which reflects the peculiarities of the development of real firms and theoretical achievements in their understanding and fits into the context of modern economic theory.

Thus, shifts in the modern economy, new trends in its development determine the fundamental changes in the functioning of firms and the emergence of new directions in the theory of the firms. The theoretical understanding of the processes that take place at different levels of the economy, in turn, provides an opportunity to determine the development prospects, ways to solve emerging problems and make decisions on ensuring efficiency, well-being, economic security.

SUMMARY

In today's economy, under the influence of a number of factors, cardinal shifts occur at all its levels. Particular attention needs to be paid to the processes taking place at the micro level, as in the last decades the role of the firm in providing the competitive advantages of the national economy, in raising the well-being of the population and solving social problems has significantly increased. New trends in the economy, which determine the direction of change and the depth of shifts, significantly affect, above all, the firm, its structure and forms. Servization, individualization, virtualization, and networkization have brought to life the appropriate organizational forms and structures of firms that require theoretical substantiation, the development of new theoretical approaches

to the analysis of the firm and the definition of priority directions of its development in various industries and spheres of economy. Particular attention should be paid to the relationship between changes in the economy and in the activities of the firm, the effects of these changes on the development of theoretical competencies and models of the firm. This section explores the peculiarities of such relationships and interactions, identifies the directions of change and priorities of modern production, the development of the company and theoretical approaches to its analysis. This made it possible to substantiate the feasibility of forming a new theory of the firm in the context of shifts in the modern economy and the development of a new paradigm of economic theory.

REFERENCES

1. Richardson G. The organization of Industre. The Economic Jornal. 1972. Vol. 82.

2. Фуруботн Э.Г., Рихтер Р. Институты и экономическая теория. Достижения новой институциональной экономической теории. СПб. Изд. дом СПб. гос. ун-ва, 2005. 702 с.

3. Клодт Х. Нова економіка: форми вияву, причини і наслідки. Київ : Таксон, 2006. 306 с.

4. Горняк О.В. Теорії фірми. Навч. посібник. Одеса : Астропринт, 2010.

5. Махлуп Ф. Теории фирмы: маржималистские, бихевио-ристские и управленческие. В кн. Вехи экономической мысли. Т. 2. Теория фирмы. Под ред. В.М. Гальперина. СПб.: Экономическая школа, 1999. 524 с.

6. Вільямсон О.Е. Економічні інституції капіталізму. Фірми, маркетинг, укладання контрактів. Київ : АртЕк, 2001. 472 с.

7. Социально-экономическая эффективность: опыт США. Ориентир на глобализацию. Москва : Наука, 2002. 360 с.

8. Holmstrom B.R. and J. Tirole. The Theory of the Firm. In: R. Schmalensee and R.D. Willing, ads., Hand book of Industine Organisation Amsterdam: North-Holland 1989, 1, 63–133.

9. Хэй Д., Моррис Д. Теория организации промышленности. В 2-х томах. Т-2. СПб. ГУ экономики и финансов. Высшая школа экономики, 1999. 592 с.

10. Вітренко А.О. Сервісна економіка: Теорія, сучасні виклики та глобальні тренди. Київ : Знання, 2016. 413 с.

11. Penrose E. The Theory of the Growth of the Firm. Oxford Basil Black Well, 1959.

12. Hamel G., Prachalad C.K. The Core Competence of the Corporation. Harvard Business Review. Mai-june, 1990.

13. Прахалад С.К., Фаэй Л., Ренделл Р. Создание ключевых компетенций и их использование. В. кн. Портер М., Самплер Дж., Прахалад С. К. и др. Курс МВА по стратегическому менеджменту. Москва : Альмина Бизнес Букс, 2004. С. 357–382.

14. Саймон Г.А. Теория принятия решений в экономической теории и науке о поведении. В кн. Вехи экономической мысли. Т. 2. Теория фирмы. СПб. : Экономическая школа. 1999. С. 54–72.

15. Cyert R. M., March Jc. A Behavioral theory of the firm. Prenfice Holl. 1963.

16. Скотний П.В. Економіко-теоретичне знання в парадигмі методології : монографія. Дрогобич, 2011. 408 с.

17. Алчиан А., Демсец Т. Производство, информационные издержки и экономическая организация. В кн. Истоки: экономика в контексте истории и культуры. Москва : Издат. дом ГУ ВШЭ, 2004. С. 166–207.

18. Jensen M. C., Mecling W. H. Teoty of the Firm: Managerial, Behavior, Agency Cocts and ownership Structure. *Journal of Finansial Economies*. 1976. N 4. P. 305–360.

19. Милгром П., Робертс Д. Экономика, организация, менеджмент. СПб : Экономическая школа, 1999. В 2-х томах. Т. 1. 470 с. Т. 2. 424 с.

20. Шерешева М.Ю. Форми сетевого взаимодействия компаний. Курс лекций. Москва : Изд. дом ГУ Высшей школы экономики, 2010. 339 с.

21. Коуз Р. Природа фирмы. В кн.: Природа фирмы. Под ред. О.Е. Уильямсон и С. Дж. Уинтера. Москва : Дело. 2001. С. 33–52.

22. Нельсон Р.Р., Уинтер С. Дж. Эволюционная теория экономических измерений. Москва : 300 «Финстатинформ», 1990.

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CHAPTER 7
DEVELOPMENT OF NATIONAL ECONOMY
IN THE CONTEXT OF INFORMATION
AND DIGITALIZATION PROCESSES

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INTRODUCTION

The digitization of modern society's demands for state mechanisms of the national economy makes it dependent on the level of access to information technologies. Economic processes on a national scale are one of the drivers of change in public administration. In order to ensure the ability to better interact with business and citizens of Ukraine, a new type of communication – e-governance – is being created. When implementing changes through information technology, the needs of all segments of the population of Ukraine and their economic activity should be taken into account.

The growing role of information technology requires the creation of a more efficient mechanism for managing the national economy of Ukraine by enhancing the ability to provide various services online, which helps to reduce the resource consumption of information. The system of electronic control of state mechanisms operates on such principles as:

1) social – involves transformation into more effective public relations, which is to motivate society to be more active;

2) organizational – facilitating the establishment of communication between the hierarchical link of state bodies, which has the effect of reducing economic costs;

3) presentation – overcoming the bureaucratic mechanism, creating more flexible forms of cooperation between the state and society;

4) public relations – the use of analytical and predictive tools to address economic, political and social aspects, implementing it for public purposes;

5) exemplary – receiving tools in the exercise of their rights and freedoms by society in general[1,2].

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[1] Kolesnichenko, I.M. (2014). Rozvytok elektronnoho uriaduvannia v Ukraini: instytutsionalnyi aspect [E-Government Development in Ukraine: Institutional Aspect]. Biznes Inform, no 3, pp. 52–57.

Therefore, in order to stabilize the state of affairs, it is necessary to take into account all the diversity of the functioning of the country in such aspects as: economy, legislative framework and society. We need to draw our attention to The Concept of development of e-services in Ukraine, which is based on the principles of introduction of electronic services in Ukraine, such as: 1) consumer orientation; 2) access; 3) security; 4) reduction of bureaucracy; 5) databases of electronic information; 6) transparency; 7) efficiency; 8) flexibility of technologies[3],[4].

The main obstacles in the way of digitization are high price range, multilevel of transaction services, contradictory regulatory framework, lack of human resources, scarce financial resources of the state. According to experts, the Ukrainian national economy, which suffers crisis, should receive all the money in the conditions of the budget deficit according to the mentioned expenditure items[5].

7.1. Digitalization of national economy development

Due to the introduction of information and communication technologies (ICT), economic processes become centralized and create opportunities for efficient use of the information received. Technologies are gradually beginning to affect not only economic processes, but in general everything that is happening in the country. Integrating, information and communication technologies can affect the national economy in partially or totally, all will depend on the economic mechanisms of the national economy. Intensification through information and communication technologies in the economic processes of the national economy influences social and economic, technological, legal and cultural phenomena. Global informatization influences the globalization of the national economy and facilitates rapid access to the economic sectors through various economic instruments that have been virtualized into the

[2] Perevozkyn Yu. Elektronnoye pravitelstvo. Chast I: Chto. gde. pochem? [E-government. Part I: What, where, how much?]. URL: http://pc.uz/publish/doc/text38817_elektronnoe_pravitelstvo_chast_i_chto_gde_pochem (accessed: 23.04.2019).

[3] Nosatov, I.K. (2017). Didzhytalizatsiia upravlinnia za umov zmin natsionalnoi ekonomiky Ukrainy v hlobalizatsiinykh protsesakh [Management digitization in the context of changes in the national economy of Ukraine in globalization processes]. Menedzhment KhKhI stolittia: hlobalizatsiini vyklyky : monohrafiia / za red. I.A. Markinoi. Poltava : Simon, pp. 401–409.

[4] Nosatov, I.K. (2017). Shliakhy rozvytku informatsiinykh tekhnolohii v konteksti stratehichnoi rozbudovy natsionalnoi ekonomiky [Ways of information technology development in the context of strategic development of national economy]. Naukovyi visnyk Khersonskoho derzhavnoho universytetu. Seriia "Ekonomichni nauky". Vyp. 22-2. Ch. 2, pp. 160–164.

[5] Nosatov, I.K. (2017). Didzhytalizatsiia upravlinnia za umov zmin natsionalnoi ekonomiky Ukrainy v hlobalizatsiinykh protsesakh [Management digitization in the context of changes in the national economy of Ukraine in globalization processes]. Menedzhment KhKhI stolittia: hlobalizatsiini vyklyky : monohrafiia / za red. I.A. Markinoi. Poltava : Simon, pp. 401–409.

information and communication environment. However, involvement of state institutions is required to correct actions on the integration of information and communication technologies[6,7].

Digitization is a transformation of relations in the socio-economic and socio-political processes of the national economy, accompanied by changes in all spheres of life in the country. Information technologies make it possible to increase efficiency and cause competition in all sectors of the country, to activate the processes of modernization in all economic and technological processes within the national economy. The traits of today are the public's demand for digital innovations and their use, especially in economic processes; transforming information channels for everyone involved in the economic processes of the national economy, information technologies provide their users with the opportunity to receive relevant information.

However, the development of information technology is too fast, so systems integrating technology into economic processes should be flexible about further modernization. Without innovation, the development of economic processes within the national economy will lose its competitive edge over global trends. Changes in information technology are accelerating exponentially, with the emergence of new digital platforms and devices that can affect relationships in economic processes. The main challenge for economic operators within the national economy is the impact of digital change, including the loss of control over customer relationships, increased competition and the threat of significant costs of infrastructure upgrades to interact with suppliers, partners, employees, and customers. A well-known point is a structured approach to assessing the digital maturity of a particular economic process in order to integrate new information technologies, as well as the overall interest of all parties in this integration.

To understand the challenges ahead, business entities within the national economy must develop a systematic approach and rethink their participation in the economic processes of the national economy. The convenience of using information technology is to reduce costs and accelerate interaction between all participants in the economic process.

[6] Nosatov, I.K. (2017). Didzhytalizatsiia upravlinnia za umov zmin natsionalnoi ekonomiky Ukrainy v hlobalizatsiinykh protsesakh [Management digitization in the context of changes in the national economy of Ukraine in globalization processes]. Menedzhment KhKhI stolittia: hlobalizatsiini vyklyky : monohrafiia / za red. I.A. Markinoi. Poltava : Simon, pp. 401–409.

[7] Nosatov, I.K. (2017). Shliakhy rozvytku informatsiinykh tekhnolohii v konteksti stratehichnoi rozbudovy natsionalnoi ekonomiky [Ways of information technology development in the context of strategic development of national economy]. Naukovyi visnyk Khersonskoho derzhavnoho universytetu. Seriia "Ekonomichni nauky". Vyp. 22-2. Ch. 2, pp. 160–164.

They should focus on ensuring uninterrupted rapid access to information channels that can be provided through new information technologies[8,9].

In order to implement this approach, flexible approaches are required, which means the use of the latest technologies, for example, for testing and staff training. Currently, information technology is rapidly expanding its information storage and delivery capacity, making digital infrastructure more efficient. One of the new areas of information technology in the future will be tools such as electronic paper that can change the future of printing and other sectors of the Ukrainian economy. The prevalence of digital channels of information, new platforms and devices are the hallmarks of the fourth generation that characterize the emergence of a new digital world[10].

Most business entities are already developing measures in response to the challenge of digital change as they transition from a transaction to an "interactive" relationship with their customers. Also, part of the economic processes is being actively transformed, which should be described as after-sales service. In order to succeed in the digital world, we need to be responsible and responsive, adjusting our economic development models to new economic processes within the national economy.

This aspect requires an understanding of new perspectives available outside of traditional markets. The process of digitization offers a great opportunity to transform economic processes and activate new approaches in economic processes of the national economy.

It is necessary to distinguish the main directions of implementation of information technologies in economic processes:

– implementation of information technology to enhance potential business models (the use of automated services to expand the current services of economic entities, which reduces the cost of service and reduces the waiting time for the service itself);

– business models within the framework of information technology implementation (new non-manual services, as well as expansion of new information channels);

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[8] Nosatov, I.K. (2017). Didzhytalizatsiia upravlinnia za umov zmin natsionalnoi ekonomiky Ukrainy v hlobalizatsiinykh protsesakh [Management digitization in the context of changes in the national economy of Ukraine in globalization processes]. Menedzhment KhKhI stolittia: hlobalizatsiini vyklyky : monohrafiia / za red. I.A. Markinoi. Poltava : Simon, pp. 401–409.

[9] Nosatov, I.K. (2017). Shliakhy rozvytku informatsiinykh tekhnolohii v konteksti stratehichnoi rozbudovy natsionalnoi ekonomiky [Ways of information technology development in the context of strategic development of national economy]. Naukovyi visnyk Khersonskoho derzhavnoho universytetu. Seriia "Ekonomichni nauky". Vyp. 22-2. Ch. 2, pp. 160–164

[10] Nosatov, I.K. (2017). Didzhytalizatsiia upravlinnia za umov zmin natsionalnoi ekonomiky Ukrainy v hlobalizatsiinykh protsesakh [Management digitization in the context of changes in the national economy of Ukraine in globalization processes]. Menedzhment KhKhI stolittia: hlobalizatsiini vyklyky : monohrafiia / za red. I.A. Markinoi. Poltava : Simon, pp. 401–409.

– development of a new business model or its complete change (revenue generation through the introduction of information technology through new distribution channels for economic entities).

We outline the main income models due to the active development of information technologies in the economic processes of the national economy:

1. Transaction. Traditional products that are produced and sold from one user to another through new distribution channels.

2. The power of leasing. Power is monetized in the form of human time, the presence of a machine or assets; companies can manage power through demand forecasting, customer orders and sales.

3. Licensing. Technology, brand or intangible assets licensed for periods of time that reflect the value of the original invention.

4. Subscription. The products / services that can be obtained through a subscription are usually for a certain period of time.

5. Commission. Virtual agents receive commissions (or margins) from services or selling goods to buyers, while virtual agents are scalable digital platforms.

6. Advertising. The use of media in the Internet to enhance the position of a product / service sold through electronic media.

Two factors were particularly important for the information economy. First, transparency in economic approaches has become the standard, and candidates now have access to inside information and expertise. Second, the talent competition has intensified as a result of the active introduction of information technology into economic processes and their key role in optimizing and growing economic performance. Now the publicity of economic processes is as important as their effectiveness. The implementation of this aspect in the economic activity of the subjects should be transparent and in all socio-economic relations[11,12].

Considering the growing role of information technology, attention should be paid to digital culture, namely its components, such as:

1. Communication. Continuous exchange of information between all participants in the economic process through new digital communication

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[11] Nosatov, I.K. (2017). Didzhytalizatsiia upravlinnia za umov zmin natsionalnoi ekonomiky Ukrainy v hlobalizatsiinykh protsesakh [Management digitization in the context of changes in the national economy of Ukraine in globalization processes]. Menedzhment KhKhI stolittia: hlobalizatsiini vyklyky : monohrafiia / za red. I.A. Markinoi. Poltava : Simon, pp. 401–409.

[12] Nosatov, I.K. (2017). Shliakhy rozvytku informatsiinykh tekhnolohii v konteksti stratehichnoi rozbudovy natsionalnoi ekonomiky [Ways of information technology development in the context of strategic development of national economy]. Naukovyi visnyk Khersonskoho derzhavnoho universytetu. Seriia "Ekonomichni nauky". Vyp. 22-2. Ch. 2, pp. 160–164.

channels (eg, social media, blogs, wikis, forums, shared mailboxes, webcasts and videos). All participants in the economic process should focus on honest and open conversation. Companies should also consider using the communication log as a form of communication with their staff.

2. Management. Managers need to manage cultural change. Management must abandon people's creativity and employ hidden methodologies such as hackathons and design thinking. Companies need to take digital immersion courses for leadership in order to develop digital literacy[13].

3. Visibility of change. For this reason, manuals for employees should be developed; consider the use of visualizations; change staff development paths.

4. Continuous monitoring of changes. Use tools that can track changes, such as through questioning / feedback and performance monitoring.

Today, most participants in the economic space of the national economy understand the dependency on information innovation and introduce their innovative technologies. For example, every business entity has its own website, its marketing strategy within the virtual space. Digitizing all processes is a step-by-step change that requires detailing each action due to rapid changes in information technology.

In the process of integration and use of information and communication technology the chain: "Ideology – Methodology – Technology" changes to "Methodology – Technology". The basic values are completely offset, the tasks and goals that need to be fulfilled come first. Technologies can affect all branches of the economic process in the national economy, they should include production, marketing, sales, price characteristics, inventory management, data collection and processing, accounting and financial management[14,15]. In today's context, information can be obtained in real-time, increasing opportunities to attract international resources for investment, accelerating capital movements and optimizing macroeconomic policies pursued at all levels of government.

[13] Nosatov, I.K. (2017). Didzhytalizatsiia upravlinnia za umov zmin natsionalnoi ekonomiky Ukrainy v hlobalizatsiinykh protsesakh [Management digitization in the context of changes in the national economy of Ukraine in globalization processes]. Menedzhment KhKhI stolittia: hlobalizatsiini vyklyky : monohrafiia / za red. I.A. Markinoi. Poltava : Simon, pp. 401–409.

[14] Baranov, A., Dziuba, S. (2009). Poniattia elektronnoho uriaduvannia v Ukraini [The concept of e-governance in Ukraine]. Hromadska rada pry Derzhavnomu komiteti informatyzatsii Ukraina, hromady. orh. "Tsentr initsiatyv elektronnoho uriaduvannia", mizhnarodnyi. Fundatsiia "Vidrodzhennia". 2009. URL: http://dki.org.ua/files/Concept-E-Government.doc (accessed: 15.05.2019).

[15] Preparer l'entree de la France dans la societe del'information. Programme d'action gouvernemental. URL: http://www.epractice.-eu/document/2893 (accessed: 27.04.2019).

The level of spending on ICT is a reflection of the effect in the economic result of the national economy: 1) an increase in the country's GDP due to the emergence of a new item in the GDP structure; 2) immediate receipt of important information in economic processes; 3) adjustment of production costs due to the introduction of new software; 4) increasing the level of transparency in economic processes involving the authorities. The use of ICT, first of all, acts as a structuring tool and contributes to the empirical synthesis of economic facts[16].

Simplification of economic processes at national level through the integration of ICT should be based on:

1) the existing scientific and technical base and the possibilities for its improvement;

2) mechanisms to facilitate the introduction of new ICTs;

3) a social environment that facilitates the implementation of ICT;

4) the level of openness of the national economy.

The main vector of ICT development should be the information society as a medium of implementation of new technologies in the economic processes of the national economy. In order to shape and launch new technologies, the goals of the ICT itself and the economic process in which the technology is implemented must be summarized. In practice, ICT is actively used in data analysis to identify, model and autonomize the economic process[17]. Ukraine's national economy is at a crossroads: becoming a commodity state or a technological state, although we have the potential to develop the technological sphere, especially ICT, but their share in the national economy of Ukraine is small. Ukraine should use the expertise of such countries as India, Ireland, South Korea, Malaysia, Taiwan, China, Singapore, Finland, Israel to bridge the digital divide by developing a strategy based on analytical data, taking into account the successful experience of implementing strategies in other countries[18,19].

Information and communication technologies are a factor in the intensification of economic processes and affect their regulation. In

[16] Marchenko, V.V. (2016). Modernizatsiia mekhanizmu elektronnoho uriaduvannia v orhanakh vykonavchoi vlady v Ukraini [Modernization of eGovernment Mechanism in Executive Bodies in Ukraine]. Naukovyi visnyk publichnoho ta pryvatnoho prava: zb. nauk. pr. URL: http://www.nvppp.in.ua/vip/2016/3/34.pdf (accessed: 25.05.2019).

[17] Hlobalnaia ynytsyatyva po preodolenyiu ynformatsyonnoho neravenstva [The Global Initiative to bridge the digital divide] (UNO). URL: http://www.e-government.ru/pub/pravo/985430332.html (accessed: 06.04.2019).

[18] Blazhiievska, N., Bereza, T. Elektronnyi uriad ta informatyzatsiia orhaniv derzhavnoi vlady [Electronic Government and Informatization of Public Authorities]. URL: http://www.pravo.org.ua/word/50.dos (accessed: 15.05.2019).

[19] Hlobalnaia ynytsyatyva po preodolenyiu ynformatsyonnoho neravenstva [The Global Initiative to bridge the digital divide] (UNO). URL: http://www.e-government.ru/pub/pravo/985430332.html (accessed: 06.04.2019).

particular, conditions are created for the further growth of economic indicators of the national economy, but it is necessary to understand the complexity of the introduction of information and communication technologies in the tactical and strategic vision of the development of Ukraine, in particular its economic potential.

7.2. Areas of development of the national economy in the conditions taking into account the use of ICT

In 2011, Ukraine joined the OGP initiative to introduce standards of openness and transparency of government action, which can have a positive impact on the economic performance of Ukraine's national economy. If the Government of Ukraine's initiatives are implemented through information technology, a single system will be created that will include all authorities, which will enhance information sharing. It is also necessary to include in this system such elements of state and commercial activities of the national economy as e-democracy, e-government, e-services, e-commerce[20].

The economic component of information technology is the accumulation of knowledge, which restraint is almost impossible to influence in today's environment. An essential indicator of information technology for the national economy is the level of recovery: information technology generations change every 3-5 years. It is thanks to the knowledge that is accumulated and actively used in information technologies that the capacity of adaptation systems to the external and internal factors of the national economy is increased[21].

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[20] Blazhiievska, N., Bereza, T. Elektronnyi uriad ta informatyzatsiia orhaniv derzhavnoi vlady [Electronic Government and Informatization of Public Authorities]. URL: http://www.pravo.org.ua/word/50.dos (accessed: 15.05.2019); Hlobalnaia ynytsyatyva po preodolenyiu ynformatsyonnoho neravenstva [The Global Initiative to bridge the digital divide] (UNO). URL: http://www.e-government.ru/pub/pravo/985430332.html (accessed: 06.04.2019); Zghurovskyi, M.Z., Yakymenko, Yu.I., Tymofieiev, V.I. (2002). Informatsiini merezhevi tekhnolohii v nautsi i osviti [Information network technologies in science and education]. Systemni doslidzhennia ta informatsiini tekhnolohii, no 3, pp. 43–56; Kolesnichenko, I.M. (2014). Rozvytok elektronnoho uriaduvannia v Ukraini: instytutsionalnyi aspekt [E-Government Development in Ukraine: Institutional Aspect]. Biznes Inform, no 3, pp. 52–57; Smolinskyi, V., Khomka, V. (2012). Kompiuterni tekhnolohii yak chynnyk pidvyshchennia innovatsiinoho potentsialu ahrarnykh pidpryiemstv [Computer technology as a factor in increasing the innovative potential of agricultural enterprises]. Naukovyi visnyk NLTU Ukrainy. Vyp. 22.7, pp. 355–360; Silenko, A. (2007). Informatsiini tekhnolohii – novyi impuls dlia poshuku paradyhmy maibutnoho suspilstva [Information technology is a new impetus for the paradigm of the future society]. Politychnyi menedzhment. No 3, pp. 96–112.

[21] Blazhiievska, N., Bereza, T. Elektronnyi uriad ta informatyzatsiia orhaniv derzhavnoi vlady [Electronic Government and Informatization of Public Authorities]. URL: http://www.pravo.org.ua/word/50.dos (accessed: 15.05.2019); Danylian, O.H., Dzoban, O.P. (2012). Dosvid stvorennia elektronnoho uriadu u Frantsii ta mozhlyvosti yoho vykorystannia v Ukraini [Experience in establishing eGovernment in France and how it can be used in Ukraine]. Hileia : nauk. visn. Kyiv. Vyp. 58. No. 3, pp. 669–674; Pokhylo, I.D. (2016). Svitovyi dosvid vprovadzhennia e-uriaduvannia [Worldwide

According to international experience, electronic government implies e-government. Some scientists believe that this is communication between public authorities and citizens through the Internet. Others interpret it as providing online administrative services to public authorities. In our opinion, e-government provides for the presence of all these components.

The leading countries in the integration of e-government are the United States, Denmark, Canada, Finland, Australia. Many countries have plans to develop information technology in e-governance. For example, India relies on the development of knowledge, information systems, information and communication technologies in government processes. In the integration of information technology into government, countries such as Canada (68%) and the United States (62%) occupy the first place; Denmark and Singapore – 56% each; Australia, France, Japan – 55% each, but in Portugal these services account for 34%, in the Republic of South Africa – 22%, Brazil – 17%[22].
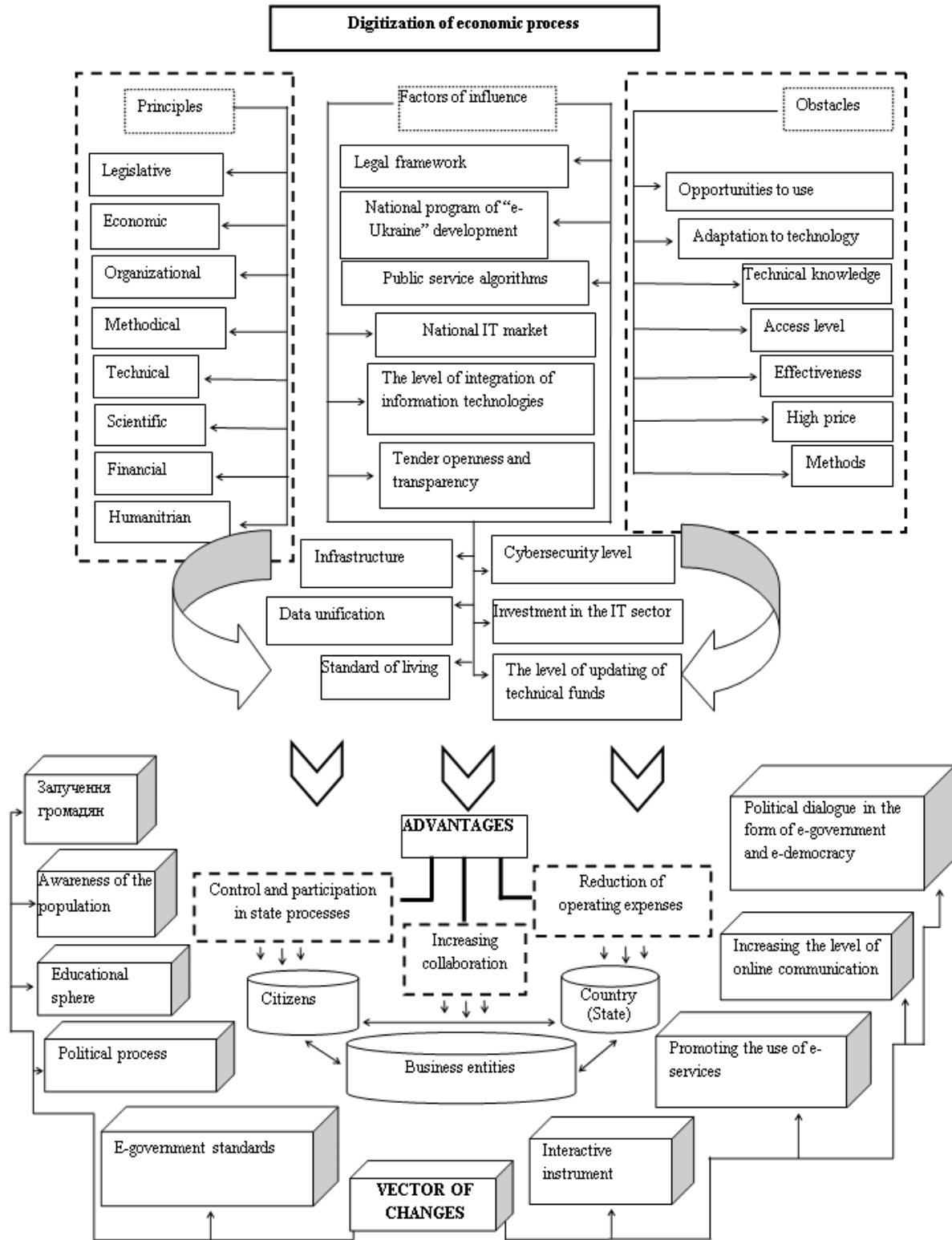
Digitization of economic processes and national economy acts (Fig. 1) as an implementation of measures to change relations between economic entities, the state and citizens of Ukraine.

Significantly increasing the importance of the principles that implement digitization in the economic processes of the national economy of Ukraine, since they depend on the level of collaboration of all participants in this process. However, one should not forget about the presence of factors (characteristics of the information sector of the national economy, state mechanisms) and obstacles that may arise in the transformation of economic processes by information technologies that form the basis of the national economy of Ukraine.

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experience in implementing e-governance]. Instytut sotsialno-humanitarnykh nauk VNTU. URL: https://conferences.vntu.edu.ua/index.php/e-democracy/edemocracy2016/ paper/viewFile/1714/1399 (accessed: 23.04.2019); Preparer l'entree de la France dans la societe del'information. Programme d'action gouvernemental. URL: http://www.epractice.¬eu/document/2893 (accessed: 27.04.2019).

[22] Danylian, O.H., Dzoban, O.P. (2012). Dosvid stvorennia elektronnoho uriadu u Frantsii ta mozhlyvosti yoho vykorystannia v Ukraini [Experience in establishing eGovernment in France and how it can be used in Ukraine]. Hileia : nauk. visn. Kyiv. Vyp. 58. No. 3, pp. 669–674; Elektronnyi uriad Frantsii: kilka harnykh prykladiv [The eGovernment of France: some good examples]. URL: http://idcorner.org/2005/03/18/e-government-infranceseveral-good-architecture-principles-and-one-oddity/ (accessed: 25.05.2019); Nosatov, I.K. (2017). Didzhytalizatsiia upravlinnia za umov zmin natsionalnoi ekonomiky Ukrainy v hlobalizatsiinykh protsesakh [Management digitization in the context of changes in the national economy of Ukraine in globalization processes]. Menedzhment KhKhI stolittia: hlobalizatsiini vyklyky : monohrafiia / za red. I.A. Markinoi. Poltava : Simon, pp. 401–409; Osoblyvosti dii elektronnoho uriadu [Features of eGovernment]. URL: http://www.epractice.eu/resource/730 (accessed: 23.04.2019); Foray D., Ark B. Van. Smart Specialisation in a truly integrated research area is the key to attracting more R&D to Europe. Knowledge Economists Policy Brief. 2007. No 1 (European Commission, Brussels); Preparer l'entree de la France dans la societe del'information. Programme d'action gouvernemental. URL: http://www.epractice.¬eu/document/2893 (accessed: 27.04.2019).

Fig. 1. Digitization of the economic process[23]

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[23] Nosatov, I.K. (2017). Didzhytalizatsiia upravlinnia za umov zmin natsionalnoi ekonomiky Ukrainy v hlobalizatsiinykh protsesakh [Management digitization in the context of changes in the national economy of Ukraine in globalization processes]. Menedzhment KhKhI stolittia: hlobalizatsiini vyklyky : monohrafiia / za red. I.A. Markinoi. Poltava : Simon, pp. 401–409; Nosatov, I.K. (2017). Shliakhy rozvytku informatsiinykh tekhnolohii v konteksti stratehichnoi rozbudovy natsionalnoi ekonomiky [Ways

The main advantages of digitization are more effective involvement of citizens in control and participation in economic processes of the national economy, increased collaboration between the state, citizens and business entities and reduction of operating expenses, which will significantly affect the state budget of the state through the use of funds for other urgent needs.

Therefore, the main vector of change will be the following: awareness of the population, activation of civic participation in state-building processes, educational sphere, political process, active use of e-services, increased level of communication, changes in approaches to democratic dialogue between all participants of economic processes of the national economy through the use of tools digitization.

According to the digital agenda, the main trends of economic processes of:

1. Data that is the main source of competitiveness. Collecting, describing, storing and processing data allow to obtain the proper information for optimal economic relations, to establish socio-economic and socio-political relations. The main access to the data is through the Internet, many data are open.

The main obstacles to the development of this trend in the economic processes of the national economy are: lack of a system of rules, regulations, standards for the collection, classification, storage and use of data (national, regional, sectoral and other levels); problems of protection of intellectual property; data protection issues, cybersecurity risks; lack of competencies in data management (digital skills), relevant education, professions, etc.

Opportunities for Ukraine: development of a new branch of the economy, new jobs; creating a base for the development of other industries and the "digital" economy; the emergence of an effective management tool; creation of an environment that prevents corruption as a phenomenon[24].

2. Development of the "Internet of Things" sphere. This trend is characterized by the interaction between physical objects or devices that have sensors, as well as software that enables them to work and communicate on the Internet. The approach based on the concept of the Internet of Things provides an opportunity to increase socio-economic and

of information technology development in the context of strategic development of national economy]. Naukovyi visnyk Khersonskoho derzhavnoho universytetu. Seriia "Ekonomichni nauky". Vyp. 22-2. Ch. 2, pp. 160–164.

[24] Tsyfrova adzhenda Ukrainy – 2020 [Digital Agenda of Ukraine – 2020]. URL: https://ucci.org.ua/uploads/files/58e78ee3c3922.pdf (accessed: 23.04.2019).

socio-political indicators of life of Ukrainian citizens, as well as to optimize the work of the public service, utilities and reduce production costs. An estimated estimate of devices working with the Internet will be 30 billion devices by 2020, with a global investment of 24 trillion USD[25].

This fact testifies to the creation of a new market for products and services through the active use of artificial intelligence and machine learning, as the ability to use new tools in business processes and measure new workforce in the near future is increasing.

The main obstacles hindering the development of the Internet of Things:

– lack of information on the latest technologies that will help reduce costs and increase efficiency; low R&D, development, innovation, and existing startups are, in most cases, focused solely on foreign markets in terms of commercialization and jurisdiction;

– low level of adaptation of modern education to modern inquiries as a result of specialists and engineers in the field of "Internet of things".

The opportunities created by the new sphere of the Internet of Things within the national economy include: improving the efficiency of the SME sector, etc.; incremental transformational innovations, development of relevant world-class products by Ukrainian companies; increase of efficiency of production, business organization, logistics, transport[26].

3. Digitalization or digital transformation. The transformation of modern economic processes and the transition from the industrial economy to the information are taking place. These processes of transformation of economic processes within the national economy form new essence and purpose of values (for example, Uber, Airbnb, digital banking, etc.). The active use of outsourcing services when developing new products and business services, manufacturing and rapid prototyping gives small companies the opportunity to develop new products and compete with large companies. Transformation processes have shifted centers of innovation from large companies to small ones.

The main barriers to the development of economic processes in the context of digital transformation: lack of government support and adequate infrastructure to develop innovative businesses and entrepreneurship; the lack of a clear vector of national systems development and infrastructure

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[25] Tsyfrova adzhenda Ukrainy – 2020 [Digital Agenda of Ukraine – 2020]. URL: https://ucci.org.ua/ uploads/files/58e78ee3c3922.pdf (accessed: 23.04.2019).
[26] Tsyfrova adzhenda Ukrainy – 2020 [Digital Agenda of Ukraine – 2020]. URL: https://ucci.org.ua/ uploads/files/58e78ee3c3922.pdf (accessed: 23.04.2019).

support for the digital transformation of the national economy; lack of mechanisms to stimulate and motivate the development of innovation, in particular in small and medium-sized enterprises.

The opportunities created by this trend for Ukraine: improving the competitiveness of the economic sectors; development of digital economy, labor market, etc.; the emergence of new industries (cross-platform with digital industry); the spread of innovative entrepreneurship.

4. Dissemination of business models built on the ideology of a shared economy. Economic processes are changing their approaches as a result of new economic relationships with the integration of information technology. Due to the use of "shared" sites, it is possible to quickly implement and commercialize ideas in material and technical constraints available to most companies.

Trendy opportunities for Ukraine: easy start-up of new businesses as it does not require large start-up costs; development of service models, impact on the efficiency and competitiveness of Ukrainian business without significant investment; opportunities for business beginners; rapid launch of commercial Internet projects, creation of new marketplace, expansion of consumption markets of Ukrainian products, services and labor resources, commercial globalization[27].

5. Virtualization of physical infrastructure IT-systems and transition to service models. With the boom of intellectualization, it is possible to reduce the capital cost of creating digital infrastructure using "cloud services" of technology and software-defined architecture. This technology makes it possible to use computing capabilities and services by paying only for this service. Cloud service clients have full access to certain services time they paid; all information is protected on a technological basis.

Opportunities for Ukraine: Businesses, enterprises, government agencies and citizens have the ability to quickly and cheaply deploy the necessary digital infrastructure and take advantage of the digital world; effectively build the country's digital infrastructure as a basis for the digital economy[28].

In order to develop the national economy with the help of information technologies it is also necessary to focus efforts on the following areas of cooperation:

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[27] Tsyfrova adzhenda Ukrainy – 2020 [Digital Agenda of Ukraine – 2020]. URL: https://ucci.org.ua/uploads/files/58e78ee3c3922.pdf (accessed: 23.04.2019).

[28] Tsyfrova adzhenda Ukrainy – 2020 [Digital Agenda of Ukraine – 2020]. URL: https://ucci.org.ua/uploads/files/58e78ee3c3922.pdf (accessed: 23.04.2019).

1. Interoperability and eServices. It is important to become an active participant in the EU Interoperability Solutions for European Public Administrations 2 (ISA2) program, e-CODEX, e-Invoicing projects and the Single Digital Gateway initiative. At present, economic relations within the framework of electronic interaction between state information resources and the development of interoperability are a major challenge for all participants in the informatization of socio-economic and socio-political relations. A positive indicator of state participation in European programs is the CMU resolution "Some Issues of Electronic Interaction of State Electronic Information Resources" aimed at integrating systems of electronic interaction between public authorities, electronic systems and resources and providing access to full interaction in accordance with EU requirements, and namely European Interoperability Framework 2.0. Active participation in ISA2, e-CODEX and e-Invoicing will provide an opportunity to meet the modern requirements of the European Union (formats, standards, regulations, technical solutions) and accelerate the country's European integration.

2. Electronic eID identification, introduction of new eIDAS regulations, international electronic identification and authentication, active participation in the EU Stork 2.0 project. The development of secure accessible and convenient electronic identification is the primary purpose of the introduction of electronic e-commerce services. It will also help accelerate the development of a new economy through the introduction of information technology. The Secure idenTity acrOss project boRders linKed 2.0 (Stork 2.0) provides an opportunity to create a single EU-wide e-authentication and authentication environment. The project aims at creating standards, formats, identifiers, etc. for the integration of interoperable electronic identification tools, in particular in the fields of e-medicine, e-public services, e-banking, and the development of EU Digital Single Market, implementation of cross-border interaction.

3. Open Data. In January 2016, the first version of the state web portal data.gov.ua was launched to provide a roadmap approved in February 2016 and for 41 tasks in 5 directions. It provides an opportunity to develop an EU open data policy, the only high standards for open data[29].

Information technologies create great opportunities for the national economy and enable the improvement of various economic processes.

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[29] Tsyfrova adzhenda Ukrainy – 2020 [Digital Agenda of Ukraine – 2020]. URL: https://ucci.org.ua/uploads/files/58e78ee3c3922.pdf (accessed: 23.04.2019).

Information technologies change relationships in different sectors of the economy and stimulate their convergence. As a key to economic growth, information technology enhances the potential for investment in innovation and new technology.

CONCLUSIONS

Today, the economic state of the country is characterized by the response of the information society to the change and improvement of the information industry, which should include the telecommunications, computer, electronic, audiovisual and other areas, which are inherent in technological convergence. Right now, the information industry is affecting all sectors of the national economy and the state's overall competitiveness with respect to other national economies.

Thus, the main components that can affect the functioning of the virtual space within the national economy are development strategies, business management models, tools for improving efficiency and flexibility, information infrastructure, new services, increasing customer loyalty and regulatory policies for Internet service providers. The information industry was the first to experience the emergence of a crisis in the economy, leading various companies to modernize information technology and reduce jobs.

In the economic space of the state, only those companies that actively implemented information technology remained, thus increasing the company's ability to work effectively in the economic environment of the national economy. The main elements that have increased efficiency in the economic environment of the state have been developed strategy, flexible model of enterprise management and carefully planned processes of major activities. Also, do not forget about information technology, where the use of multi-component information systems has become the main effective tool.

Every day, the competitive environment in the economic space of Ukraine is growing due to the widespread increase in the tools of all subjects of economic activity of information technologies. The emergence of the digital economy opens up new opportunities to computerize all sectors of the economy and ensure their competitiveness.

The new economy must focus on competition in the future, the ability to create new products or services with high quality and lower cost. Digitization of new products and services, e-business and electronic means, payments are the keys to success. The national economy of Ukraine is in

the fourth stage of its development – the digital economy. On the basis of the formed strategy in the form of a model the components that are of permanent importance for the effective involvement of human resources as the main element of determining the effectiveness of actions of the private and public sectors on the national economy of Ukraine, implementing information technologies in all economic processes.

The dominant principle is the basis of digitization in the economic processes of the national economy, since they depend on the level of collaboration of all participants in this process. The obstacles that may arise in the process of transformation of economic processes under the influence of information technologies can change the basis of the national economy of Ukraine.

It was found that the state of the information technology market is flexible and differentiated and is influenced by many factors. Big changes in information technologies are accompanied by transformation processes in the Ukrainian economy.

REFERENCES

1. Baranov, A., Dziuba, S. (2009). Poniattia elektronnoho uriaduvannia v Ukraini [The concept of e-governance in Ukraine]. Hromadska rada pry Derzhavnomu komiteti informatyzatsii Ukraina, hromady. orh. "Tsentr initsiatyv elektronnoho uriaduvannia", mizhnarodnyi. Fundatsiia "Vidrodzhennia". 2009. URL: http://dki.org.ua/ files/Concept-E-Government.doc (accessed: 15.05.2019).

2. Blazhiievska, N., Bereza, T. Elektronnyi uriad ta informatyzatsiia orhaniv derzhavnoi vlady [Electronic Government and Informatization of Public Authorities]. URL: http://www.pravo.org.ua/word/50.dos (accessed: 15.05.2019).

3. Hlobalnaia ynytsyatyva po preodolenyiu ynformatsyonnoho neravenstva [The Global Initiative to bridge the digital divide] (UNO). URL: http://www.e-government.ru/pub/pravo/985430332.html (accessed: 06.04.2019).

4. Danylian, O.H., Dzoban, O.P. (2012). Dosvid stvorennia elektronnoho uriadu u Frantsii ta mozhlyvosti yoho vykorystannia v Ukraini [Experience in establishing eGovernment in France and how it can be used in Ukraine]. *Hileia : nauk. visn. Kyiv.* Vyp. 58. No. 3, pp. 669–674.

5. Elektronnyi uriad Frantsii: kilka harnykh prykladiv [The eGovernment of France: some good examples]. URL: http://idcorner.org/

2005/03/18/e-government-infranceseveral-good-architecture-principles-and-one-oddity/ (accessed: 25.05.2019).

6. Zghurovskyi, M.Z., Yakymenko, Yu.I., Tymofieiev, V.I. (2002). Informatsiini merezhevi tekhnolohii v nautsi i osviti [Information network technologies in science and education]. *Systemni doslidzhennia ta informatsiini tekhnolohii,* no 3, pp. 43–56.

7. Kolesnichenko, I.M. (2014). Rozvytok elektronnoho uriaduvannia v Ukraini: instytutsionalnyi aspekt [E-Government Development in Ukraine: Institutional Aspect]. *Biznes Inform,* no 3, pp. 52–57.

8. Koliadenko, S.V. (2016). Tsyfrova ekonomika: peredumovy ta etapy stanovlennia v Ukraini i u sviti [The Digital Economy: Prerequisites and Stages of Formation in Ukraine and in the World]. *Ekonomika. Finansy. Menedzhment: aktualni pytannia nauky i praktyky,* no 6, pp. 105–112.

9. Marchenko, V.V. (2016). Modernizatsiia mekhanizmu elektronnoho uriaduvannia v orhanakh vykonavchoi vlady v Ukraini [Modernization of eGovernment Mechanism in Executive Bodies in Ukraine]. *Naukovyi visnyk publichnoho ta pryvatnoho prava: zb. nauk. pr.* URL: http://www.nvppp.in.ua/vip/2016/3/34.pdf (accessed: 25.05.2019).

10. Nosatov, I.K. (2017). Didzhytalizatsiia upravlinnia za umov zmin natsionalnoi ekonomiky Ukrainy v hlobalizatsiinykh protsesakh [Management digitization in the context of changes in the national economy of Ukraine in globalization processes]. *Menedzhment KhKhI stolittia: hlobalizatsiini vyklyky : monohrafiia / za red. I.A. Markinoi. Poltava : Simon*, pp. 401–409.

11. Nosatov, I.K. (2017). Shliakhy rozvytku informatsiinykh tekhnolohii v konteksti stratehichnoi rozbudovy natsionalnoi ekonomiky [Ways of information technology development in the context of strategic development of national economy]. *Naukovyi visnyk Khersonskoho derzhavnoho universytetu. Seriia "Ekonomichni nauky".* Vyp. 22-2. Ch. 2, pp. 160–164.

12. Osoblyvosti dii elektronnoho uriadu [Features of eGovernment]. URL: http://www.epractice.eu/resource/730 (accessed: 23.04.2019).

13. Perevozkyn Yu. Elektronnoye pravitelstvo. Chast I: Chto. gde. pochem? [E-government. Part I: What, where, how much?]. URL: http://pc.uz/publish/doc/text38817_elektronnoe_pravitelstvo_chast_i_chto_gde_pochem (accessed: 23.04.2019).

14. Pokhylo, I.D. (2016). Svitovyi dosvid vprovadzhennia e-uriaduvannia [Worldwide experience in implementing e-governance].

Instytut sotsialno-humanitarnykh nauk VNTU. URL: https://conferences.vntu.edu.ua/index.php/e-democracy/edemocracy2016/ paper/viewFile/1714/1399 (accessed: 23.04.2019).

15. Smolinskyi, V., Khomka, V. (2012). Kompiuterni tekhnolohii yak chynnyk pidvyshchennia innovatsiinoho potentsialu ahrarnykh pidpryiemstv [Computer technology as a factor in increasing the innovative potential of agricultural enterprises]. *Naukovyi visnyk NLTU Ukrainy. Vyp.* 22.7, pp. 355–360.

16. Silenko, A. (2007). Informatsiini tekhnolohii – novyi impuls dlia poshuku paradyhmy maibutnoho suspilstva [Information technology is a new impetus for the paradigm of the future society]. *Politychnyi menedzhment.* No 3, pp. 96–112.

17. Tsyfrova adzhenda Ukrainy – 2020 [Digital Agenda of Ukraine – 2020]. URL: https://ucci.org.ua/uploads/files/58e78ee3c3922.pdf (accessed: 23.04.2019).

18. Foray D., Ark B. Van. Smart Specialisation in a truly integrated research area is the key to attracting more R&D to Europe. *Knowledge Economists Policy Brief.* 2007. No 1 (European Commission, Brussels).

19. Preparer l'entree de la France dans la societe del'information. Programme d'action gouvernemental. URL: http://www.epractice.eu/ document/2893 (accessed: 27.04.2019).

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CHAPTER 8
COMPETITIVENESS OF THE INDUSTRY POTENTIAL: INFLUENCE OF FACTORS AND THEIR ESTIMATION

Kovalenko-Marchenkova Ye. V.

INTRODUCTION

The industry potential is an aggregated potential of enterprises that work inside of it. The industry potential determines its ability to self-development on a more qualitative basis in specific conditions of space and time, characterized by the action of certain factors. The competitiveness of the industry's potential we can determine as the multidimensional complex property of using certain resources, which is defined by its components and the nature of their interconnections, characterized by investment attractiveness, is formed under the influence of factors. The estimation of the competitiveness of the potential is the first step forward increasing the competitiveness of the national economy as a whole. The problem of the potential is studied in the works of different national and foreign scientists: A. Onishchenko, B. Paskhaver, E. Figurnov, V. Gusakov, A. Anchishkin, L. Kostyrko, L. Abalkin, K. Vobliy, A. Voronov, O. Fedonin, I. Repin, O. Oleksik, I. Olenko, N. Poberezhna, I. Lukinov, I. Dolzhanska, T. Zagorna, I. Ansoff, V. Shapoval, G. Gerasimchuk, R. Marushkov, L. Sosnenko, V. Kovalev, O. Volkov, M. Ivanov, Yu. Odegov, K. Andreev, B. Mochalova, L. Revutsky, E. Lapina, B. Bachevsky, O. Reshetnyak, and others are among them. The competitiveness is studied by T. Vyatkina and P. Vyatkin, M. Gelvanovsky, V. Zhukovsky, N. Pedchenko, K. Kuznetsova, R. Fatkhuddinov V. Khomyakov and other. N. Krasnokutskaya, A. Voronkova, A. Kvasko have researches about competitiveness of the potential in particular. Factors of competitiveness is discussed in works of I. Lifits, K. Seleznov, S. Savchuk and others. Such amount of works about competitiveness and competitiveness of potential formed the interest to this topic for forward research.

8.1. An overview of the essence of factors
of the industry potential competitiveness

The competitiveness of the industry's potential is influenced by many factors. That is why it is worth to clarify the essence of "industry potential competitiveness factor". The term "factor" is of Latin origin and is defined by scientists as a significant objective cause of a phenomenon, the influence of which determines the nature and individual features of the object of influence[1].

The Statistical Dictionary, edited by M. Korolev, offers the following definitions of the concept of a factor:

1) the reason which is in a certain logical connection with the investigation;

2) a numerical value (stat. – "indicator"), which is in a certain quantitative relationship with another indicator;

3) in mathematical statistics – the internal evolution of an object, the reason, which is not directly observed but can be quantified[2].

K. Seleznov lists the following properties of the factor:

– first, it can change its quantitative and qualitative characteristics when exposed to a particular phenomenon;

– secondly, the concept of factor includes a force that gives momentum to movement and changes the characteristics of the subject of influence;

– thirdly, the factor is the magnitude that at each instant of time has a point of influence on the object, the quantitative value of the impact and its orientation in space;

– fourth, the factor involved in the process of economic activity is an economic resource (asset), the remuneration of which is the relevant form of factor income;

– fifth, the property of the factor to generate income is not automatically realized but is provided if it is effectively used[3].

Professor I. Lifts in his work defines the factor of competitiveness as the direct cause, the presence of which is necessary and sufficient to change one or more criteria of competitiveness[4].

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[1] Лукинов О.В. Основные факторы конкурентного преимущества строительной организации : сб. науч. тр. Москва : МГСУ, 2003. С. 45–57.

[2] Королев М. А. Статистический словарь. Москва : Финансы и статистика, 1989. 620 с.

[3] Селезньова К.В. Обґрунтування факторів впливу на розвиток експортного потенціалу машинобудівного підприємства. *Вісник Національного технічного університету «ХПІ». Технічний прогрес та ефективність виробництва.* 2013. № 45. С. 102–115.

S. Savchuk proposes to understand the competitiveness factor as the arbitrary property of an economic environment or the economic entity itself, capable of influencing the process and results of the operation of that entity in a competitive environment. Thus, the author explains, competitiveness factors are a subset of the entity's viability factors in a competitive environment[5].

Competition in the industry depends on the nature of the industry, as well as specific factors such as industrial policy, government relations, competition system, ability to analyze competitors.

Identifying the factors of potential competitiveness is a complex and important stage of work, as it is the factors that determine the development of each component of the industry's potential[6].

Our research allowed to identify the main factors of competitiveness classification criteria for potential industry classification.

We have developed a classification of the factors of competitiveness of the industry's potential on various characteristics.

If we allocate all the factors of competitiveness of the industry potential depending on the field of origin, it is possible to distinguish internal and external factors.

Internal factors of industry competitiveness depend on the state of the industry and the enterprises that operate in this industry. Internal factors can be formed at the mezzo and micro levels. External factors do not depend on the characteristics of the industry and are formed at the macro-level[7].

Factors, which are formed at the micro-level, are created at the level of the enterprises of the industry and depend on their organizational, managerial, resource, financial characteristics. The following factors can be internal: organizational and managerial factors; resource factors; production factors; socio-psychological factors; innovation and investment factors; information factors.

Factors of the mezzo level – factors that are created at the industry level and include: market factors; infrastructure factors; investment factors; legislative and legal factors; natural resource factors.

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[4] Лифиц И.М. Формирование и оценка конкурентоспособности товаров и услуг : Учебное пособие для вузов. Юрайт–Издат. 2004. 335 с.

[5] Савчук С.И. Основы теории конкурентоспособности. ИПРЭЭИ НАН Украины. Мариуполь : Рената 2007. 520 с.

[6] Єфремова В.Б. Фактори впливу на конкурентоспроможність. *Волин. ін-т економіки та менеджменту*. URL: http://www.viem.edu.ua/konf6/art.php?id=0467 (дата звернення: 07.11.2019).

[7] Коваленко-Марченкова Є.В. Класифікація факторів конкурентоспроможності потенціалу галузі. *Materials of the XIII International scientific and practical cconference «Science And Civilization – 2017»*. Sheffield. 2017. Volume 2. С. 82–84.

Macro-level factors are external factors that occur outside of enterprises and industries (at the national and global levels). This group of factors includes economic, social, political, legal conditions that arise under the influence of restrictive or stimulating measures by state bodies, banks, investment companies, public groups, political forces, public organizations, etc.

Factors, formed at the macro level, maybe the next:

political and legal factors; economic factors; environmental factors; social factors; external- economic factors.

Given the current pace of change for each factor, the creation of competitive potential is focused on the prospect and providing its flexibility. This result requires a detailed analysis of the factors of influence, taking into account the fact that individual components of the industry's potential do not respond equally to the change of these factors[8].

It is interesting to divide the factors into two groups: factors of influence on the potential formation that determine the possible presence of competitive advantages, that is, contribute to their achievement; factors of influence on the usage of potential, which contributes to maintaining competitive advantages.

The main factors for achieving the competitiveness of the industry's potential include organizational-managerial, innovation-investment and production factors, market; scientific, technological, investment, economic, social and external economic factors[9].

In addition, all the competitiveness factors of an industry's potential by the duration of impact can be classified into permanent (impact of which lasts for a long time) and variables (impact of which changes over time), as well as by nature of influence – factors of direct and indirect influence.

When analyzing the competitiveness factors of an industry's potential, it is important to consider how far their influence can be controlled. From this point of view, the factors of competitiveness of the potential can be uncontrolled, limited-controlled and controlled. Uncontrollable factors cannot be controlled not only at the industry level but also at the state one. Limited controllable factors can be controlled at

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[8] Чумак Л.Ф. Фактори впливу на формування конкурентоспроможного потенціалу підприємств. *Экономика и управление*. 2011. № 1. С. 62–69.

[9] Коваленко-Марченкова Є.В. Класифікація факторів конкурентоспроможності потенціалу галузі. *Materials of the XIII International scientific and practical cconference «Science And Civilization – 2017»*. Sheffield. 2017. Volume 2. С. 82–84.

the state level but are not affected at the industry level. For controlled factors, their impact is fully controlled at the industry level.

Some authors consider factors by their origin (natural and artificial factors), specialization (general and specialized), the intensity of influence (minor, significant and very significant) and its orientation (positive and negative). By importance, all factors of competitiveness of the industry's potential can be divided into primary and secondary ones[10,11,12].

For sure, each factor must be evaluated from the point of view of achievement and maintaining competitiveness, and for this purpose, the basic requirements for these indicators must be selected.

The analysis of the factors, influencing the competitiveness of the potential, provides time for forecasting opportunities, developing measures that will turn threats into any profitable opportunities.

8.2. Methodical aspects of estimation the influence of factors on the competitiveness of the industry's potential

The estimation of factors of the industry's potential competitiveness is a necessary tool for ensuring the competitiveness of the potential of any industry. For estimation of the influence of the factors of competitiveness of the potential of the industry, it is necessary to use specific methodological tools, which allows determining the necessary parameters for ensuring the competitiveness and its quantitative characteristics.

The competitiveness of the industry's potential depends on many factors, the first stage of estimating the influence of which is to identify the factors influencing the competitiveness of the potential of the industry.

The estimation of the influence of factors should begin with the identification of their list. With this aim, methods of scientific knowledge such as analogy, idealization, formalization, and systematization are applied. However, the analogy method does not provide reliable information about the factors of influence. The idealization method

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[10] Селезньова К.В. Обґрунтування факторів впливу на розвиток експортного потенціалу машинобудівного підприємства. *Вісник Національного технічного університету «ХПІ». Технічний прогрес та ефективність виробництва.* 2013. № 45. С. 102–115.

[11] Лифиц И.М. Формирование и оценка конкурентоспособности товаров и услуг : Учебное пособие для вузов. Юрайт–Издат, 2004. 335 с.

[12] Єфремова В.Б. Фактори впливу на конкурентоспроможність. *Волин. ін-т економіки та менеджменту.* URL: http://www.viem.edu.ua/konf6/art.php?id=0467 (дата звернення: 07.11.2019).

cannot be applied because no object would act as the standard. And formalization is related to the usage of mathematical apparatus and it is more appropriate in economic and mathematical modelling. Therefore, it is proposed to use a systematic method to identify the factors influencing the formation and usage of the industry's potential.

As a specific method of research, systematization is a cognitive process of ordering several disparate factors. The ordering is done by establishing the unity and difference of the elements, which have to be systematized, determining the location of each factor relative to each other. The result of systematization is an appropriate system of factors influencing the components of the formation and usage of the industry's potential. The advantage of using the systematization method in our study is the fact that as a result of systematization we can obtain an appropriate system of factors of positive and negative impact on the competitiveness of the potential of the construction industry (Figure 1).

Generalizing scientific views on competitiveness of the potential will help to systematize the factors that may influence the formation and usage of the potential and form a preliminary list on this basis.
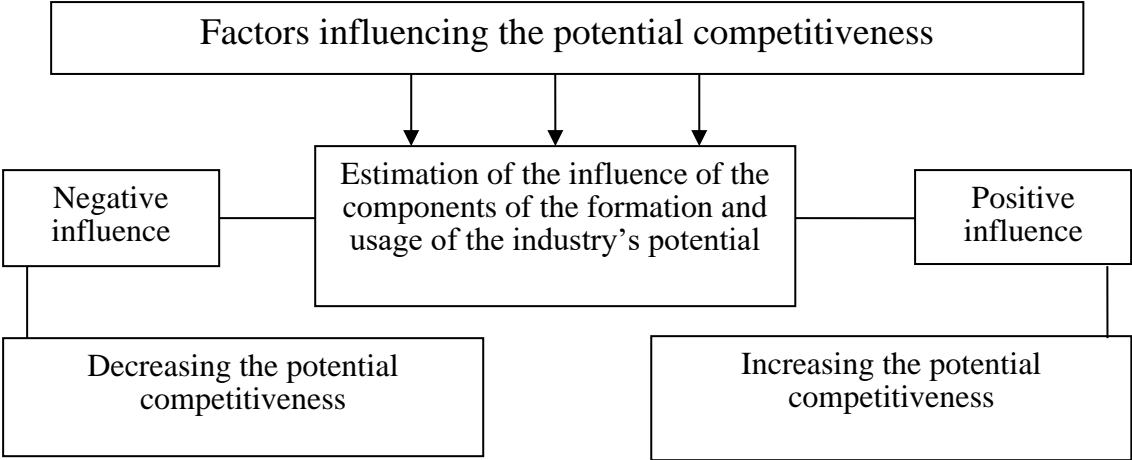
Figure 1. The system of factors influencing the competitiveness of the industry's potential
Source: built by the author

The next stage involves determining the most important factors that influence the formation and usage of the industry's potential, using the method of an expert survey. A list will be given to the experts, who will evaluate the factors and select the factors that influence the formation or usage of the potential of the industry.

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In the next stage, the overall impact of the most significant factors on the formation or usage of the potential of the industry should be estimated based on expert assessments.

This stage should include determining the sensitivity of the industry's potential components to the influence of external factors, estimating the impact of the most significant factors on the formation and usage of industry's potential considering components of the potential and determining the influence of the most relevant factors on the overall potential's formation and usage indicators considering sensitivity.

Objective estimation of the influence of factors on the formation and usage of the potential of the industry requires determining the sensitivity of the establishment of the components that have the greatest influence on the formation and usage of the industry's potential. In our previous research, we defined natural-resource, investment, scientific-technical, intellectual and infrastructural components of the industry's potential[13]. To establish the component that has the greatest influence on the change of the generalized indicator of the industry's potential formation, a factor analysis of the dependence of the change of the generalizing indicator of the formation on the change of the formation indicator for each component of the potential is proposed.

We propose to use the method of chain substitutions, the sequence of which is as follows[14,15]:

Stage 1. The calculation of the actual and basic value of the generalizing indicator of the industry's potential formation in the analysed year is determined using the following formula:

$$IF^{t-1} = \frac{\sum_{i=1}^{I} IF_i^{t-1}}{I} = \frac{1}{I} \cdot (IF_1^{t-1} + IF_2^{t-1} + IF_3^{t-1} + IF_4^{t-1} + IF_5^{t-1}), \quad (1)$$

$$IF^t = \frac{\sum_{i=1}^{I} IF_i^t}{I} = \frac{1}{I} \cdot (IF_1^t + IF_2^t + IF_3^t + IF_4^t + IF_5^t), \quad (2)$$

where IF^t and IF^{t-1} – the basic and actual value of the generalizing indicator of the industry's potential formation;

IF and IF_i^{t-1} – the basic and actual value of the generalizing indicator of the industry's potential formation by the i-th component;

[13] Коваленко-Марченкова Є.В. Складові потенціалу будівельної галузі як основа його конкурентоспроможності. *Причорноморські економічні студії.* 2017. Вип. 15. С. 36–39.

[14] Савицька Г.В. Економічний аналіз діяльності підприємства : Навч. посіб. 3-тє вид., випр. і доп. Київ : Знання, 2007. 668 с.

[15] Бутинець Ф.Ф. Економічний аналіз. Житомир : ПП «Рута», 2003. 680 с.

IF_1^t and IF_1^{t-1} – the basic and actual value of the generalizing indicator of the industry's potential formation by the natural-resource component;

IF_2^t and IF_2^{t-1} – the basic and actual value of the generalizing indicator of the industry's potential formation by the investment component;

IF_3^t and IF_3^{t-1} – the basic and actual value of the generalizing indicator of the industry's potential formation by the scientific and technical component;

IF_4^t and IF_4^{t-1} – the basic and actual value of the generalizing indicator of the industry's potential formation by the intellectual component;

IF_5^t and IF_5^{t-1} – the basic and actual value of the generalizing indicator of the industry's potential formation by the infrastructural component;

$i = \overline{1, I}$ – number of the component of the industry's potential;

$t = \overline{1, T}$ – the number of the year under study.

Stage 2. The calculation of the conditional values of the generalizing indicator of the industry's potential formation in this year is determined using the following formulas:

a) The first conditional value of the generalized indicator of the industry's potential formation in this year, which is calculated on the basis of the actual value of the indicator of the industry's potential formation by natural-resource component and the basic values of the indicators of industry's potential formation by other components:

$$IF_{1conditional}{}^t = \frac{1}{I} \cdot (IF_1^t + IF_2^{t-1} + IF_3^{t-1} + IF_4^{t-1} + IF_5^{t-1}), \quad (3)$$

where $IF_{1conditional}{}^t$ – the first conditional value of generalizing indicator of the industry's potential formation.

b) The second conditional value of the generalizing indicator of the industry's potential formation in this year, which is calculated on the basis of the actual value of the indicator of the industry's potential formation by natural-resource and investment component and the basic values of the indicators of industry's potential formation by other components:

$$IF_{2conditional}{}^t = \frac{1}{I} \cdot (IF_1^t + IF_2^t + IF_3^{t-1} + IF_4^{t-1} + IF_5^{t-1}), \quad (4)$$

where $IF_{2conditional}{}^{t}$ – the second conditional value of generalizing indicator of the industry's potential formation.

c) The third conditional value of the generalizing indicator of the industry's potential formation in this year, which is calculated on the basis of the actual value of the indicator of the industry's potential formation by natural-resource, investment and scientific-technical component and the basic values of the indicators of industry's potential formation by other components:

$$IF_{3conditional}{}^{t} = \frac{1}{I} \cdot (IF_1^t + IF_2^{t-1} + IF_3^{t-1} + IF_4^{t-1} + IF_5^{t-1}), \qquad (5)$$

where $IF_{3conditional}{}^{t}$ – the third conditional value of generalizing indicator of the industry's potential formation.

d) The fourth conditional value of the generalized indicator of the industry's potential formation in this year, which is calculated on the basis of the actual value of the indicator of the industry's potential formation by natural-resource, investment, scientific-technical and intellectual component and the basic values of the indicators of industry's potential formation by infrastructural components:

$$IF_{4conditional}{}^{t} = \frac{1}{I} \cdot (IF_1^t + IF_2^{t-1} + IF_3^{t-1} + IF_4^{t-1} + IF_5^{t-1}), \qquad (6)$$

where $IF_{4conditional}{}^{t}$ – the fourth conditional value of generalizing indicator of the industry's potential formation.

Stage 3. Determination of the change of the generalizing indicator of the industry's potential formation under the influence of the change of indicators by the components:

a) Change of the generalizing indicator of the industry's potential formation under the influence of the change of indicators by the natural-resource component:

$$\Delta IF_1{}^{t} = IF_{1conditional}{}^{t} - IF^{t-1} \qquad (7)$$

b) Change of the generalizing indicator of the industry's potential formation under the influence of the change of indicators by investment component:

$$\Delta IF_2{}^{t} = IF_{2conditional}{}^{t} - IF_{1conditional}{}^{t} \qquad (8)$$

c) Change of the generalizing indicator of the industry's potential formation under the influence of the change of indicators by scientific-technical component:

$$\Delta IF_3{}^{t} = IF_{3conditional}{}^{t} - IF_{2conditional}{}^{t} \qquad (9)$$

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d) Change of the generalizing indicator of the industry's potential formation under the influence of the change of indicators by intellectual component:

$$\Delta IF_4^{\ t} = IF_{4conditional}^{\ t} - IF_{3conditional}^{\ t} \qquad (10)$$

e) Change of the generalizing indicator of the industry's potential formation under the influence of the change of indicators by infrastructural component:

$$\Delta IF_5^{\ t} = IF_{5conditional}^{\ t} - IF_{4conditional}^{\ t} \qquad (11)$$

Stage 4. Determining the overall change and verifying the accuracy of the calculations:

$$\Delta IF^t = IF^t - IF^{t-1} = \Delta IF_1^{\ t} + \Delta IF_2^{\ t} + \Delta IF_3^{\ t} + \Delta IF_4^{\ t} + \Delta IF_5^{\ t} \qquad (12)$$

The calculation of the change of generalizing indicator of formation depending on the change of formation indicators for each component of potential is carried out for a number of years. After the calculations, using the methods of economic analysis, we determine the annual average deviation (absolute and linear) of the generalised indicator of the industry's potential as a whole and due to the influence of each component on its change[16,17,18]:

a) average absolute deviation:

– of a generalizing indicator of the industry's potential formation as a whole:

$$\overline{\Delta IF} = \frac{\sum_{t=2}^{T} \Delta IF^t}{T-1}; \qquad (13)$$

– of a generalizing indicator of the industry's potential formation due to changes in the indicator of formation by the natural-resource component:

$$\overline{\Delta IF_1} = \frac{\sum_{t=2}^{T} \Delta IF_1^{\ t}}{T-1}; \qquad (14)$$

– of a generalizing indicator of the industry's potential formation due to changes in the indicator of formation by the investment component:

[16] Коростенко Т.Д. Економічний аналіз і діагностика стану сучасного підприємства : навчальний посібник. Київ : Центр навчальної літератури, 2005. 400 с.

[17] Мних Є.В. Економічний аналіз діяльності підприємства: підручник. Київ : Київ. нац. торг.-екон. ун-т. 2008. 514 с.

[18] Прокопенко І.Ф. Методика і методологія економічного аналізу : навч. пос. Київ : Центр учбової літератури. 2008. 430 с.

$$\overline{\Delta IF_2} = \frac{\sum_{t=2}^{T} \Delta IF_2{}^t}{T-1};$$ (15)

– of a generalizing indicator of the industry's potential formation due to changes in the indicator of formation by the scientific-technical component:

$$\overline{\Delta IF_3} = \frac{\sum_{t=2}^{T} \Delta IF_3{}^t}{T-1};$$ (16)

– of a generalizing indicator of the industry's potential formation due to changes in the indicator of formation by the intellectual component:

$$\overline{\Delta IF_4} = \frac{\sum_{t=2}^{T} \Delta IF_4{}^t}{T-1};$$ (17)

– of a generalizing indicator of the industry's potential formation due to changes in the indicator of formation by the infrastructural component:

$$\overline{\Delta IF_5} = \frac{\sum_{t=2}^{T} \Delta IF_5{}^t}{T-1};$$ (18)

b) mean linear deviation:
– of a generalizing indicator of the industry's potential formation as a whole:

$$\left|\overline{\Delta IF}\right| = \frac{\sum_{t=2}^{T} \left|\Delta IF^t\right|}{T-1};$$ (19)

– of a generalizing indicator of the industry's potential formation due to changes of the indicator of formation by the natural-resource component:

$$\left|\overline{\Delta IF_1}\right| = \frac{\sum_{t=2}^{T} \left|\Delta IF_1{}^t\right|}{T-1};$$ (20)

– of a generalizing indicator of the industry's potential formation due to changes of the indicator of formation by the investment component:

$$\left|\overline{\Delta IF_2}\right| = \frac{\sum_{t=2}^{T} \left|\Delta IF_2{}^t\right|}{T-1};$$ (21)

– of a generalizing indicator of the industry's potential formation due to changes of the indicator of formation by the scientific-technical component:

$$\left|\overline{\Delta IF_3}\right| = \frac{\sum_{t=2}^{T} \left|\Delta IF_3{}^t\right|}{T-1};$$ (22)

– of a generalizing indicator of the industry's potential formation due to changes of the indicator of formation by the intellectual component:

$$\left|\overline{\Delta IF_4}\right| = \frac{\sum_{t=2}^{T}\left|\Delta IF_4{}^t\right|}{T-1};$$ (23)

– of a generalizing indicator of the industry's potential formation due to changes of the indicator of formation by the infrastructural component:

$$\left|\overline{\Delta IF_5}\right| = \frac{\sum_{t=2}^{T}\left|\Delta IF_5{}^t\right|}{T-1};$$ (24)

To establish the component that has the greatest influence on the change of the generalizing indicator of the industry's potential usage, a factor analysis of the dependence of the change of the generalization indicator of the usage on the change of the usage indicator for each component of the potential is proposed.

We propose to use the method of chain substitutions:

Stage 1. The calculation of the actual and basic value of the generalizing indicator of the industry's potential usage in the analysed year is determined using the following formula:

$$IU^{t-1} = \frac{\sum_{i=1}^{I} IU_i^{t-1}}{I} = \frac{1}{I} \cdot (IU_1^{t-1} + IU_2^{t-1} + IU_3^{t-1} + IU_4^{t-1} + IU_5^{t-1}),$$ (25)

$$IU^{t} = \frac{\sum_{i=1}^{I} IU_i^{t}}{I} = \frac{1}{I} \cdot (IU_1^{t} + IU_2^{t} + IU_3^{t} + IU_4^{t} + IU_5^{t}),$$ (26)

where IU^t and IU^{t-1} – the basic and actual value of the generalizing indicator of the industry's potential usage;

IU and IU_i^{t-1} – the basic and actual value of the generalizing indicator of the industry's potential usage by the i-th component;

IU_1^t and IU_1^{t-1} – the basic and actual value of the generalizing indicator of the industry's potential usage by the natural-resource component;

IU_2^t and IU_2^{t-1} – the basic and actual value of the generalizing indicator of the industry's potential usage by the investment component;

IU_3^t and IU_3^{t-1} – the basic and actual value of the generalizing indicator of the industry's potential usage by the scientific and technical component;

IU_4^t and IU_4^{t-1} – the basic and actual value of the generalizing indicator of the industry's potential usage by the intellectual component;

IU_5^t and IU_5^{t-1} – the basic and actual value of the generalizing indicator of the industry's potential usage by the infrastructural component;

$i = \overline{1, I}$ - number of the component of the industry's potential;

$t = \overline{1, T}$ – the number of the year under study.

Stage 2. The calculation of the conditional values of the generalizing indicator of the industry's potential usage in this year is determined using the following formulas:

a) The first conditional value of the generalizing indicator of the industry's potential usage in this year, which is calculated on the basis of the actual value of the indicator of the industry's potential usage by natural-resource component and the basic values of the indicators of industry's potential usage by other components:

$$IU_{1conditional}{}^t = \frac{1}{I} \cdot (IU_1^t + IU_2^{t-1} + IU_3^{t-1} + IU_4^{t-1} + IU_5^{t-1}), \qquad (27)$$

where $IU_{1conditional}{}^t$ – the first conditional value of generalizing indicator of the industry's potential usage

b) The second conditional value of the generalizing indicator of the industry's potential usage in this year, which is calculated on the basis of the actual value of the indicator of the industry's potential usage by natural-resource and investment component and the basic values of the indicators of industry's potential usage by other components:

$$IU_{2conditional}{}^t = \frac{1}{I} \cdot (IU_1^t + IU_2^{t-1} + IU_3^{t-1} + IU_4^{t-1} + IU_5^{t-1}), \quad (28)$$

where $IU_{2conditional}{}^t$ – the second conditional value of generalizing indicator of the industry's potential formation.

c) The third conditional value of the generalizing indicator of the industry's potential formation in this year, which is calculated on the basis of the actual value of the indicator of the industry's potential formation by natural-resource, investment and scientific-technical component and the basic values of the indicators of industry's potential formation by other components:

$$IU_{3conditional}{}^t = \frac{1}{I} \cdot (IU_1^t + IU_2^{t-1} + IU_3^{t-1} + IU_4^{t-1} + IU_5^{t-1}), \quad (29)$$

where $IU_{3conditional}{}^t$ – the third conditional value of generalizing indicator of the industry's potential formation.

d) The fourth conditional value of the generalizing indicator of the industry's potential formation in this year, which is calculated on the basis of the actual value of the indicator of the industry's potential formation by natural-resource, investment, scientific-technical and intellectual component and the basic values of the indicators of industry's potential formation by infrastructural components:

$$IU_{4conditional}{}^{t} = \frac{1}{l} \cdot (IU_1^t + IU_2^{t-1} + IU_3^{t-1} + IU_4^{t-1} + IU_5^{t-1}), \quad (30)$$

where $IU_{4conditional}{}^{t}$ – the fourth conditional value of generalizing indicator of the industry's potential formation.

Stage 3. Determination of the change of the generalizing indicator of the industry's potential usage under the influence of the change of indicators by the components:

a) Change of the generalized generalizing indicator of the industry's potential usage under the influence of the change of indicators by the natural- resource component:

$$\Delta IU_1{}^{t} = IU_{1conditional}{}^{t} - IU^{t-1} \quad (31)$$

b) Change of the generalizing indicator of the industry's potential usage under the influence of the change of indicators by investment component:

$$\Delta IU_2{}^{t} = IU_{2conditional}{}^{t} - IU_{1conditional}{}^{t} \quad (32)$$

c) Change of the generalizing indicator of the industry's potential usage under the influence of the change of indicators by scientific-technical component:

$$\Delta IU_3{}^{t} = IU_{3conditional}{}^{t} - IU_{2conditional}{}^{t} \quad (33)$$

d) Change of the generalizing indicator of the industry's potential usage under the influence of the change of indicators by intellectual component:

$$\Delta IU_4{}^{t} = IU_{4conditional}{}^{t} - IU_{3conditional}{}^{t} \quad (34)$$

e) Change of the generalizing indicator of the industry's potential usage under the influence of the change of indicators by infrastructural component:

$$\Delta IU_5{}^{t} = IU_{5conditional}{}^{t} - IU_{4conditional}{}^{t} \quad (35)$$

Stage 4. Determining the overall change and verifying the accuracy of the calculations:

$$\Delta IU^t = IU^t - IU^{t-1} = \Delta U^t + \Delta IU_2{}^t + \Delta IU_3{}^t + \Delta U^t + \Delta IU_5{}^t \quad (36)$$

The calculation of the change of generalizing indicator of usage depending on the change of formation indicators for each component of potential is carried out for a number of years. After the calculations, using the methods of economic analysis, we determine the annual average deviation of the generalizing indicator of the industry's potential as a whole and due to the influence of each component on its change[19,20,21]:

a) average absolute deviation:

– of a generalizing indicator of the industry's potential usage as a whole:

$$\overline{\Delta IU} = \frac{\sum_{t=2}^{T} \Delta IU^t}{T-1}; \quad (37)$$

– of a generalizing indicator of the industry's potential usage due to changes of the indicator of formation by the natural-resource component:

$$\overline{\Delta IU_1} = \frac{\sum_{t=2}^{T} \Delta IU_1{}^t}{T-1}; \quad (38)$$

– of a generalizing indicator of the industry's potential formation due to changes of the indicator of formation by the investment component:

$$\overline{\Delta IU_2} = \frac{\sum_{t=2}^{T} \Delta IU_2{}^t}{T-1}; \quad (39)$$

– of a generalizing indicator of the industry's potential formation due to changes of the indicator of formation by the scientific-technical component:

$$\overline{\Delta IU_3} = \frac{\sum_{t=2}^{T} \Delta IU_3{}^t}{T-1}; \quad (40)$$

[19] Коростенко Т.Д. Економічний аналіз і діагностика стану сучасного підприємства : навчальний посібник. Київ : Центр навчальної літератури, 2005. 400 с.

[20] Мних Є.В. Економічний аналіз діяльності підприємства: підручник. Київ : Київ. нац. торг.-екон. нн-т, 2008. 514 с.

[21] Прокопенко І.Ф. Методика і методологія економічного аналізу : навч. пос. Київ : Центр учбової літератури, 2008. 430 с.

– of a generalizing indicator of the industry's potential formation due to changes of the indicator of formation by the intellectual component:

$$\overline{\Delta IU_4} = \frac{\sum_{t=2}^{T} \Delta IU_4{}^t}{T-1}; \qquad (41)$$

– of a generalizing indicator of the industry's potential formation due to changes of the indicator of formation by the infrastructural component:

$$\overline{\Delta IU_5} = \frac{\sum_{t=2}^{T} \Delta IU_5{}^t}{T-1}; \qquad (42)$$

b) mean linear deviation:
– of a generalizing indicator of the industry's potential usage as a whole:

$$\left|\overline{\Delta IU}\right| = \frac{\sum_{t=2}^{T} \left|\Delta IU^t\right|}{T-1}; \qquad (43)$$

– of a generalizing indicator of the industry's potential formation due to changes in the indicator of usage by the natural-resource component:

$$\left|\overline{\Delta IU_1}\right| = \frac{\sum_{t=2}^{T} \left|\Delta IU_1{}^t\right|}{T-1}; \qquad (44)$$

– of a generalizing indicator of the industry's potential formation due to changes in the indicator of usage by the investment component:

$$\left|\overline{\Delta IU_2}\right| = \frac{\sum_{t=2}^{T} \left|\Delta IU_2{}^t\right|}{T-1}; \qquad (45)$$

– of a generalizing indicator of the industry's potential formation due to changes in the indicator of usage by the scientific-technical component:

$$\left|\overline{\Delta IU_3}\right| = \frac{\sum_{t=2}^{T} \left|\Delta IU_3{}^t\right|}{T-1}; \qquad (46)$$

– of a generalizing indicator of the industry's potential formation due to changes in the indicator of usage by the intellectual component:

$$\left|\overline{\Delta IU_4}\right| = \frac{\sum_{t=2}^{T} \left|\Delta IU_4{}^t\right|}{T-1}; \qquad (47)$$

– of a generalizing indicator of the industry's potential formation due to changes in the indicator of usage by the infrastructural component:

$$\left|\overline{\Delta IU_5}\right| = \frac{\sum_{t=2}^{T}\left|\Delta IU_5^{\ t}\right|}{T-1};$$ (48)

CONCLUSIONS

Summarizing the information above we can conclude that competitiveness of the industry potential is formed under the influence of different factors of micro-, mezzo- and macro-levels of economy. The classification of the competitiveness factors of the industry's potential on various characteristics is developed. Factors of industry's potential competitiveness have to be evaluated from the point of view of achievement and maintaining the competitiveness. The analysis of the factors is needed for forecasting opportunities, developing measures that will turn threats into any profitable opportunities. The methodological approach to estimating the influence of factors on the industry potential competitiveness using the methods of factor analysis is developed.

A methodological approach to the estimation of the competitiveness of the potential of the industry considering factors and components of the potential is proposed. The main purpose of estimating the competitiveness of the industry's potential is to identify the level of competitiveness considering the degree of its formation and efficiency of usage, which can be the basis for modeling the competitive strategy of the industry.

Indicator methods for estimating the competitiveness of the potential of the industry make it possible to evaluate integrally the competitiveness of the potential by its components, which allows to consider the complex nature of the potential competitiveness concept.

SUMMARY

The research is devoted to studying the competitiveness of industry potential, which is formed under the influence of micro-, mezzo-, macro-level factors. The essence, particularly, of the factors of potential competitiveness is explored. It is considered as the reason, the presence of which is necessary and sufficient to change one or more criteria of competitiveness. The classification of the factors of competitiveness of the industry's potential on various characteristics is represented. The system of factors influencing the competitiveness of the industry's potential is given. For estimation the competitiveness of the industry

potential, including the influence of competitiveness factors on the potential formation and usage considering components of the potential, the methodological approach is developed.

REFERENCES:
1. Бутинець Ф.Ф. Економічний аналіз. Житомир : ПП «Рута». 2003. 680 с.
2. Єфремова В.Б. Фактори впливу на конкурентоспроможність. *Волин. ін-т економіки та менеджменту.* URL: http://www.viem.edu.ua/konf6/art.php?id=0467 (дата звернення: 7.11.2019).
3. Коваленко-Марченкова Є.В. Класифікація факторів конкурентоспроможності потенціалу галузі. *Materials of the XIII International scientific and practical cconference «Science And Civilization – 2017».* Sheffield. 2017. Volume 2. С. 82–84.
4. Коваленко-Марченкова Є.В. Складові потенціалу будівельної галузі як основа його конкурентоспроможності. *Причорноморські економічні студії.* 2017. Вип. 15. С. 36–39.
5. Королев М.А. Статистический словарь. Москва : Финансы и статистика, 1989. 620 с.
6. Коростенко Т.Д. Економічний аналіз і діагностика стану сучасного підприємства : навчальний посібник. Київ : Центр навчальної літератури, 2005. 400 с.
7. Лифиц И.М. Формирование и оценка конкуренто-способности товаров и услуг : Учебное пособие для вузов. Юрайт-Издат, 2004. 335 с.
8. Лукинов О.В. Основные факторы конкурентного преи-мущества строительной организации : сб. науч. тр. Москва : МГСУ. 2003. С. 45–57.
9. Мних Є.В. Економічний аналіз діяльності підприємства : підручник. Київ : Київ. нац. торг.-екон. ун-т, 2008. 514 с.
10. Прокопенко І.Ф. Методика і методологія економічного аналізу : навч. пос. Київ : Центр учбової літератури, 2008. 430 с.
11. Савицька Г.В. Економічний аналіз діяльності підприємства : навч. посіб. 3-тє вид., випр. і доп. Київ : Знання, 2007. 668 с.
12. Савчук С.И. Основы теории конкурентоспособности. ИПРЭЭИ НАН Украины. Мариуполь : Рената, 2007. 520 с.
13. Селезньова К.В. Обґрунтування факторів впливу на розвиток експортного потенціалу машинобудівного підприємства.

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14. Чумак Л.Ф. Фактори впливу на формування конкуренто-спроможного потенціалу підприємств. *Экономика и управление.* 2011. № 1. С. 62–69.

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CHAPTER 9
WAYS OF COMPANIES' FFICIENCY INCREASING IN THE CONTEXT OF ITS MARKET VALUE

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INTRODUCTION

The main task of the companies at the present stage is to produce high quality, competitive goods and products that will be in demand among consumers. Thus, the final financial purpose of the organization is to obtain the highest possible level of profit through the sale of products (services, works). The performance of a firm is measured by a number of indicators, the main of which is profitability, which is defined as the ratio of profit to cost and allows to determine the economic efficiency of the firm. In the modern conditions of market relations development efficiency of enterprises' activity is connected with rational formation and distribution of financial resources with the purpose of maximization financial results that has positive influence on market value of firm. On the problem of market value of firm is examined by scientists and economists. Theoretical and practical aspects of market value is highlighted in scientific works of modern scientists such as A. Sheremet, R. Kostyrko, V. Koval'ov, M. Miller, A. Damadaran, M. Fedotova, A. Gryaznova. The purpose of the article is to research the essence of profit and profitability as economic categories, to determine their role in the company's financial activity.

9.1. The essence of profit and profitability

In modern literature the term "effectiveness" is very popular. In general effectiveness is the capability of producing a desired result or the ability to produce desired output. So it is determined as ratio of the result (effect) to expenses or resources.

General productivity is a much wider term than labor productivity and production profitability. The main feature of effectiveness can be necessity of achieving the aim of the company with minimum expenses of social work and labor.

There is a difference between economic effect and economic efficiency.

The economic effect is an indicator that characterizes the result of activity in absolute terms. Depending on the level of management, sectoral affiliation of the object and other parameters, indicators of gross national product, national income, gross production, profit, gross income from the sale of goods are used as effect indicators.

Cost-effectiveness reveals a link between operating costs and their outcome. Cost-effectiveness means the relationship between the economic effect and the costs or financial resources used to achieve it.

Depending on what is taken as an effect of the company's functioning – the volume of production (sale) of products or the financial result – there is a difference between the indicators of production efficiency and financial efficiency. In terms of the planned system of economy, priority was given to the indicators of production efficiency (labor productivity, fixed assets, material output). With the transition to a market economy, the interpretation of performance criteria and their content changes. Since the main purpose of business activity in terms of market relations is profit, it is the most important absolute criterion for the efficiency of the enterprise.

However, it is not possible to make a valid conclusion about the efficiency level. The size of the profit, as a rule, does not allow to estimate the scale of the company. Therefore, the degree of relative weight of this amount will not be the same for enterprises with a significant difference in turnover. Therefore, it is impossible to estimate the level of efficiency of the enterprise without the ratio of the resources being advanced or consumed by the profit indicator.

In the most general form, to evaluate the effectiveness of an enterprise is possible by the relative indicators of profitability or by the ratio of growth rates of the main indicators: total assets (TA), total operational sales (Top) and profit (TP)[1].

100% <Ta <Top <Tp. The first inequality (100% <Ta) shows that the enterprise is increasing its economic potential and scale of activity. The second inequality (Ta <Top) indicates that sales are growing faster than economic potential. Based on this, we can conclude that the use of financial resources at the enterprise is increasing.

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[1] Палійчук Є.С. Ефективні методи підвищення прибутковості виробничого підприємства на сучасному етапі. *Ефективна економіка.* 2017. № 12. URL доступу: http://www.economy.nayka.com.ua/ ?op=1&z=5964

The third inequality (Top<Tp) means that the profit of the enterprise increases faster than the volume of sales of products and total capital, which indicates an increase in the level of profitability of sales.

These ratios are commonly called the "a golden rule of enterprise economics." If these proportions are observed, this indicates the sustainable development of the enterprise and strengthening its financial and economic condition.

The main tasks of the analysis of the effectiveness of the enterprise:

– determining the influence of objective and subjective factors on the effectiveness of the enterprise;

– study of the composition and structure of profit in dynamics;

– estimation of absolute and relative indicators of formation of profit from different types of activity;

– identification of factors that influence the amount of profit and quantitative measurement of their impact on the performance indicator;

– assessment of the efficiency of distribution of net profit of the enterprise;

– identifying reserves for increasing the amount of profit and profitability;

– evaluation of the enterprise's work on the use of opportunities to increase profits and profitability;

– development of measures for the use of identified reserves.

When analyzing the performance of an enterprise, it is necessary to consider the interests of users of analytical information, which can be divided into four groups:

The first group – investors and lenders – that is individuals and legal entities that provide money to a business organization on a long-term basis and receive their share in the form of interest on loans. The main absolute indicator that characterizes the performance of a business organization from the standpoint of this group of persons is profit before deduction of interest and taxes.

The second group is the state bodies that control and ensure the proper functioning of the enterprise. Each such organization handles certain social and economic tasks that are important to the state: for example, the creation of additional jobs. The economic interest of the state: getting some income through the tax system.

The third group is the business owners. From the standpoint of the moment, the end result is important to them, that is, the profit before

distribution, and from the long-term perspective, the amount of reinvested profit.

The fourth group includes workers of the enterprise and its counterparties (suppliers, creditors).

Production process is fulfilled by interaction of three crucial factors: staff (work force), labor and object of labor. Using means of production, staff produces useful goods or provides services. This means that, on the one hand there are labor costs, and on the other the results of production (activity) depending on scale of means of production, staff potential and level of its usage which is important for business management.

Nowadays effectiveness of a company's activity relates to effective business processes execution.

There is no single accepted definition of the term "business process". But it can be considered that it is some limited complex of actions characterized with such terms as "entrance", "process", "exit", "management", "supplier of the process", "client of the process".

Business process is a complex of operations, certain number of internal kinds of activity that start with one or more exits and finish with creation of a product, necessary for the client. At the same time the client must not always be external consumer. It can be organizational department or a certain employee[2].

There are three types of business-processes:

– managing: business-processes which manage functioning of a system;

– operating: business-processes which provide the main business of a company and make the basic income stream;

– supporting: business processes which serve the basic business.

The purpose of every business process is to offer the product that satisfies the client by price, durability, service and quality. Product is considered as a result of business that has material and intangible value for the certain consumer.

Business processes management demands their constant improvement and optimization. There are two conceptual approaches to business processes improvement: gradual and cardinal approach. Gradual approach developed by Deming is fulfilled within existing organizational structure of the company and demands no or little

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[2] Гетьман О.О., Шаповал В.М. Економіка підприємства : Навч. посіб. [2-ге вид.]. Київ : Центр уч. літератури, 2013.

investment. Cardinal approach developed by Michael Hammer and James Champy leads to crucial process changes and fundamental changes in organizational structure of the company.

In the bases of cost approach of business management is understanding that the main task for shareholders (owner of the capital) is increasing their financial welfare as a result of effective exploitation.

Main stages of cost management system:

– determination of starting point – assessment of the company's market value;

– determination of factors of the company's cost;

– development of the system of operational and strategic managerial decisions estimation;

– analysis of departments' contribution to the company's costs;

– periodical assessment.

Researches show that business market value is considerably connected with assessment of cash flow dynamics. This means that cost approach to competitiveness management admits concentration of management not on the current changes of the amount of profit, but on long-term cash flow. In this case the company constantly increasing business value will always be able to avoid capital outflow to competitors.

An enterprise is a structure-forming element of the modern market economy. The material basis of the enterprise is the capital as sum of money invested in means of production and objects of labor enable to bring income to its owner[3]. Only being in constant movement and recovery, capital can bring some income to its owner. In the process of capital circulation, it changes (increases or decreases). The difference between increased and initial capital is changing in company's cost. Based on economic theory one can claim that the main purpose of the company's activity is increasing its value or business capitalization. Company's cost can both increase and decrease as a result of inefficient of financial and economic activity during the reporting period.

Relevance of company's value management increases due to rival's struggle strengthening of organizations for investors' capital and shareholders. Besides, the necessity of the company's value management is dictated by modern demands to business organization nominated to the company's top-managers. In this context the special attention is paid

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[3] Olsen E. Economic Value Added. / Perspectives. The Boston Consulting Group, Inc. 1996.

to the concept named VMB (Value Based Management) in the frame of the new managerial paradigm.

VBM permits financial managers to pan, monitor and manage the company's activity, providing increasing of shareholder's value. VBM-approach appeared in the process of financial management development.

Using financial indices for the assessment of the value of the company's capital has started since the twenties of the 20th century. At this period Dupont model was successfully used which is now used for assessment of the company's capital value[4].

In the 70-80th years of the twentieth century the following financial indices became widely used: Earnings per share (EPS); Return on equity (ROE); Return on assets (ROA); Return on net assets (RONA) and cash flow (CF).

EPS is calculated as a company's profit divided by the outstanding shares of its common stock. ROE s a measure of financial performance calculated by dividing net income by shareholders' equity. ROA is an indicator of how profitable a company according to its total assets. ROA gives a manager, an investor, or an analyst an idea as to how efficient a company's management is at using its assets to generate earnings.

RONA is a measure of financial performance calculated as net profit divided by the sum of fixed assets and net working capital.

And only at the beginning of the 90th yearsVBM-approach was used including the following main indices of the company's value assessment: Economic Value Added (EVA); Market Value Added (MVA); Shareholder Value Added (SVA); Credit valuation adjustment (CVA); Cash-flow return on investment (CFROI).

EVA s a measure of a company's financial performance based on the residual wealth calculated by deducting its cost of capital from its operating profit, adjusted for taxes on a cash basis[5]. MVA is a calculation that shows the difference between the market value of a company and the capital contributed by all investors, both bondholders and shareholders. In other words, it is the sum of all capital claims held against the company plus the market value of debt and equity.

SVA is a performance metric that results from subtracting a corporation's cost of capital from its net operating profit after tax. CVA is the difference between the risk-free portfolio value and the

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[4] Руда Р.В. Аналіз ефективної діяльності підприємства: необхідність та методика. *Вісник Бердянського університету менеджменту і бізнесу*. 2012. № 4 (20). С. 55–62.

[5] Olsen E. Economic Value Added. // Perspectives. The Boston Consulting Group, Inc. 1996.

true portfolio value that takes into account the possibility of a counterparty's default. CFROI is a valuation metric that acts as a proxy for a company's economic return.

Alternative indices of the company's activity efficiency are those that consider investment capital value (EVA, SVA, CFROI, CVA, MVA, etc.). the most frequently used among them are Economic Value Added (EVA) and Cash Value Added (CVA).

In the core of VBM-approach is management based on integrational financial index – company's value. VBM-approach is based on combination of traditional Dupont models and discounted cash flow (DFC). The methods mostly differ with the approach to expenses calculation, the result received in absolute or per centage value. The idea of Dupont's presented of the resulted financial index, for instance Return on assets (ROA) as a tree of interconnected parameters being managed and controlled is taken that determine cash flow[6].

Companies create value for their shareholders if the sum of money for new investment to generate will increase the volume of the investment itself[7].

This is concerned by theories of capitalization of income method of valuation, discounted cash flows model – DFC model, residual income. Based on discounted cash flows model (DFC model), the value created by the company, is the difference between present value its future cash flows and capital invested. The main problem of using such indices of the company's effectiveness as ROA, ROE, RONA, EPS is that they firstly do not consider capital value as a source of the company's financing and secondly, they are indices that demonstrate the company's short-term result.

The strategy of enterprise's development in modern conditions should be based on the requirements and capabilities of the capital management system and implemented through exercising of certain functions (financial, production, reproduction, cumulative, investment and value) and based on certain principles.

In the financial crisis conditions, every managerial decision must be made in terms of its impact on the value of the enterprise. Value-added methods used to manage the companies' value within the concept of

[6] Кучерява А.С. Прибутковість підприємства та шляхи її підвищення. *Проблеми підвищення ефективності інфраструктури*. 2015. № 40. С. 38–44.

[7] Аналіз прибутковості діяльності сучасного підприємства. *Культура народов Причерноморья*. 2012. № 225. С. 79–83.

value-based management (VBM approach) consider payment of both borrowed and equity capital, the state of the external environment. They are as well focused on the dynamics and forecasting of the company's value, which enables to resolve the conflict of interests between the shareholders and managers and evaluate the efficiency of the company's capital usage.

The problem of increasing the production efficiency is to provide the maximum possible result for each unit of labor, material, financial and other resources spent. Thus, the criteria of the production effectiveness in macroeconomic scale is increasing of public labor productiveness. The quantitative expression of this criterion is reflected through the system of production efficiency indicators based on the following groups of indicators:

1) general indices of production economic efficiency (satisfaction level of the market needs, production of products per unit of resources cost, costs per unit of commodity output, profit per unit of total costs, production profitability, national economic effect from the use of a unit of production);

2) efficiency indicators of live labor usage (labor input of the product unit, relative release of workers, growth rates of labor productivity, share of product growth due to labor productivity growth, labor time efficiency ratio, saving of wage fund, production on 1 UAH of wage fund);

3) indicators of the fixed assets efficiency usage (fixed assets return, capital intensity of products, profitability of fixed assets, asset return of the active part of fixed assets);

4) indicators of material resources usage efficiency (material consumption of products, material output, coefficient of usage of the most important types of raw materials and materials, fuel and energy consumption per 1 UAH of net production, saving of material costs, coefficient of extraction of useful components from raw materials);

5) indicators of financial resources usage efficiency (ratio of turnover of working capital, duration of one turnover of normalized working capital, relative release of working capital, specific investment, capital investment per unit of facilities, return on investment, payback period of investments);

6) indicators of the product quality (the economic effect of improving the products quality, the share of products that meets the best world and domestic samples, etc.).

9.2. The main ways of increasing the company's effectiveness

Reserves for increasing the production economic efficiency mean unused opportunities to increase output per unit of aggregate costs due to a more rational use of all types of the company's resources.

The main factors of improving production efficiency are improving its technical level, improving management, organization of production and labor, changing the volume and structure of production, improving the quality of natural resources and others.

Economic effectiveness of the company's activity relates to its social effectiveness, because the results of the company's performance are the basis for solving certain social problems.

Social effectiveness should be considered both at the level of each company (local е effectiveness) and at the national or municipal levels. Determining the level of social effectiveness should include both quantifiable and non-quantifiable measures[8].

In general, all the measures of increasing companies' efficiency can be combined in three areas:

1) costs and resources management;

2) development and improvement of production and other activities;

3) improvement of the company's management system and all its activities[9].

The essence of the problem of increasing the production (activity) efficiency is to achieve the maximum possible increase in production (income, profit) for each unit of resources (costs). On this basis, the only macroeconomic criterion of the production (activity) efficiency is productivity of social (live and materialized) labor increasing.

Quantitative determination and contents of criterion are reflected in the certain indices of the company's production and other activity effectiveness.

Forming the system of effectiveness indicators for business entities, it is necessary to adhere to certain principles, among them are:

− ensuring the organic interrelation between the criteria and the system of specific performance indicators;

− displaying the efficiency of all types of resources usage;

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[8] Черниш С.С. Організаційно-методичні аспекти аналізу рентабельності. *Інноваційна економіка*. 2013. № 6. С. 305–309.

[9] Терещенко О.О., Стецько М.В. Управління вартістю підприємства в системі фінансового менеджменту. *Фінанси України*. 2007. № 3. С. 91–99.

– the ability to apply efficiency indicators to the management of different units of production at the enterprise (activity in the organization);

– performance of a stimulating function by the leading indicators in the process of using existing reserves of production (activity) growth efficiency[10].

The main result of the company's activity is determined by several indicators, which are divided into absolute and relative. The absolute indicators include the profit of the enterprise, and relative – the company's profitability. Table 1 shows formation of the net profit (loss) of Ukrainian construction companies for the period of 2014-2018[11].

Table 1

**Formation of net profit (loss)
of Ukrainian construction companies, million UAH**

Indices	2014	2015	2016	2017	2018
Net income of sales	149823,4	141716,8	169104,4	222483,3	301905,0
Other operational incomes	9602,2	15021,3	13863,0	16419,7	14672,4
Other incomes	19666,9	20458,7	16291,0	12453,7	21124,4
Operational costs	150668,1	169240,2	183301,8	230712,1	306166,4
Other costs	55713,0	33030,8	25299,6	24180,4	25101,5
Cost of sales	113253,7	126832,3	148819,6	197652,3	268841,8
Net profit (loss)	-27948,8	-25861,9	-10553,0	-5014,3	4414,1

Net income of construction products sales has been increased since 2015. Construction companies had a loss during 2014-2017. However, the loss was being reduced and in the year 2018 Ukrainian construction companies received net profit of UAH 4414.1 million. As a result, the level of profitability of operating activities became positive only in 2017 which is shown in table 2[12].

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[10] Горлачук В.В., Яненкова І.Г. Економіка підприємства. Навчальний посібник. Миколаїв : Вид-во ЧДУ ім. Петра Могили, 2010. 344 с.

[11] Офіційний сайт Державного комітету статистики України. Оперативна статистична інформація. URL: http://www.ukrstat.gov.ua/

[12] Офіційний сайт Державного комітету статистики України. Оперативна статистична інформація. URL: http://www.ukrstat.gov.ua/

Table 2

**Profitability of Ukrainian construction companies'
operational activity**

Years	Level of profitability (unprofitability), %
2008	-2,7
2009	-0,9
2010	-1,5
2011	0,2
2012	-0,1
2013	0,0
2014	5,8
2015	-7,6
2016	-0,4
2017	1,6
2018	1,3
2019 (January- June)	2,2

Profitability level of all the business entities depends on their profit, commercial product, production expenses, fixed assets and working capital. Important factors providing increasing of profit and profitability are increasing of labor productivity, saving of material resources, increasing the returns on assets and level of technical progress, in particular: mechanization and automatization of labor-consuming technical processes, improvement of production organization, etc.

Consideration of these factors will contribute increasing of its activity efficiency[13].

The process of measuring the expected or achieved level of the company's activity is methodologically linked to the determination of the appropriate criterion and the formation of an appropriate system of indicators.

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[13] Гетьман О.О. Економіка підприємства : Навч. посіб. [2-ге вид.]. Київ : Центр уч. літератури, 2013. 488 с.

9.3. The main internal and external factors of increasing the company's activity

Possible directions of realization of internal and external factors of the company's efficiency increasing are different in terms of influence, degree of use and control. Therefore, detailed information about the scale, forms of control and the most significant internal and external factors of efficiency on different levels of staff management is important for managers and certain specialists. Businesses must constantly monitor the process of internal factors usage through development and consistent implementation of their own performance improvement program and take into account the impact of external factors.

It is necessary to specify the directions of action and using the main internal and external factors to improve the efficiency of business entities, among which are the following:

1) Technology. Technological innovations, especially modern forms of automation and information technology, make the most significant influence on the level and dynamics of production efficiency (provision of services). They cause significant changes in the technical level and productivity of technological equipment, etc.

2) Equipment. Equipment has the leading role in the program of effectiveness increasing primarily for the production and other business entities' activities. The performance of the operating equipment depends not only on its technical level, but also on the proper organization of its maintenance, optimal terms of operation, changeability of work, loading in time, etc.;

3) Material resources. Materials and energy have a positive effect on the level of activity efficiency, if the problems of resource saving, reduction of material consumption and energy intensity of products (services) are solved. In this case the management of inventory of material resources and sources of supply is rationalized;

4) Finished goods (products). The products themselves, their quality and design are also important factors in the effectiveness of business entities. The level of the latter must correlate with the useful value, that is, the price that the buyer is ready to pay for a product of appropriate quality. However, in order to achieve high level of effectiveness it is not enough to provide useful goods companies should provide on the market in the necessary place, time and competitive price. Thus, the company should avoid any organizational or economic obstacles between the production and some stages of marketing research;

5) Employees. The main source and determinant factor of efficiency growth are employees – directors, managers, specialists, workers. Business qualities of employees, increase productivity of their work that in many respects are caused by the effective motivational mechanism, maintenance of the company's favorable microclimate;

6) Organization and systems. Unity of the staff, rational delegation of responsibility, effective management characterize the proper organization of the company's activity, which provides necessary specialization and coordination of management processes, and, consequently, a higher level of efficiency (productivity) of any complex production and economic system that should be flexible and change according to the new tasks of market condition;

7) Methods of work. With more labor-intensive processes, more sophisticated methods of work ensure the company's activity efficiency. Constant improvement of the working methods involves systematic analysis of the working places and their certification, increasing qualification of the staff, generalization and using of positive experience accumulated at other enterprises;

8) Management style. Management style combines professional competence, business ethics of relationships among people and influences all directions of the company's activity. Therefore, the proper management style as an important element of modern management is a crucial factor of each company's and structure's effectiveness increasing;

9) State economic and social policy. State economic and social policy significantly influences the efficiency of public production. Its main elements are: practical activity of power structures; various types of legislation; financial instruments; economic rules and regulations (regulation of income and wages, price control, licensing of certain activities); market, industrial and social infrastructure; macroeconomic structural changes; privatization programs of state-owned enterprises; commercializing of organizational structures of nonproductive sphere;

10) Institutional mechanisms. In order to continuously improve the effectiveness of all economic entities' activity, the state must create appropriate organizational preconditions providing constant functioning at the national, regional or sectoral levels of special institutional mechanisms: research organizations, training centers, institutes, associations, etc. Their activity should be concentrated on solving key problems of increasing of different production and economic systems'

efficiency and the country's economy in general; practical realization of strategy and tactics of national economy development at all management levels.

11) Infrastructure. An important condition for increasing the company's activity efficiency is the sufficient level of development of various institutions of market and industrial infrastructure network. Currently, all business entities use the services of innovation funds and commercial banks, exchanges (commodity, stock, labor) and other market infrastructure institutes. The proper development of production infrastructure (communication, specialized informational systems, transport, trade, etc.) has significant influence on the company's activity efficiency. Wide chain of social infrastructure establishments plays the crucial role in the process of effective development of all economy's structural elements;

12) Structural changes in society. Social change also affects performance at different levels of management. The most important are the structural changes of economic and social nature[14]. Main occur in such spheres: technology, scientific research, technical level of fixed assets, scale of activity and production, employment models in different production and nonproduction spheres; educational, qualification level of staff.

Typically, two approaches to evaluate the performance of an enterprise – monetary and resource are used. In a monetary approach, results and expenses are determined by cash inflows and outflows. According to the resource approach, the results are characterized by the volume of products produced, and the costs by the volume of resources consumed of various kinds[15]. Despite the fact that expenses and results are estimated in money, they are considered to be got when the goods are produces, and the expenses are spent in the moment of consumption of the resource. The main difference between cash and resource approach is in different approaches to expenses and results and the moment of time.

In the condition of the resource approach expenses of any recourse are considered at the moment of their spending, and the results, for instance, produced goods at the moment of production. In the condition of monetary approach expenses of any resources are considered at the moment of payment. Goods production will influence the company's

[14] Мельник Л.Г., Корінцева О.І. Економіка підприємства: Конспект лекцій : Навч. посіб. Суми : ВТД «Університетська книга», 2014. 412 с.

[15] Гринчуцький В.І. Економіка підприємства. Навчальний посібник. Київ : ЦУЛ, 2019. 304 с.

financial state when the entrepreneur will get money for the goods loaded. Therefore, the monetary approach demands considerable attention to the sales of products organization. At the same time, it is important to consider in difference in time between the goods being received and the goods being paid [16]

It should also be noted that the achievement of a certain level of success in the company's functioning is inextricably linked to the acquisition of competitiveness by the enterprise.

Financial results of Ukrainian construction companies before taxation for the peroid of 2009-2019 are shown in table 3[17].

Table 3

**Financial results before taxation
of Ukrainian construction companies**

Years	Financial result before taxation, million UAH	Companies that received profit		Companies that received loss	
		% to the total number of companies	Financial result, million UAH	% to the total number of companies	Financial result, million UAH
2009	-3458,3	57,0	5433,2	43,0	8891,5
2010	-4418,2	55,3	4905,1	44,7	9323,3
2011	-3845,8	60,5	5373,0	39,5	9218,8
2012	-71,1	60,5	9139,1	39,5	9210,2
2013	-5126,6	62,3	5968,0	37,7	11094,6
2014	-27288,4	62,7	6295,7	37,3	33584,1
2015	-25074,1	71,1	5648,1	28,9	30722,2
2016	-9342,9	70,8	8446,6	29,2	17789,5
2017	-3535,8	71,5	10300,0	28,5	13835,8
2018	6433,9	72,8	15411,8	27,2	8977,9
2019	1340,8	75,5	2408,4	24,5	1067,6

The share of profitable construction enterprises in Ukraine increases during 2011-2019, and in 2019 is 75.5%, comparing to the year 2009 when their share made 57%.

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[16] Іванілов О. Економіка підприємства. Київ : ЦУЛ, 2019. 728 с.

[17] Офіційний сайт Державного комітету статистики України. Оперативна статистична інформація. URL: http://www.ukrstat.gov.ua/

Competitive market environment requires continuous improvement from the enterprise. In order to be competitive, an enterprise must have competitive advantages. They are conditions that allow a company to produce a good or service of equal value at a lower price or in a more desirable fashion. These conditions allow the productive entity to generate more sales or superior margins compared to its market rivals.

The main ways to obtain competitive advantages are following[18]:

– to strengthen competitiveness by taking measures to improve the activity and increase its efficiency;

– to weaken the company's competitors;

– to change the market environment.

Since the implementation of the last two areas requires considerable effort and it is highly dependable on the factors of the external environment, the main means of obtaining competitive advantage is to improve the efficiency of their own activities[19].

CONCLUSION

Production (activity) efficiency is a complex term showing the final results of resource usage during the certain period of time. its main feature can be necessity of achieving the purpose of production activity with minimum expenses of public labor or time.

The problem of the company's activity and production efficiency increasing in general tends to provide the maximum possible result per each unit of labor, material and financial resources used. The main factors of the company's efficiency increasing are increasing its technical level, organizational improvement, organization of production and labor, increasing quality of resources, etc. Only effective usage of all the system of factors can provide sufficient rates of production effectiveness growth.

It is also necessary to consider both internal and external factors.

In order to provide competitiveness in the long-term period the company's activity must be effective as well as efficient which is equally important.

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[18] Цьвок Д.Р., Яворська Н.П. Формування конкурентних переваг підприємства. *Проблеми системного підходу в економіці.* 2017. Випуск № 5(61). С. 141–147.

[19] Новицька С.С., Яцкевич І.В. Визначення необхідності ефективного оцінювання конкурентних переваг підприємства. *Розвиток методів управління та господарювання на транспорті.* 2014. № 1 (46). С. 98–109.

SUMMARY

The article is devoted to analysing the main terms of the company's activity effectiveness as well as groups of indices of activity's economic effectiveness. The main ways of increasing of the company's activity effectiveness are considered. The economic role and importance of income and profitability to assess the efficiency of enterprises is proved. It is established that the profit is the goal, the result of a stimulus and a factor of economic security of the enterprise. Necessary conditions for effective management of profit are discovered. The conditions necessary for effective management and improving the process of the company's profit management are determined. Based on the analysis the main ways of increasing the company's effectiveness were developed. The role of value in the company's development in the modern market conditions was determined. Some approaches to the company's value management were analysed.

Analysis of the main indices of Ukrainian construction companies over the last periods of time was given, among them: net income, costs of sales, other operational incomes and expenses, net profit, level of operational profitability. Positive changes in efficiency of their activity are determined.

REFERENCES:

1. Аналіз прибутковості діяльності сучасного підприємства. *Культура народов Причерноморья*. 2012. № 225. С. 79–83.

2. Гетьман О.О. Економіка підприємства : Навч. посіб. [2-ге вид.]. Київ : Центр уч. літератури, 2013. 488 с.

3. Горлачук В.В., Яненкова І.Г. Економіка підприємства. Навчальний посібник. Миколаїв : Вид-воЧДУ ім. Петра Могили, 2010. 344 с.

4. Гринчуцький В.І. Економіка підприємства. Навчальний посібник. Київ : ЦУЛ, 2019. 304 с.

5. Іванілов О. Економіка підприємства. Київ : ЦУЛ, 2019. 728 с.

6. Кучерява А.С. Прибутковість підприємства та шляхи її підвищення. *Проблеми підвищення ефективності інфраструктури.* 2015. № 40. С. 38–44.

7. Мельник Л.Г., Корінцева О.І. Економіка підприємства: Конспект лекцій : Навч. посіб. Суми : ВТД «Університетська книга», 2014. 412 с.

8. Новицька С.С., Яцкевич І.В. Визначення необхідності ефективного оцінювання конкурентних переваг підприємства. *Розвиток методів управління та господарювання на транспорті.* 2014. № 1 (46). С. 98–109.

9. Olsen E. Economic Value Added. // Perspectives. The Boston Consulting Group, Inc. 1996р.

10. Офіційний сайт Державного комітету статистики України. Оперативна статистична інформація. URL: http://www.ukrstat.gov.ua/

11. Палійчук Є.С. Ефективні методи підвищення прибутковості виробничого підприємства на сучасному етапі. *Ефективна економіка.* № 12. 2017. URL: http://www.economy.nayka.com.ua/?op=1&z=5964

12. Руда Р.В. Аналіз ефективної діяльності підприємства: необхідність та методика. *Вісник Бердянського університету менеджменту і бізнесу*. 2012. № 4 (20). С. 55–62.

13. Терещенко О.О., Стецько М.В. Управління вартістю підприємства в системі фінансового менеджменту. *Фінанси України*. 2007р. № 3. С. 91–99.

14. Цьвок Д.Р., Яворська Н.П. Формування конкурентних переваг підприємства. *Проблеми системного підходу в економіці.* 2017. Випуск № 5(61). С. 141–147.

15. Черниш С.С. Організаційно-методичні аспекти аналізу рентабельності. *Інноваційна економіка*. 2013. № 6. С. 305–309.

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CHAPTER 10
ANALYSIS AND PLANNING
OF PRODUCTION EFFICIENCY
IN THE ECONOMIC SECURITY ENSURING SYSTEM

Fisunenko P. A.

INTRODUCTION

In the conditions of reforming the Ukraine economy, the introduction of market relations is important to constantly improve production management, which is highly dependent on the prediction of development prospects, on the forecast as a means of knowing the future. The state of affairs in the Ukraine economy remains extremely complex. It is forced to overcome the consequences of the planning and distribution system of the economy, its structural deformations, costly mechanism of pricing and non-competitive ability. So the ability to develop business plans becomes extremely relevant. Forecasting allows us to take alternative paths and to anticipate future development outcomes. Planning – is one of the well-known parts of entrepreneurial activity, which forms the basis for the efficient operation of the enterprise. Planning of enterprise activity must meet the requirements of market economies and response to all processes that occur in the country. Successful work of the enterprise depends on the availability of necessary resources and their efficient use. For effective promotion of work at the enterprise it is necessary to implement a management system of the production efficiency. The reliability of this system is the minimization of resources in each unit of output and will become the basis of the enterprise economic security system.

The issues of forecasting and planning in terms of market relations are constantly attracting the attention of scientists. And business planning is given considerable attention in educational publications and scientific publications on enterprise economics, strategic management, analysis of economic activity, as well as in regulatory documents of state authorities. Studies of such economists as: Alan West, R. Akkoff, and M.A. Belov, V.Yu. Brink, V.P. Burov, O.D. Vasilik, V.G. Vasilkov, N.P. Goncharova, B.E. Grabovetsky, M.P. Gruzinov, O.G. Dacia, L.M. Dragun, P. Drucker, O.S. Ivanilov, E.A. Zin, V.O. Korostelov,

P. Kotler, V.G. Kotlyarova, E. Land Peter, V.E. Moskalyuk, V.M. Oparin, S.F. Pokropyvny, A.M. Poddyrogin, M. Porter, N.A. Savelyeva, V.A. Sidun, G.M. Tarasyuk, M.G. Tverdohlib, V.M. Tymoshenko, M.O. Turchenyuk, R.B. Tian, T.O. Primak, S.M. Pokropivny, Yu.V. Ponomaryova, D. Khan, G.O. Shvydanenko, T.I. Yatskiv and others. The works of these authors are devoted to the methods of planning and forecasting, technologies of development of plans and forecasts at the enterprise, analysis of efficiency of forecasting and planning of activity of the enterprise, analysis of consumer requirements and activity of competitors, etc. However, the issue of methodological support for prospective analysis (quantitative, qualitative and factor analysis), which should be carried out when developing a business plan, is not sufficiently covered. Also, despite the large number of publications, further research on the methodological support for planning the activity of the enterprise in the direction of increasing the efficiency of resource use is needed. Resource planning methodology should be based on the economic law of labour productivity growth and be an integral element (tool) of the production efficiency management system.

10.1. Forecasting and planning

Any management decision is inherently predictable. Forecasting provides a fundamental basis for entrepreneurial activity in any field. Forecasting the development of the enterprise involves determining the factors that affect the structure and volume of demand, the dynamics of its changes. Developing forecasts and drawing up plans on the basis of a market economy is a constant condition for the survival of any enterprise. In the conditions of the market, the pre-planned analysis of possible options for development, actions in the future, external and internal factors is of great importance. This is called forecasting. According to V.A. Sidun, forecasting is an element of in-house planning. Forecasting involves exploring the prospects of particular sectors of the national economy and entire regions. It is on this basis that the largest companies formulate the overall purpose of the development of the company as a whole and its individual divisions. As an element of in-house forecasting planning, it is directly related to marketing and takes the form of a firm's market strategy[1].

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[1] Сидун В.А., Пономарева Ю.В. Экономика предприятия: учебное пособие. Харьков : ХДУХТ, 2006. 261 с.

The importance of planning is expressed in the famous aphorism: «Plan or be planned». The point of the statement is that a firm that does not know or does not consider it necessary to plan its activities, itself is the object of planning, a means to achieve another's goal. Planning is a subjective activity of people, which, based on the study of patterns, any phenomena and processes (aspects of social life), determine their development (state of motion) in the near and distant periods of time. Planning at an enterprise is the planning of all its income and spending directions to ensure the development of the enterprise. Planning is done by drawing up financial plans of different content and purpose depending on the tasks and objects of planning. Unlike planning, forecasting is predominantly forward-looking and, being a component of planning, differs significantly from the latter. Forecasting is a system of quantitative and qualitative research aimed at identifying trends in the development of an object and finding the best ways to achieve its goals. A prediction is a probabilistic judgment about the state of any object or phenomenon in the future with a relatively high degree of certainty made by specialized scientific research. Forecasting is applied at the preliminary (pre-planned) stage of development and helps to develop the concept of economic development of an object or phenomenon for the planned period. It also plays a role at the stage of plan implementation, in evaluating the achieved results, finding opportunities and directions of additional management influences intended to eliminate deviations from the outlined plan of the development trajectory.[2]

According to O.S. Ivanilov, the forecast is a scientifically grounded hypothesis regarding the probable future state of the economic system and the economic objects and indicators that characterize this state. Development, compilation of forecasts is called forecasting[3].

The forecast outlines the scope and opportunities within which real-world goals and objectives can be formulated, identifies problems that should be the object of development in the plan. Developing a forecast and forming an order portfolio in a market environment are interrelated stages within the overall planning within an enterprise-specific framework. The differences between them are that the formed order portfolio reflects and embodies the decision already made, and the forecast is the search for a potential, realistic, economically correct

[2] Швиданенко Г.О., Васильков В.Г., Гончарова Н.П. та ін. Економіка підприємства : підручник / Київ : КНЕУ, 2009. 598 с.
[3] Іванілов О.С. Економіка підприємства: підруч. Київ : Центр учбової літератури, 2009. 728 с.

solution. The formed portfolio of orders at the enterprise is perceived as a result of all types and stages of work, it must be qualitatively homogeneous and aimed at achieving the chosen goal. The forecast opens the possibility of different development options, analyzes and substantiates them. The forecast can look at the various principles of economic policy and the combination of objective and subjective, economic and non-economic factors. It does not set out any specific objectives for the plan, but it does contain the material needed to develop them. Economic forecasts can be short-term (up to 3 years), medium-term (5-7 years), long-term (over 10 years). In this case, the organization of forecasting activities requires the provision of the necessary counter flows of information[4].

The essence of planning lies in the development and justification of goals, identifying the best methods and ways to achieve them when effectively using all types of resources necessary to accomplish the tasks and establish their interaction. In the planning process, each business should answer the following questions: What should be done and why? When will it be done and Who will do it? Where will it be done and What is needed for it? Addressing these issues is a planning function that serves as a basis for decision-making and is a management activity that involves the development of goals and objectives of production management, as well as identifying ways to implement plans to achieve the goals. The process of planning the activity of enterprises includes many components: production and sale of products, its cost, security of labour, material and financial resources, financial results of work, financial condition of the enterprise, its investment activities. These are the objects of enterprise planning that are considered as a whole and through which its object is revealed. Since planning is the process of preparing decisions about goals, methods and methods of achieving them by purposeful comparative evaluation of different alternative actions under the envisaged conditions, and their adoption is always related to the use of resources, then the resources of the enterprise and are to a greater extent the subject of planning at the enterprise[5].

The term «resource» – means a stock, a source. Resources include stocks and sources of raw materials, assets and cash, labour. Resources –

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[4] Грабовецький Б.Є. Планування та економічне прогнозування : навч. посіб. Вінниця : ВНТУ, 2013. 66 с.

[5] Тарасюк Г.М., Шваб Л.І. Планування діяльності підприємства : навч. посіб. Київ : «Каравела», 2005. 312 с.

a set of tangible and intangible elements that directly or indirectly participate in the production process[5].

In our opinion, when planning the activity of the enterprise, we must first consider the production resources, namely fixed assets, working capital and manpower. In this context, fixed assets should be understood as one-off capital costs associated with the production of products that retain their natural shape over a long period of time and transfer their value in parts to the value of the output. Working capital is also a one-time capital expenditure that is advised (or available) to create (hold) circulating production and rotation funds that ensure the continuity of production and sales. Labour resources, in a way, can also be considered as one-time capital expenditures that an enterprise incurs to support the production process. In addition to the current costs associated with the use of labour (wages and accruals), the company also makes capital, which is not included in the cost – this can be the cost of finding staff, training and skills, creating working conditions and living conditions, recreation and wellness, etc.

The logic of attributing fixed assets, working capital and manpower to the category of one-time capital expenditures is that they share a common nature, origin – these are funds, capital that an enterprise advances in its activities. The «disposability» and «capital» of these costs are that they are made at a single point in time in a large amount (purchase of equipment, buildings, structures, inventories, personnel), and they are reimbursed in parts (depreciation, write-off of part of inventories at cost) made in a certain period of production, etc. for a long time. Much of it remains on the balance sheet (capitalized) in the form of resources, undamaged costs, unused costs.

The basis of enterprise resource planning should be based on the law of productivity growth (efficiency) of labour formulated by K. Marx. «Increasing labour productivity is precisely that the proportion of living labour decreases, and the proportion of past labour (embodied in means of production) – increases, but increases so that the total amount of labour in each unit of product decreases»[6]. The need to minimize resources in each unit of product also derives from the laws of increasing needs and the relative scarcity of resources.

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[5] Довгаль Н.С. Ресурсний потенціал підприємства: теоретичні основи. *Науково-технічна інформація*. 2009. С. 42–45.

[6] Маркс К. Капитал / Маркс К., Энгельс Ф. // Сочинения. 2-е изд. Москва : Государственное издательство политической литературы, 1955–1981 гг. Т. 25. Ч. II. 286 с.

It is important to note that the increase in labour productivity (production efficiency) indicates a faster growth in output compared to the increase in labour costs (living and past). This principle should also be used in planning the activities of an enterprise.

Thus, efficient use of resources is the most important factor in ensuring the solvency, creditworthiness and financial stability of the enterprise, maintaining its competitiveness, generating sufficient resources for development and obtaining sufficient profit. Resource efficiency depends on factors such as technical progress and implementation of its achievements in production, improvement of production organization, improvement of product quality, improvement of planning and increase of production automation, optimization of running costs.

To solve the problem of increasing production efficiency at enterprises, it is necessary to implement an appropriate system – the system of production efficiency management. The activities of this system should be aimed at the continuous minimization of resources and costs in each unit of output. In terms of a systematic approach, the proposed mechanism is a set of goals, criteria, methods and functions designed in accordance with economic laws as tools needed to achieve the goal. This mechanism is designed to minimize the costs of the enterprise and includes a set of measures (technical, technological, organizational, social, economic) aimed at minimizing resources (fixed assets, working capital, labour) and costs in each unit of output.

One of the tools of this production efficiency management system is analysis, the methodological support of which is primarily based on factor analysis. Factor analysis is a technique of complex systematic study and evaluation of the influence of factors on the value of productive indicators. The role of factor analysis in the management of economic systems is that it gives the opportunity to form and change the parameters of the studied object by appropriate selection and adjustment of the factors that caused them. Factor analysis is an integral part of the balance sheet method of planning, providing for the reconciliation of the entire amount of costs and each element with the sources of their financing. Factor analysis methodology is universal, it can be used for analysis of all spheres of activity of the enterprise, and above all, for planning.

In the real production, in real time, the outputs and resources of the enterprise change. These changes are accepted as factors of the first

kind, which will be considered directly when conducting factor analysis. Second-class factors include the actions of those responsible for resource efficiency (who is to blame for reducing resource efficiency). Second-class factors are identified on the basis of an analysis of the authority and responsibility of direct executors conducted by management.

The basis of factor analysis and evaluation of efficiency of use of enterprise resources and costs is based on the algorithm:

$$Ep = Ir,c / Io, \tag{1}$$

where Ir,c; Io – respectively, the index of resources and costs, the index of outputs of the enterprise. Many possible results of the calculation of the relation (1) were formalized and displayed in the form of a diagram (Figure 1). The vertical axis delayed the change in the outputs. And upward growth of the outputs was recorded (Io > 1), while depositing Io – 1; down from «1» – decrease in output, when Io < 1, delayed 1 – Iкр. On the horizontal axis delayed change of resources and costs of the enterprise. And to the right of «1» recorded the growth of resources and costs, that is, cases when Ir,c > 1, delayed Ir,c – 1. To the left of «1» – reduced resources and costs (when Ir,c < 1), delayed 1 – Ir,c.
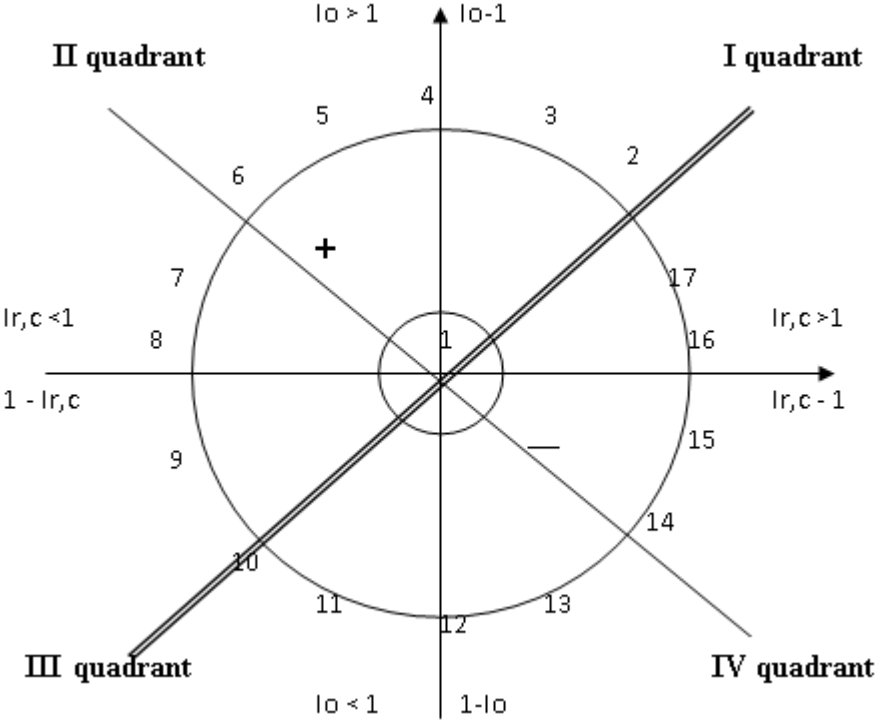
Figure 1. Resource Variables Ratio (Ir,c) and the outputs (Io)

Thus, we obtained 17 types of sets of points of the results of the calculation of the relation (1) between Io and Ir,c. Of these, there were 7 types of ratios, in which the result of changes in the numerator and denominator in time in each unit of the outputs of the resources and costs became less (than in the basic variant). This is the set of points in sector 3, on lines 1-4, in sector 5, on lines 1-6, in sector 7, on lines 1-8, in sector 9.

Here, the correlation results inform the user about the increase in resource efficiency compared to with the basic period. In addition, there are 10 types of results of the calculation of the relation (1) between the variable of output and the variable resources and costs, in which in each unit of outputs the resources and costs were kept at the same level or increased compared to the base variant. This is at point «1», many points on line 1-10, in sector 11, on line 1-12, in sector 13, on line 1-14, in sector 15, on line 1-16, in sector 17, on lines 1-2. Here, the results of the relationship inform about the decrease in the efficiency of use of resources and costs of the enterprise, compared with the basic period. In this case, the controlling must to identify centres of responsibility (persons, group of persons) for wrongly made in the past technical, technological, organizational, economic, social decisions that develop recommendations for eliminating factors that adversely affect the economy of the enterprise and the use of resources. Each type of relationship has its own evaluation algorithm, what are given in Table 1.

Planning as part of a resource efficiency management system must meet the following requirements:

• planning as a management method should «work» in the enterprise resource efficiency management system;

• planning of resources should be done «for themselves»;

• the rate and limit (limits) of resources and costs should be achievable, but as norms and limits are mastered, they must be revised in the direction of strengthening;

• the methodology for calculating the rates and limits for resources and costs should be simple and free of subjective elements.

Factor analysis methodology provides the user with boundary conditions for the relationship between variable end results and variable resources. In addition, this technique gives a range of ways to increase the efficiency of use of enterprise resources, namely: from Fig. 1 shows that line 10-1-2 represents a set of threshold values of the planned values of the resources required for production of products, the observance of which will necessarily contribute to the increase of resource efficiency (Figure 2).

Table 1
Factor estimation algorithm evaluation of enterprise efficiency

Types	Conditions		Evaluation algorithm	Point (T) line (L) sector (S)	Rating «+» – is effective, «-» - is ineffective
	the outputs (O)	resources and costs (R,C)			
1.	Io=1	Ir,c=1	{Io-1;1-Io}={Ir,c-1;1-Ir,c}	T.1	-
2.	Io>1	Ir,c>1	Io-1=Ir,c-1	L. 1-2	-
3.	Io>1	Ir,c>1	Io-1>Ir,c-1	S.3	+
4.	Io>1	Ir,c=1	Io-1>{Ir,c-1;1-Ir,c}	L. 1-4	+
5.	Io>1	Ir,c<1	Io-1>1-Ir,c	S. 5	+
6.	Io>1	Ir,c<1	Io-1=1-Ir,c	L. 1-6	+
7.	Io>1	Ir,c<1	Io-1<1-Ir,c	S. 7	+
8.	Io=1	Ir,c<1	{Io-1;1-Io}<1-Ir,c	L. 1-8	+
9.	Io<1	Ir,c<1	1-Io<1-Ir,c	S. 9	+
10.	Io<1	Ir,c<1	1-Io=1-Ir,c	L. 1-10	-
11.	Io<1	Ir,c<1	1-Io>1-Ir,c	S. 11	-
12.	Io<1	Ir,c=1	1-Io={Ir,c-1;1-Ir,c}	L. 1-12	-
13.	Io<1	Ir,c>1	1-Io>Ir,c-1	S. 13	-
14.	Io<1	Ir,c>1	1-Io=Ir,c-1	L. 1-14	-
15.	Io<1	Ir,c>1	1-Io<Ir,c-1	S. 15	-
16.	Io=1	Ir,c>1	{Io-1;1-Io}<Ir,c-1	L. 1-16	-
17.	Io>1	Ir,c>1	Io-1<Ir,c-1	S. 17	-

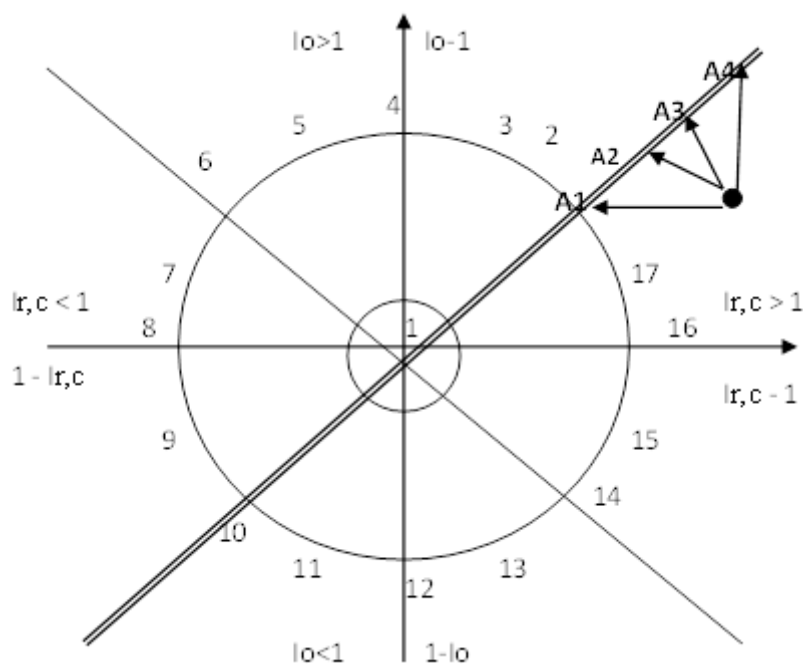Required for the above calculations are the conditions under which:

$$I_o > I_{r,c}, \tag{2}$$

that is: $\dfrac{O_{pl}}{O_t} > \dfrac{R,C_{pl}}{R,C_t}$, $\tag{3}$

hence: $O_{pl} \times R,C_t > O_t \times R,C_{pl}$, $\tag{4}$

The planned size of resources (absolute value) is determined by:

$$R,C_{pl} < \frac{O_{pl} \times RC_t}{O_t} \tag{5}$$

**Figure 2. Information on directions of achievement
of effective use of resources and costs of the enterprise**

The proposed methodology for planning allows the development of several variants of plans (variability of planning). The planned size of resources depends on the planned production volume, which can be set in several variants (depending on the market situation). A prerequisite for achieving resource efficiency is the following inequality:

$$PE_{pl} < PE_t, \qquad (6)$$

where PE – resources and costs per unit of outcomes of the enterprise (plan and fact).

That is, the resource intensity of the deliverables in the planning period should necessarily be below the same indicator in the reporting period.

To create several variants of plans, it is advisable to make a matrix (Table 2).

where O_0 is the outcomes of the base (reporting) period;

O_1, O_2, ..., O_j – planned value of outcomes (information of marketing service);

R,C_0 – value of resources and costs of the base (reporting) period;

R,C_1, R,C_2, ..., R,C_i – estimated values of resources and costs of the planning period (variants of calculations 1, 2, .., i).

Table 2

The matrix of determining the effective size of resources and costs of the enterprise

Resources and costs / The final results	R,C_0	R,C_1 $R,C_1 < \dfrac{O_j \times RC_0}{O_0}$	R,C_2 $R,C_2 < \dfrac{O_j \times RC_0}{O_0}$	.....	R,C_i $R,C_i < \dfrac{O_j \times RC_0}{O_0}$
O_0	PE_{00}	PE_{10}	PE_{20}	.....	PE_{i0}
O_1	PE_{01}	PE_{11}	PE_{21}	.....	PE_{i1}
O_2	PE_{02}	PE_{12}	PE_{22}	.....	PE_{i2}
.....	.....	.....	.....	.....	.....
O_j	PE_{0j}	PE_{1j}	PE_{2j}	.....	PE_{ij}

10.2. Perspective analysis

Analysis and planning are one of the important management functions without which no management decisions can be made by business entities. They are equivalent to management functions such as accounting, control, organization, communication and motivation.

Business planning with a business plan describes all the basic aspects of the enterprise, and the analysis examines the problems that it may face in the practice of its activities and identifies ways to solve these problems.

The business plan is the basis of enterprise management, at the same time search, research and project work, which provides the solution of the tasks that are facing the enterprise, regardless of its functional orientation. The business plan development process includes a detailed analysis of economic and organizational issues. A business plan is a document that contains a system of time and space-related activities and actions that are coordinated with the purpose and resources aimed at maximizing profit at minimum risks due to the implementation of an entrepreneurial project (agreement). The business plan considers the scientific, technical, technological, organizational, social and other aspects of the implementation of the entrepreneurial project, but focuses on its financial and economic aspects[7].

In our opinion, according to the business plan, a prospective analysis and evaluation of the efficiency of using the resources of the

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[7] Волкова Н.А., Волчек Р.М., Гайдаєнко О.М. та ін. Економічний аналіз : навч. посіб. За ред. Волкової Н.А. Одеса : ОНЕУ, Ротапринт, 2015. 310 с.

enterprise should be conducted. Such approach will allow to provide continuous increase of efficiency of activity of the enterprise.

The analysis should help management to answer the questions: how (effectively or ineffectively), how much (effectively or ineffectively) that influenced (factors), and what measures should be taken to improve resource efficiency, costs, production efficiency as a whole. Prospective analysis requires the development of methods for analytical support of production efficiency management system, including qualitative, quantitative and factor analysis.

Analysis is a logical method of scientific research, the essence of which is the imaginary or practical dismemberment of the whole into its constituent parts and their study in all the variety of essential relationships. Prospective analysis is an analysis of future results of financial and economic activity of the enterprise. The most important tasks of prospective analysis are the preparation of the necessary analytical information to substantiate the prospective and current plans for the development of the enterprise, assessment of the reality of the implementation of the planned plans[8].

Prospective qualitative analysis of efficiency of use of resources and expenses of the enterprise helps to answer the question: «how?» the resources and costs of the enterprise were used effectively (or inefficiently). To carry out perspective qualitative analysis of resource efficiency, costs, efficiency of enterprise development as a whole, it is proposed to use the absolute values of fixed assets, working capital, labour resources, cost, production costs, commodity (gross) products. The algorithm of perspective qualitative analysis and estimation of the use of resources, costs of the enterprise (E) is offered in the following form:

$$E_1 = \frac{\sum_{t=1}^{T} I_{r,c}}{\sum_{t=1}^{T} I_o} \tag{7}$$

where $\sum_{t=1}^{T} I_{r,c}$, $\sum_{t=1}^{T} I_o$ – respectively, the sum of indices of resources, costs, the sum of indices of outcomes of the enterprise. When $E_1 \geq 1$, the conclusion is made about inefficient use of resources, costs of the enterprise, only if $E_1 < 1$ concludes about the effective use of resources,

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[8] Тарасенко Н. В. Економічний аналіз : навч. посібник. 3-е видання. Львів : Новий світ, 2004. 344 с.

costs of the enterprise, since in the planning period in each unit of outcomes the amount of resources and costs (required for production of outcomes), will decrease.

To perform a prospective qualitative analysis of resource efficiency, costs, production efficiency of the enterprise, you can also use relative indicators: capital consumption of products by fixed assets (FA) and working capital (WC), labour complexity (LCP), production cost (PC).

An algorithm for perspective qualitative analysis of resource efficiency, enterprise costs, which is carried out using capacity indicators is proposed in the form of the relation:

$$E_2 = \frac{\sum\limits_{t=1}^{T} I_{PE}}{T} \qquad (8)$$

where I_{PE} – the index of resources and costs per unit of outcomes of the enterprise (I_{FA}, I_{WC}, I_{LCP}, I_{PC}).

In the case of $E_{PE} \geq 1$ concludes that the resources and costs of the enterprise were used inefficiently during the analyzed period of time. Only when the $E_{PE} < 1$, concludes that the resource efficiency, costs in the planning period compared with the baseline will increase.

Quantitative prospective analysis in the production efficiency management system answers the question «how much effectively (or ineffectively)» the resources and costs of the enterprise were used during the analyzed period.

For quantitative perspective analysis of resource efficiency and costs, enterprise efficiency, the following algorithm is proposed:

$$E_3 = \sum\limits_{t=1}^{T} (PE_t - PE_{pl}) \times O_{pl} \times K \qquad (9)$$

where PE_t; PE_{pl} – resources and costs (FA, WC, LCP, PC) per unit of outcomes of the enterprise, respectively, in the base and planning periods; K – coefficient of efficiency of use of resources and costs of the enterprise.

The equation can have a positive, negative and zero solution. If $E_3 \leq 0$, the conclusion is made about inefficient use of resources and costs of the enterprise (negative value – reduction of profit due to increase of resource-, cost of production in the planned period in comparison with the base value). Only in the case of a positive value does it conclude that the increase in the efficiency of resource use and costs of the enterprise (a positive value – an increase in profit by

reducing the indicator of resource-, cost-intensive products in the planned period compared with the base value).

The use of the proposed approaches to analysis and planning will ensure economic security.

CONCLUSIONS

The article defines the essence and tasks of analysis and planning of the efficient of the enterprise as a basis of the enterprise economic security system, the main purpose of which is to create the potential for survival of the enterprise in the conditions of dynamic change of the external environment, which creates uncertainty of the prospect. Effective functioning of the enterprise in modern conditions is impossible without use in management of methods of analysis and planning. The subject of enterprise analysis and planning is resources and costs. Efficient use of resources and costs is one of the important factors for improving production efficiency and ensuring economic security of the enterprise.

Well-known management scientist P. Drucker emphasized that efficiency is a consequence of the fact that «right and right things are done. And efficiency is a consequence of the fact that these things are created correctly»[9]. For the successful operation of the enterprise, ensuring and efficient use of resources and their minimization, it is necessary to implement a system of production efficiency management. The tool of this system is prospective analysis, the methodological support of which is based on qualitative, quantitative and factor analysis. The purpose of this system is to minimize resources per unit of outcomes of production.

A prospective qualitative analysis of the effective use of resources and costs of the enterprise determines how to use (effectively or ineffectively) the resources and costs of the enterprise. A prospective quantitative analysis determines how effectively (or ineffectively) the resources and costs of an enterprise are used. A prospective factor analysis identifies the factors that influenced resource and cost efficiency. Such approaches will allow to provide continuous increase of efficiency of activity of the enterprise.

The results of factor analysis make it possible to calculate the planned size of resources and costs, to comply with the requirements of

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[9] Питер Ф. Друккерр. Энциклопедия менеджмента: Пер. с англ. Москва : Издательский дом «Вильямс», 2004. 432 с.

the law of increasing productivity (efficiency) of labour. An appropriate methodological approach is proposed for such calculations. In turn, factor analysis is an integral part of the balance sheet method of planning, whose methodology is versatile, it provides many ways to improve the efficiency of use of enterprise resources and allows you to develop several plans. In order to achieve efficient use of resources, the resource intensity of the deliverables in the planning period must necessarily be lower than in the reporting period.

SUMMARY

The results of theoretical content research, forecasting features and activities of the company analysis and planning and their interconnection are presented in this article. Directions of achievement on effective resources use are defined. The article describes the results of a study of approaches to analysis and planning of enterprise activity, their interaction. Methodical approach to planning of resources of company in production efficiency management system are suggested. The methodology of qualitative, quantitative and factor analysis are presented. The essence of business planning, perspective analysis, estimates of resource efficiency, costs of businesses and methodological approach, the algorithm and the method of calculation, which have been revealed and offered in this article. The use of the proposed approaches to analysis and planning will ensure economic security.

REFERENCES:

1. Бєлов М.А., Євдокимова Н.М. та ін. Планування діяльності підприємства : навч. посіб. Київ : КНЕУ, 2002. 45 с.

2. Васильків Т.Г., Качмарик Я.Д., Блонська В.І., Лупан Р.Л. Бізнес-планування : навч. посіб. Київ : Знання, 2013. 173 с.

3. Гетало В.П., Гончаров Г.О., Колісник А.В. Бізнес-планування : навч. посіб. Київ : Професіонал, 2008. 240 с.

4. Грабовецький Б.Є. Планування та економічне прогнозування : навч. посіб. Вінниця : ВНТУ, 2013. 66 с.

5. Довгаль Н.С. Ресурсний потенціал підприємства: теоретичні основи. *Науково-технічна інформація*. 2009. С. 42–45.

6. Драгун Л.М., Левченко В.Ф., Бондаренко О.Л. Удосконалення аналізу ефективності використання обігових коштів підприємства. *Фінанси України*. 1998. № 12. С. 12–21.

7. Швиданенко Г.О., Васильков В.Г., Гончарова Н.П. та ін. Економіка підприємства : підруч. Київ : КНЕУ, 2009. 598 с.

8. Волкова Н.А., Волчек Р.М., Гайдаєнко О.М. та ін. Економічний аналіз : навч. посіб. Одеса : ОНЕУ, Ротапринт, 2015. 310 с.

9. Єщенко П.С., Палкін Ю.І. Сучасна економіка : навч. посіб. Київ : Вища школа, 2005. 327 с.

10. Іванілов О.С. Економіка підприємства : підруч. Київ : Центр учбової літератури, 2009. 728 с.

11. Кушнір Т.Б., Немцов О.В. Теоретико-методичні аспекти формування системи планування на підприємстві. *Вісник економічної науки України* Вип. 1. Донецьк, 2009. С. 111–115.

12. Маркс К., Энгельс Ф. Капитал. 2-е изд. Москва : Государственное издательство политической литературы, 1955–1981 гг. Т. 25. Ч. II. 286 с.

13. Москалюк В.Є. Планування діяльності підприємства : навч. посіб. Київ : КНЕУ, 2005. 384 с.

14. Опарін В.М. Фінанси (загальна теорія) : навч. посібник. 2-е вид., доп. і перероб. Київ : КНЕУ, 2002. 240 с.

15. Питер Ф. Друкер. Энциклопедия менеджмента: Пер. с англ. Москва : Издательский дом «Вильямс», 2004. 432 с.

16. Покропивний С. М. Економіка підприємства : підруч. Київ : КНЕУ, 2001. 528 с.

17. Рязанцева В.В. Аналіз формування та використання прибутку підприємства. *Статистика України*. 2007. С. 40–43.

18. Сидун В.А., Пономарева Ю.В. Экономика предприятия : учебное пособие. Харьков : ХДУХТ, 2006. 261 с.

19. Смаковська Ю. Критерії експертної оцінки бізнесплану підприємницького проекту. *Формування ринкової економіки в Україні*. 2009. № 19. С. 434–438.

20. Тарасюк Г.М., Шваб Л.І. Планування діяльності підприємства : навч. посіб. Київ : «Каравела», 2005. 312 с.

21. Тарасенко Н.В. Економічний аналіз : навч. посібник. 3-е видання. Львів : Новий світ, 2004. 344 с.

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