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Analytical Provision of Socio-Economic Security Management at Macro and Microlevels

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ABSTRACT

The agricultural crisis in Ukraine during last years has exacerbated the need for changes in managing the socio-economic security of economic entities. Neglect of the social component poses real threats to economic security of the enterprises and the agricultural sector as a whole. The purpose of the study is to substantiate the theoretical and methodological foundations for analytical support of socio-economic security management at the macro and micro levels. The factors of strengthening economic security of agriculture in Kharkiv region of Ukraine in the context of the social component and developed an economic and mathematical model of socio-economic security of agriculture in the region are analyzed in the first part. In the second part, the micro-level factors of socio-economic security and their influence were systematized using grouping methods, averages and variance indicators. The practical significance of the obtained results lies in the possibility of using the developed analytical tools in forming a holistic approach to the management of socio-economic security at the macro and micro levels.

Keywords: socio-economic, analysis, assessment, profitability level of product sales, level of economic activity of rural population, economic and mathematical modeling, grouping, agriculture, enterprise.

JEL classification: C40, J01, R50, Q10

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1. Introduction

1.1. The role of the social component in the economic security system

The instability of Ukraine's foreign-policy and economic situation, and the crisis of agriculture pose important problems about the need to make adjustments to existing business management practices. First of all, the need for changes in the management and technology of economic security of economic entities has become more acute. Human capital, which largely determines the development of an enterprise, is a major aspect of economic security. It is impossible to ensure economic security of the enterprises, regions and countries without constant attention to the human component in the system of measures that ensure this security. Failure to do so leads to inefficient use of the enterprise's potential.

The problems of socio-economic security management at the macro and micro levels are a constant focus of economic science. In particular, V. Bezbozhnyi, O. Vivchar, N. Kolenda, B. Kupchak, A. Madzhula, N. Meheda revealed the concept of socio-economic security of the enterprises, social and humanitarian aspects of economic security management of the enterprises, ways of its provision. The issues of assessing the economic security of the enterprises, methodological approaches to the definition and practical use of economic security indicators were investigated by H. Kozachenko, I. Petrova, V. Ponomarev, O. Ostrovskaia, V. Sirota, O. Sokolova and other scientists. The multifaceted nature of the problem of economic security of the agricultural enterprises and the branch as a whole determines the deepening of research into the analytical support for managing the socio-economic component of it. This has led to the choice of the topic of the scientific research, determined its focus.

The purpose of the study is to substantiate the theoretical and methodological foundations for the analytical support of socio-economic security management at the macro and micro levels. Achieving this goal has led to the following tasks:

- to supplement the classification of economic security enhancement factors in the context of the social component at the macro level;
- to clarify and systematize the characteristics of the factors of socio-economic security of the enterprises;
- to develop tools for assessing economic security in the context of the social component;
- to improve the scientific and methodological approach to the construction of an econometric model of ensuring socio-economic security of the agricultural sphere of the region.

1.2. Signs of socio-economic security

Let us consider the approaches to the definition of “social security”, “socio-economic security” and assess its level, which are presented in the economic literature.

V.L. Bezboznyi refers the main features of social security of the enterprises to protection of the enterprise against internal and external threats, which is achieved through the harmonization and reconciliation of its interests according to the interests of the subjects of the internal and external environment in time and space (Bezboznyi, 2009).

The signs of social security of the enterprise according to B.F. Kupchak are a proper standard of living, income, acceptable working and leisure conditions regardless of the impact of the internal and external threats (Kupchak, 2010). A similar interpretation is given by N. Mekheda and A. Madzhula: social security is a system of social and economic measures aimed at providing material provision for the workers, improving the quality of life and working conditions (Mekheda, Madzhula, 2011).

S.S. Omelchuk believes that social security of the enterprise is to provide a living wage for the workers of the enterprise, wage growth, motivation and labour payment system based on the final results of work, compliance with the wages of employees (Omelchuk, 2008).

N.M. Luhova, T.V. Golubeva characterizes social security of the enterprise as creating a system of mutually beneficial partnerships between the staff and the leaders. This is ensured by meeting the

material and intangible needs of the workers and realizing the interests of the enterprise (Luhova, Golubeva, 2011).

N.V. Kolenda considers socio-economic security of the enterprise as a condition characterized by the reliable protection of the social and economic system from the existing and potential threats from the internal and external environment, which gives opportunities for self-organization and self-development, preservation and development of labor potential, guarantees capability and stability, appropriate social state and standard of living in terms of the appropriate profitability level and coherence and realization of economic interests (Kolenda, 2016).

To the immediate factors of production that affect the proper level of economic security of the enterprises
O.I. Vivchar refers: direct location of the enterprise, the available natural resources and the conditions of their placement in the territory, the availability of labor resources, their educational and qualification level, the existing production infrastructure, the social and economic infrastructure and the level of providing the population (Vivchar, 2016, 2018).

Developing a methodology for conducting the analysis of ensuring the economic security of the enterprise,
A. Tretyakova distributes the importance coefficients of components of the economic security system of the enterprise (ICC) as follows: financial security 25, personnel security 20, technological security 18, legal security 15, information security 15, environmental security 5, power security 8 (Tretyakova, 2017).

A. Davydova, R. Zakharova, K. Teslenko indicate that the labor payment of the personnel and control over ensuring the effective formation and use of funds for material incentives for the workers affect the effective functioning of the enterprise. Established system of personnel management control and organization of internal control of workers activity and labor payment will create reliable protection of economic security of the enterprise (Davydova, Zakharova, 2018; Teslenko, 2018).

To analyze the risks and threats in the development of crisis phenomena, V. Pozdieiev uses the level of business activity of the enterprise, according to which the zone of tolerable risk (no threat), the zone of critical risk (emergence of threat), the area of catastrophic risk (manifestation of threat) (Pozdieiev, 2016). By analogy with the methods developed by the scientists for the analysis of socio-economic security of the region, we suggested using the level of economic activity of the population.

The scientific works by V. Syrota are devoted to diagnostics of the level of economic security at the enterprises with a different degree of corporate social responsibility development. The author has developed the indicators of diagnostics of the threat level of the enterprise activity, but they relate to the financial component of economic security (leverage of the financial lever, economic profitability of balance, the effect of the force of the financial lever influence). Among the indicators of the personnel component are called the coefficients of employee skills, turnover, loss of working time, turnover of the personnel (Syrota, 2016).

2. Methodology

Multiple regression method was used to construct the economic and mathematical model of ensuring social and economic security of agriculture in Kharkiv region. The purpose is to build a model with a large number of factors, while determining both the impact of each of them individually and their cumulative impact on the modulating indicator. The information base for econometric modeling was the data of statistical yearbooks “Kharkiv Region” (Main Department of Statistics in Kharkiv Region, 2019)7, statistical collections “Population of Kharkiv region”, statistical bulletin “Labor of Kharkiv region” for 2005 – 2018.Selection of independent variables was carried out on the basis of the qualitative theoretical and economic analysis of the factors and analysis of the intercorrelation coefficients. The calculations were performed using the integrated data analysis and data management system “STATISTICA” (Borovikov, 2001). The estimation of reliability of the synthesized by the equation of a straight-line multifactor model of the level of economic activity of the rural population of Kharkiv

region for 2005 – 2018 was made according to the following criteria: cumulative correlation coefficient, mathematical criterion F - Fischer-Snedecor, adjusted coefficient of determination, average error of approximation.

The method of grouping takes an important place in the system of the statistical methods of economic security research at the micro level. We have selectively researched 542 agricultural enterprises of 27 districts of Kharkiv region of various forms of management (except the farms). Each of them has individual features (profitability of production, area of land, number of employees, cost of production, payroll, etc.). Without taking into account these individual traits that differentiate one enterprise from another, it is impossible to explore the processes of managing socio-economic security of the enterprises. When conducting the analytical grouping of the agricultural enterprises by the profitability level, the information on mass economic, social and demographic phenomena has been used. It is contained in the statistical report compiled by the enterprises in 2018, namely: "Report on agricultural products sales" (№ 21-total (annual)), "Report on production of livestock products, number of farm animals and their forage" (№ 29-agriculture (annual)), "Report on the main economic indicators of agricultural enterprises activity" (№ 50-agriculture (annual))", "Report on work" (№ 1 (quarterly)).

Since the intervals are unequal apart from the absolute frequencies, we calculated the distribution density index (as the ratio of the number of the enterprises in a group to the interval value): $W = \frac{f}{h}$ (where f is frequency, h is interval size).

The estimation of reliability of indicators measurement by analytical groups on the profitability level of agricultural products sales is carried out using the variation coefficient: $CV = \frac{SE}{\bar{y}} \cdot 100\%$ (where SE is the standard error of sampling).

3. Analytical provision of socio-economic security management at macro and microlevels

In accordance with the workforce concept that meets international standards, the equilibrium of the economic system corresponds to a certain level of employment. Therefore, while studying provision of socio-economic security management at the regional level, we have analyzed a number of employed and unemployed people as part of the economically active population of Kharkiv region. Measuring them will allow further macroeconomic monitoring and development of an employment strategy to ensure economic security at the macro level.

We have proposed and elaborated the following system of the indicators for assessing socio-economic security of the agricultural sector of the region:

1) the level of economic activity of the rural population of the region;
2) the coefficient of work force turnover in agriculture of the region upon employment;
3) the coefficient of workforce turnover in agriculture of the region after disposal;
4) the coefficient of replacement of workforce in agriculture of the region; `
5) the average monthly nominal wage in agriculture;
6) the coefficient of pension load in rural areas;
7) the coefficient of labor replacement of the generations;
8) the birth rate of the rural population of the region;
9) the mortal rate of the rural population of the region.

Table 1 presents the results of the analysis of the economic activity level of rural population of Kharkiv region in the dynamics for 2005 – 2018.

Table 1. Level of economic activity of rural population in Kharkiv region, 2005 – 2018

Indicator	Years				2018 in % till:	
	2005	2010	2015	2018	2005	2018
Number of existing rural population, thousand people	585,5	555,0	525,1	507,2	86,6	96,6
Economically active population aged 15-70, thousand people	320,7	277,6	230,7	238,9	74,5	103,6
- of working age	269,4	242,1	227,4	233,2	86,6	102,6
- older than working age	51,3	35,5	3,3	5,7	11,1	172,7
Engaged population, thousand people	301,2	253,4	209,2	226,6	75,2	108,3
- of working age	249,9	217,9	205,9	220,9	88,4	107,3
- older than working age	51,3	35,5	3,3	5,7	11,1	172,7
Unemployed, thousand people	19,5	24,2	21,5	12,3	63,1	57,2
- of working age	19,5	24,2	21,5	12,3	63,1	57,2
Economically inactive population, thousand people	118,8	129,7	156,1	139,8	117,7	89,6
- of working age	69	81,7	94,1	76,7	111,2	81,5
- older than working age	49,8	48	62	63,1	126,7	101,8
Level of economic activity of population,%	54,8	50,0	43,9	47,1	-7,7	3,2
Coefficient of labor replacement of generations by children,%	215,8	213,9	191,4	199,9	92,6	104,4
Coefficient of pension load, %	384,6	413,4	228,8	243,6	63,3	106,5

In Kharkiv region in 2018 the level of economic activity of the rural population is 41.7%, that is, in the total rural population of the region, 41.7% are residents who provide labor supply. Among them 226.6 thousand people (94.8%) were engaged in all types of economic activity. 12.3 thousand people (5.4%) had no employment, but were actively seeking it and were classified as unemployed in accordance with the ILO methodology.

In 2018, the coefficient of labour replacement of the generations by the children in the rural areas of Kharkiv region is 199.9 ‰. This means that there are 200 people under the age of 15 per 1,000 economically active population. At the same time, the pensioners load is 243,8people. The downside is that over the fourteen-year period of studying, the pensioners load exceeded the children one. The upside is almost 4 times shortage of this difference: from 168.8 ‰ to 43.7 ‰.

The next stage of the study is the construction of an econometric model of socio-economic security at the macro level for 2005 – 2018, for which the following indicators were included in the multifactor correlation and regression model: the level of economic activity of the rural population in Kharkiv region,% (y); the coefficient of labor replacement in agriculture,% (x_1); the average monthly wage for the agriculture of the region, translated at the NBU exchange rate in dollars to compare data in dynamics, US dollars (x_2);labor replacement of the generations by children, ‰(x_3); the coefficient of pension load, ‰ (x_4); mortal rate, ‰ (x_5).

The multifactor model of the economic activity level of the rural population of Kharkiv region for 2005 – 2018, synthesized by the equation of a straight line, has the following form:

$$y_{x_{1...n}} = 9{,}3033 - 0{,}1864x_1 + 0{,}0458x_2 - 0{,}0736x_3 + 0{,}0105x_4 + 3{,}0545x_5 .$$

The analysis of the signs at the regression coefficients leads to the conclusion that the increase of economic activity of the rural population of Kharkiv region is positively influenced by the increase of the average monthly wage, the pension load per 1000 people of working age population and death. The regression coefficients a_1 and a_3 are also negative, indicating a decrease in performance when

increasing the coefficient of work force replacement and labor replacement of the generations by the children.

The multiple (cumulative) correlation coefficient $R = 0{,}961$ indicates that there is a strong degree of linear relationship between the level of economic activity of the rural population of Kharkiv region and the studied variables. The estimation of the materiality of the multiple correlation coefficient by the Fisher-Snedecor criterion showed that its actual value is greater than the table value: $19{,}584 > 6{,}00$. Therefore, the constructed economic and mathematical model of the level of economic activity of the rural population of Kharkiv region can be considered statistically significant at the probability level of 0.95.

The value of the cumulative coefficient of determination is $R^2 = 0{,}924$, that is 92.4% of the total variation in the result attribute due to the change in the factors included in the correlation model. The average relative error of approximation is 0,988. The value of the average error of approximation is 0.988 <10 and shows that it indicates a high accuracy of the constructed economic and mathematical model of socio-economic security of agriculture of Kharkiv region for 2005 – 2018 (by the level of economic activity of the rural population).

As a result of the decomposition of the total amount of the level variation of economic activity of the rural population of Kharkiv region, it was found out that the most significant factors affecting the simulated indicator are the mortality rate of the rural population (46.9%), the average monthly wage (21%) and labor replacement indicators (11,8%).

Let's summarize the parameters of the multiple linear regression model of the level of economic activity of the rural population in Kharkiv region in Table 2.

Thus, the mathematical model of socio-economic security of agriculture of Kharkiv region for 2005 – 2018 (according to the level of economic activity of the rural population) synthesized by the equation of a straight line on the basis of Fisher testing and the average error of approximation has high accuracy and is adequate.

Table 2. Parameters estimation of linear multiple regression model of socio-economic security of agriculture of Kharkiv region for 2005 – 2018 (by level of economic activity of rural population)

Factor	Regression coefficient a_i	t-Student criteria $t_{0.05} = 2.3060$	β-coefficient	Share of factor in total variation, %	Factors rating
x_1	-0,186405	-2,50338	-0,295287	11,8	3
x_2	0,045826	3,67259	0,832865	21,0	2
x_3	-0,073641	-0,77238	-0,303125	3,7	5
x_4	0,010452	0,52802	0,215153	9,0	4
x_5	3,054511	3,13091	0,896150	46,9	1
Multiple (cumulative) correlation coefficient, R					0,961
Multiple (cumulative) coefficient of determination, R^2					0,924
Adjusted (adapted) multiple coefficient of determination					0,830
F-Fisher-Snedecor criterion					19584
Average approximation error, $\bar{\varepsilon}$					0,988

The received actual values of t - Student criteria indicate the statistical significance of three of the five independent variables included in the model. It is proved that the most significant factors influencing the level of economic activity of the rural population are the mortality rate, the average monthly wage of agricultural workers and the indicators of workforce movement. They account for, respectively, 46.9%, 21% and 11.8% of the total variation of the efficient feature. The multiple regression model of social and economic security of agriculture in Kharkiv region can be used for practical purposes and for making forecasts.

As a characteristic of economic security at the micro level, we have chosen the main indicator of agricultural enterprises efficiency – the profitability level of agricultural products sales. As a result of

our analytical grouping of the enterprises, five groups have been formed according to the profitability level of agricultural products sales (Table 3).

Table 3. Distribution of agricultural enterprises in Kharkiv region by profitability level of agricultural products sales, 2018

Group number	Group of enterprises by profitability level, %	Number of enterprises in a group	Size of interval, %	Distribution density, units	Average profitability level, %	Variation coefficient, %
1	To 20, 0	54	20	2,70	8,69	24,74
2	20,1 - 35,0	60	15	4,00	31,94	4,89
3	35,1 – 50,0	150	15	10,00	43,64	9,98
4	50,1 – 65,0	172	15	11,47	58,60	9,35
5	65,1 – and more	106	35	2,31	83,82	15,12

Thus, the initial aggregate of the agricultural enterprises is represented by a number of distributions according to the profitability level of agricultural products sales, which is close to normal distribution. This is evidenced by the following data. First, the highest density of distribution of the enterprises has been obtained in the third and fourth groups. In the third group per unit of the interval there are 10 enterprises, in the fourth group – 11 enterprises. Secondly, the values of the variation coefficients in the groups range from 4.89% to 29.74%. In the second group, the profitability estimate is reliable ($CV \le 5\%$). In the third and fourth groups, the estimate is suitable for quantitative analysis, but its reliability is not high enough ($5\% \le CV \le 10\%$). Since the estimate of the fifth group is within the bounds, the estimate is only suitable for the qualitative analysis and should be used with caution (State Statistics Service of Ukraine, 2019).

Socio-economic security at the level of the enterprises is formed by many factors that can be combined into the following groups of the indicators:

1. The structure of the workers' employment in the crop production and livestock branches, which is formed by the specialization of the enterprise.
2. Workload (the number of the workers per 100 ha of agricultural land) or land load.
3. Load of livestock per one worker in the livestock branch.
4. The ratio between the number of the workers in the branches of agriculture.
5. Labor productivity (cost of production per one worker).
6. Direct labor costs per one worker.
7. The share of direct labor costs in the structure of industrial self-cost of the products.
8. Profitability of using direct labor costs.

The results of the research of socio-economic security management factors of the agricultural enterprises of Kharkiv region in 2018 on the basis of grouping of the enterprises by the profitability level of products sales are presented in table 4.

The analysis of the data given in table 5 allows us to draw the following conclusions. The main socio-economic factors for increasing the profitability level of agricultural products sales, as one of the characteristics of economic security of the agricultural enterprises in Kharkiv region, are:

1) Employment of the workers in the crop production branch. 94.8% of the sampled enterprises are engaged in cultivation of grain crops, 91.3% - in cultivation of sunflower seeds. There is no dairy farming in 431 farms out of 542 (79.5%). The pig industry is absent in 473 enterprises (87.3%). The calculation of the relative values of the structure showed that for all five groups the share of the workers of crop production is quite high and is on average by the aggregate of the enterprises 71% (the range of variation $R = 4.9\%$, the oscillation coefficient is only $K_O = 6{,}9\%$).

Table 4. Factors of socio-economic security management of agricultural enterprises in Kharkiv region, 2018

Indicator	Groups of enterprises by profitability level of agricultural products, %					In aggre-gate
	I	II	III	IV	V	
Number of enterprises	54	60	150	172	106	542
Share of enterprises which grew, %:						
- grain crop	85,2	91,7	93,3	100,0	95,3	94,8
- sunflower	85,2	88,3	90,0	93,6	94,3	91,3
Area of agricultural land:						
- on the whole per one group, thousand hectares	124,1	115,4	296,6	374,7	174,3	1085,1
- on average per group for one enterprise, ha	2298	1923	1977	2178	1644	2002
Average number of workers per group, people	2650	2327	6527	9196	2531	23231
engaged in crop production, %	66,1	78,3	67,0	69,6	71,0	71,0
Crop production workers per 100 livestock workers, people	195	360	203	229	546	244
Area of agricultural land per 1 worker (land load), ha	46,8	49,6	45,4	40,7	68,9	46,7
including per 1 worker of the crop production branch, ha	70,8	63,4	67,9	58,5	81,5	65,8
Number of workers per 100 ha of agricultural land, people	2,14	2,02	2,20	2,45	1,45	2,14
Labor productivity – total, thousand UAH.	588,9	625,2	651,6	494,1	631,1	577,2
including crop production	786,3	735,1	725,5	586,2	709,3	480,2
Share of direct labor costs in the structure of industrial self-cost of products, %	9,24	8,20	10,26	10,74	7,86	9,69
Direct labor costs per one worker, UAH:						
for a year	54844	57153	54608	54933	63430	55980
for a month	4570,4	4762,8	4550,7	4577,7	5285,8	4665,0
Growth rate, %						
- labour costs	100,0	104,2	95,5	100,6	115,6	x
- labour efficiency	100,0	106,2	104,2	75,8	127,7	x
Profitability of labor costs, %	252,7	391,7	600,5	606,8	953,3	586,3
Profitability of plant growing products, %	18,5	36,8	56,4	70,3	84,3	56,7

2) The ratio between crop and livestock production workers (relative coordination values). In total, there are 244 crop production workers per 100 livestock workers. Unlike the employment structure, this indicator varies significantly by group. Thus, for the enterprises of the second and fifth groups, the relative values of coordination exceed the average level in the aggregate, respectively, 1.5 times and 23 times, and make up 360 and 546 persons (variation range is $R = 351$, the oscillation coefficient is $K_O = 143{,}9\%$).

3) Land load. Its level ranges from 46.8 hectares in the first group of the enterprises to 68.9 hectares in the fifth group (variation range is $R = 22{,}1$ hectares, oscillation coefficient is $K_O = 47{,}3\%$). An increase in the area of agricultural land per employee indicates, first, a decrease of labor costs, deductions for social measures due to the decrease in the number of the workers. Secondly, the increase in land load

is a consequence of increasing the level of mechanization and automation of production. Time is reduced for performing certain technological operations, depreciation of fixed assets, fuel and lubricants are used more efficiently. As a result, the total cost of sales is reduced and the level of profitability increases.

4) Direct labor costs. The peculiarity of the processes of labor costs formation is due to the dual nature of the indicator "wage", which, being a motivating, stimulating factor of production is at the same time an article of operating costs of the enterprise. On the one hand, wages are the main and often the only source of income for the employed workers, the basis of material well-being of their families. On the other hand, labor costs are a significant part of production costs and an effective means of motivating the workers to achieve the goals of the enterprises for the employers. To analyze this factor of socio-economic security of the enterprises under study, we used relative and absolute indicators: the share of direct labor costs in the structure of production costs, direct labor costs per employee, and profitability of labor costs.

The level of the share of labor costs in the structure of agricultural production self-cost is very low, but tends to increase from 9.24% in the first group to 10.74% in the fourth group.

The absolute amount of direct labor costs also increases against the level of the first group. The efficiency of using labor costs can only be ensured by growth rates of productivity that outpace the rate of increase in wages. According to the calculations, this ratio is observed in the farms of the second, third and fifth groups.

The profitability level of wage costs shows that on the average on the aggregate of the enterprises under study for one hryvnia of labor costs received 5 UAH. 86 cop. profits from agricultural products sales. This indicator has a clear tendency to increase. If in the first group it is 252,7%, in the fifth one it is 953,3% (range of variation is $R = 700{,}6\%$ hectare, the oscillation coefficient is $K_O = 11{,}9\%$).

4. Conclusions

According to the results of the research the following conclusions of theoretical, methodical and practical nature are made:

1. The mechanism of socio-economic security management of agricultural enterprises is the interaction and interconnection of its constituent elements: assessment, analysis, management and control of the indicators which reflect the results of social and economic activities of the agricultural enterprises through its productivity and efficiency. The analytical function of studying the socio-economic security of the enterprise, industry, and region is to study information, measure indicators, assess the degree of impact of existing threats on the level of economic security, to form conclusions on this basis, in predicting the further development of the situation.

2. Assessment of the factors of strengthening the socio-economic security by the indicator of the level of economic activity of the rural population was carried out using economic and mathematical modeling. The multifactor model of economic activity level of the rural population of Kharkiv region for 2005 – 2018 has high accuracy, synthesized by the equation of a straight line. Strengthening the socio-economic security of the agricultural sector of the region is facilitated by the incomes growth of the workers of the branch and indicators of labor replacement. A real threat to the level of socio-economic security is the unfavorable demographic situation. The high and increasing mortality rates of the rural population, the decline in the number of children under 15 on the one hand, and the aging of the population, on the other, weaken the basis of the region's agricultural workforce.

3. On the basis of the grouping methods, averages and variation indicators, the existence of a diversity of links between economic security and social factors is grounded. The system of direct indicators in the model of management of socio-economic security of the agricultural enterprises can be represented as follows: structure of employment of workers by branches, land load per worker of agriculture, load of livestock per worker in the livestock branch, the ratio between the number of

workers in the branches of agriculture, direct labor costs per worker, share of labor costs in the structure of production cost, and profitability of wage payments.

4. The practical significance of the obtained results lies in the possibility of using the developed theoretical and methodological provisions and analytical tools in forming a holistic approach to the management of socio-economic security at the macro and micro levels. The analysis of the dynamics and interrelation of the indicators of the social component of economic security is the basis for the calculation in further studies of threshold values of the indicators, identification of threats and identification of security zones.

References

1. BEZBOZHNYI, V.L. (2009) “Vybir sposobu zabezpechennja socialjno-ekonomichnoji bezpeky velykykh promyslovykh pidpryjemstv [The choice of how to ensure the socio-economic security of large industrial enterprises]”, PhD Thesis, Ukraine.
2. BOROVIKOV, V. (2001) “Statistica: iskusstvo analiza dannykh na kompyutere. Dlya professionalov [Statistics: the art of data analysis on a computer. For professionals]”, 656 p., Sankt-Petersburg: Piter.
3. DAVYDOVA, A.A. & ZAKHAROVA, R.L. (2018) “Sistema kontrolya oplaty truda personala kak faktor obespecheniya ekonomicheskoy bezopasnosti predpriyatiya [The system of control over the remuneration of personnel as a factor in ensuring the economic security of the enterprise]”. Current issues of economics and modern management, pp. 53-60.
4. KOLENDA, N.V. (2016) “Ponjattja socialjno-ekonomichnoji bezpeky pidpryjemstva [The concept of socio-economic security of the enterprise]”, Economy and Society, pp. 672-678.
5. KUPCHAK, B.F. (2010) “Ekonomichna bezpeka pidpryjemstva: sutj ta umovy vynyknennja [Economic security of the enterprise: essence and conditions of origin]”. Lviv State University of Internal Affairs Bulletin, vol. 2, pp. 334-346.
6. LUHOVA, V.M., HOLUBIEVA, T.V. (2011) “Socialjna bezpeka jak kljuchova pidsystema bezpeky pidpryjemstv [Social security as a key subsystem of enterprise security]”. Business Inform, no. 10, pp. 69-72.
7. MAIN DEPARTMENT OF STATISTICS IN KHARKIV REGION (2019), Available at: http://kh.ukrstat.gov.ua/. Accessed 16 January 2020.
8. MEKHEDA, N., MADZHULA, A. (2011) “Planuvannja socialjnoji bezpeky na pidpryjemstvi [Social security planning at the enterprise]”, Available at: http://nauka.kushnir.mk.ua/?p=39869. Accessed 09 January 2020.
9. OMELCHUK, S. (2008) “Vyznachennja sutnosti ponjattja "ekonomichna bezpeka pidpryjemstva" ta jogho skladovykh [Defining the essence of the concept of "economic security of the enterprise" and its components]”. Bulletin of Khmelnytskyi National University, no. 6, pp. 206-210.
10. POZDEEV, V.L. (2016) “Aktualnye zadachi analiza ekonomicheskoy bezopasnosti predpriyatiya [Actual tasks of economic security of the enterprise]”. Accounting. Analysis. Audit, no. 2, pp. 16–23.
11. STATE STATISTICS SERVICE OF UKRAINE (2019), Available at: http://www.ukrstat.gov.ua/. Accessed 16 January 2020.
12. SYROTA, V.S. (2016). “Korporatyvna sotsialna vidpovidalnist u systemi ekonomichnoi bezpeky pidpryiemstv [Corporate social responsibility in the system of economic security of enterprises]”, PhD Thesis, Ukraine.
13. TESLENKO, Ye.Yu. (2018) “Rol kontrolya i ucheta oplaty truda v sisteme obespecheniya ekonomicheskoy bezopasnosti predpriyatiya [The role of control and accounting of wages in the system of economic security of the enterprise]”, Available at: https://elibrary.ru/item.asp?id=36688260. Accessed 12 January 2020.
14. TRETYAKOVA, A.S. (2017) “Metodika provedeniya analiza obespecheniya ekonomicheskoy bezopasnosti predpriyatiya (organizatsii) [Methods of analysis of economic security of the enterprise (organization)]”. A young scientist, no. 11, pp. 277-280.

15. VIVCHAR, O. (2016) “Integrated management system of financial and economic security business under conditions of post-crisis recovery”, Kielce, Poland.
16. VIVCHAR, O.I. (2018) “Upravlinnja ekonomichnoju bezpekoju pidpryjemstv: socioghumanitarnyj kontekst [Management of economic security of enterprises: socio-humanitarian context]”, 474 p., FOP Palianytsia V.A., Ukraine.