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Main Challenges of Agriculture of Ukraine in Globalization

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Abstract

Based on the analysis of the problems of agriculture of Ukraine the author highlighted categories of problems of agriculture in Ukraine and with the help of the Thomas L. Saaty analytic hierarchy process and identified their rating. The next stage of the rating definitions and problems is the pairwise comparisons of each problem category. The first place in the category value is “economic”, the second – “infrastructure”, the third – “social”, and the fourth – “production”, in the last fifth place – “environmental” problems. According to the analysis in each category is provided a list of the main problems of agriculture in Ukraine: small-scale production, insufficient condition of fruit and vegetable warehouses, weakness of non-productive cooperatives, rising unemployment, opacity of land relations, inconsistency with international standards of quality and safety, low investment adaptation of Ukrainian legal acts to EU requirements, unsatisfactory condition of engineering and transport infrastructure of rural settlements, lack of technical support for producers of agricultural machinery and low-sales service, non-compliance with agricultural storage technologies, running state of social infrastructure and other.

Keywords: analytic hierarchy process; globalization; priorities; problems of agriculture; system adaptation; Ukraine.

Introduction

Significant contribution of agriculture to the country's development, food security, the impact on social stability and macroeconomic indicators determines the high responsibility for the consequences of public policy for the sector. Not less important aspect is the appropriate economic policies world trends, conditions that arise in the process of globalization. There is a need for stability and transparency of Agrarian Policy of Ukraine in conjunction with its respective tasks solving urgent problems and priorities to ensure the development of agriculture in the context of globalization, which requires adapting regulatory policies and determine the priority decisions are the main problems.

The aim is to rank the major problems of agriculture sector in Ukraine preferred direction

adaptation of state regulation. The object of study is the organizational and economic mechanism of development and functioning of the Ukrainian agriculture. Subject of research are theoretical, methodological and scientific-practical provisions on priority adaptation of state regulation of agriculture of Ukraine, taking into account the ranking of industry problems.

Method of research

Theoretical and methodological basis of this study is a systematic approach to the study of the subject and the object of study [1]. The study used the general and special economic methods of induction and deduction, generalization to the phenomena that are being studied, and others. Questions of state regulation of agricultural sector of the economy of Ukraine and the main problems of agriculture is widely covered in the works of famous Ukrainian scientists [2; 3; 4; 5; 6; 7; 8; 9]. Problems and prospects of rural areas development is covered in the works of Ukrainian scientists [10]. Prospects and risks in agricultural trade in connection with the integration process, including the impact of the EU-Ukraine agreement on free trade in agriculture are considered in many scientific papers note [11; 12; 13]. There is an acute problem of unemployment in rural areas and the related tasks of social adaptation [14].

Inability to only using the methods of quantitative assessments make ranking the problems of agriculture in Ukraine makes use of other methods. Analysis of the scientific literature led to the conclusion that the most appropriate to rank the problems is the method of analytic hierarchy Process Thomas L. Saaty [14, p. 75]. Rating problems is within the unit. Using the specified scale allows experts to evaluate and compare the problems with a relatively accurate.

Based on the findings of experts define a rating of the problems. In order to obtain a single estimate is first necessary to determine the significance of the problems with using a paired comparison method.

In paired comparison and assessment categories sum of weighting factors equal to 1 (formula (1)).

$$\sum_{i=k}^N a_i = 1, \quad (1)$$

where a_i – weight coefficient;

k – category;

N – the number of terms a_k, a_{k+1}, \dots, a_N .

An important step is the expert evaluation of the significance of each problem under the paired comparison. An expert was proposed questionnaire for point scoring under the paired comparison of the importance of problems and categories within each category, with the ability to supplement the list of issues for further evaluation.

The weighting factor is the product of the problems weighting coefficient industry problems within the category of the weighting coefficient category (formula (2)).

$$WP = W_X \cdot a_k, \quad (2)$$

where WP – where weight coefficient of the problem;

W_X – weight coefficient of i -th problem defined within a category;

a_k – weight coefficient category.

The study included the following stages: data collection qualitative methods, the formation of expert groups (used purposive sampling of professionals who have the necessary knowledge and experience, ready to take part in the discussion) and quantitative data collection methods. Statistical sampling studies are: 1st focus group – managers of registered legal entities by main activity (the representatives of all the major forms of economic sectors and sub-sectors of agriculture of Ukraine).

Quota sampling. The required sample size is 190 experts that take place in our case. Thus, the sample for this focus group representative; 2nd focus group civil servants of the Ministry of Agrarian Policy and Food of Ukraine and the Ministry of Economic Development and Trade.

The sample cluster. The required sample size of 22 experts, which takes place in our case; Third focus group – scientists in the field of agriculture.

The sample cluster. The required sample size of 22 experts in our case. Representativeness of the sample was determined by calculating the sample size for each focus group, taking into account adjustments for small general population. Confidence probability shows – 95% confidence interval

– 5%. The required sample size is 234 expert that takes place in our case. Thus, the sample is representative.

Table 1 shows categories and the rating scale problems. The maximum permissible level of consistency (CR) is not more than 10%, or 0.1 [14, p. 75, 304].

Table 1: Point scoring of problems during paired comparison

Score	Problem assessment
1	equal benefit between the problems
2	slight advantage
3	average advantage
4	advantage, above-average
5	moderately strong advantage
6	strong advantage
7	very strong advantage
8	very, very strong advantage
9	absolute advantage

Source: [14, p. 304].

The obtained expert evaluations were compiled and calculated weighting coefficients of basic agricultural problems with the software Super Decisions.

Discussion

Improving the state support of agriculture is an actual task and strategic priority of our state and unanimously considered by the Government, the President and the national and international experts as a catalyst for economic growth. Achieving international competitiveness of agriculture in Ukraine, first, possibly subject to review of the principles of state aid to the agricultural producers, and secondly, it may not only have a positive economic effect, but also unpredictable (negative) social consequences due to the release of people employed in agriculture and sharp deterioration in the environment. The author offers the following categories for the analysis of problems: production; economic; social; infrastructure; environmental. According E. Shubravska, E. Prokopenko difficulties and problems associated with the modernization of agriculture of Ukraine “are subdivided-scale application at the national and industry, and the results of, and obstacles to implementation – on the investigative and limiting” [8], this approach applies to all the problems of agriculture. By branches of agriculture in each category identified the main problem. Despite significant regional differences and, therefore, differences in the problems of the same sector / sub-sector in different regions of the country, these aspects will not be considered by us as a result of the limited scope of this article.

Research results

The aggravation of global problems as a result of climate change, increasing world population, the growing influence of the environment, due to the emergence of new technological opportunities informatization of agricultural production and trade, harmonization of requirements for maintaining the technology and quality of products, relevant than ever makes the development of the global food market and ensure of drinking water, changing traditional approaches to agriculture and reclamation activities. Integration of agriculture of Ukraine into the world economy requires an adequate response to global challenges and the use of new opportunities.

The agriculture generated about 11% of the country's GDP and also more than 30% of the population (14.2 million people) actually engaged in individual agricultural production. In the countryside of low official employment and unemployment rises, so for 2000–2012 the number of employees decreased by 3.71 times [16]. “In 2013, the average number of employees in enterprises, institutions, organizations... with the number of employees more than 10 people who were engaged in agriculture and the provision of related services amounted to 504.9 thousand” [17, p. 2].

This confirms the problem of small commodity in almost all sub-sectors of agriculture, which has the effect of the discrepancy standards of production and storage (including European); import growth; price disparity, reducing the profitability of production, social problems. The wage fund for the year accrued to permanent employees of agriculture in 2013 was amounted to 3.5% of the total wage fund full-time employees in the national economy. The average monthly nominal salary of one full-time employee of agricultural enterprises in 2013 was one of the lowest among all types of economic activity and amounted to 2270 UAH [17, p. 2].

With this level of income of the population is forced to focus much effort on food self-sufficiency. Villagers buy food products try to minimize, and their private farms practically perform the function of social protection [17, p. 2]. As a result, labor productivity growth is exempt workforce, rising unemployment, deteriorating demographic situation, the process of aging of the rural population and employment in agriculture, is exacerbated social problems.

Ukraine owns 30% of the world reserves of black earth, the area of agricultural land in 2013 was 41.5 million hectares (69 % of the territory of Ukraine) have 32.5 million hectares – an area of arable [17, p. 1], but concern is the rapid soil degradation as a result of natural and anthropogenic factors. In Ukraine is 57.5% of soils prone to erosion. According to the National Scientific Centre “Institute of Soil Science and Agricultural Chemistry named after Sokolovsky”, approximately 40% of the arable land in Ukraine overcrowded [18]. The process of soil erosion increases dramatically due to the low standard of farming, outdated methods and means of the processing of the soil, excess acreage standards such industrial crops as maize, rapeseed and others. Environmental problems are exacerbated due to climate change, agriculture Ukraine needs to adapt to changes in temperature and precipitation, a significant reduction in the level of water in rivers, increasing the probability of catastrophic weather events. Environmental problems, in turn, cause production problems (decreased productivity, inability of traditional crop rotation and others) and well as infrastructural problems (inability to implement ameliorative potential). Agriculture of Ukraine is concentrated almost 7% of the country's capital investment, but the cost of fixed assets decreased from 11.5% in 2000 to 1.5% in 2012 [17]. There is a significant asymmetry between the volume of investment and agricultural production. In some regions of Ukraine there is insufficient technical support for producers of agricultural machinery and low service level of its service. One reason for the low investment activity is small-scale production. Legislative barriers nonproductive developments of the cooperative movement constrain investment activity, as well as create the problem of marketing of agricultural products.

Agricultural holdings have the resources and the opportunity to invest their own and borrowed funds in business development, which contributes to leadership in terms of productivity, profitability, compared with other forms of organizational management. According to Ukrainian scientists achieve rapid return on investment in agribusiness assets combined with a decrease in environmental management standards [10, p. 50]. Which also highlights the need for state regulation during take into account the peculiarities of doing business both large and small manufacturers.

Nationwide problems in Ukraine are: the high level of corruption, including in the courts, the high economic risks, the weakness of the stock market, the opacity of the financial system, holding back the flow of foreign investment in agriculture. However, large agricultural holdings, successfully attracted external funding, contributed to the transformation of innovative annual EBRD investments, and the signing of the EU Association potentially opens up prospects for the financing of small and medium-sized farms. The low level of investment in long-term profile industry leads in turn to a decrease in productivity, profitability, production volume, the formation of the problems in the food market, which confirms the complex nature of the problems. For example, low levels of investment in cattle due to the high cost of cattle space (per head) (10–15 thousand dollars USA) and the duration of rearing livestock. The profitability of cattle has negative values since 1994, the number of cattle has decreased over the years of independence is 5 times.

The problem of agriculture in Ukraine is also a low level of innovation activity. For example on the website of the State Statistics Service of Ukraine there are no data on innovation in agriculture, because their parameters is low or absent. Study through questionnaires allowed E. Shubravska and E. Prokopenko to allocate main reasons as “lack of enterprises own funds and

financing from external sources, excessive costs of innovation and limited information about the markets innovative products. In addition, according to agricultural enterprises innovation process also significantly hampered by the lack of qualified staff and guaranteed demand for innovative products” [8, p. 46].

By results of O. Yatsenko research Ukraine is integrated into the global market and now offer its global agricultural food products is more than twenty-headings, but is dominated by its commodity origin [9, p. 81–82). Foreign exchange earnings for exported agricultural products account for 25% of total Ukrainian exports. However, performance in many kinds of products is far behind the European average.

Moreover, for the main export commodities (corn, sunflower, honey and bee products) Ukraine has persistent competitive advantage in the global food market, but there is a need for consolidation of manufacturers, the development of organic production, greening, the development of modern methods of foreign trade and expansion of export geography. Another problem is the adaptation of Ukrainian legal acts to EU requirements, which will allow Ukraine to increasingly take advantage of association with the EU [12].

The matrix of pairwise comparisons is formed on the basis of the proposed experts' questionnaires processing to determine the importance of each category (table 2).

Table 2: Expert assessment of the significance of the problems of agriculture in Ukraine

Category	Coefficient of category importance
The economic	0,42114
The infrastructural	0,25233
The social	0,15385
The production	0,11261
Environmental	0,07007

On the basis of information provided in table 2, the experts identified the following weights categories of problems. The category of “economic” is the biggest indicator. That is, at this stage economic forces have the greatest influence on the formation of rating problems of agriculture in Ukraine. In the second place by value are infrastructure problems, the third – the social, the fourth – the production, at the last, fifth place – environmental problems.

The next stage of the rating definitions and problems is the pairwise comparisons of each problem category. According to the analysis in each category is provided a list of the main problems of agriculture in Ukraine: economic (small-scale production, the weakness of non-production cooperatives, the opacity of land relations; inconsistency with international standards of quality and safety, the problem of redistribution of the market in the market self-organization; increased dependence on public funding; difficulty product sales by small farmers and individual farms; adaptation of the Ukrainian normative legal acts to the EU requirements, low economic efficiency of agricultural production in comparison with other countries, low investment, low efficiency of the Agrarian Fund, low innovation activity, the limited geography of foreign trade, the difficulty of obtaining funding from external sources); industrial (noncompliance of storage technologies, the use of outdated technologies, failure of agricultural production technologies, failure to collect technology, low level of organic production); environmental (soil degradation, changes in temperature, change in water regime, lowering the water level in rivers and reservoirs, environmental pollution, including CO₂; changes in the natural biological cycle; inefficient use of waste; lack of control over planting material; lack of control over the use of veterinary preparations); social (rising unemployment), demographic (reduced life expectancy, the aging of the working population), social exclusion, low level of qualification of personnel, increase morbidity, high levels of alcohol and drug abuse); infrastructure (insufficient volume of fruit and vegetable warehouses; inadequate technical support for producers of agricultural machinery and poor service; a state of neglect of social infrastructure (health and educational institutions, libraries, clubs), the poor state of engineering and transport infrastructure of rural settlements,

lack of funding objects of depressed areas, low level software veterinary service; failure of port facilities for export, low level of gasification of rural settlements; lack of access to technologies using alternative energy sources, low level of sewage and water supply).

We make an example of peer review to identify the most important problems in agriculture of Ukraine at the appropriate stage of economic development. The results of peer review for each issue were ranked within the category and are shown in Table 3.

Table 3: Rating problems of agriculture in Ukraine

Economic	
small-scale production	0.0758052
weakness of non-productive cooperatives	0.0547482
opacity of land relations	0.0505368
inconsistency with international standards of quality and safety	0.042114
low investment level	0.042114
adaptation of Ukrainian legal acts to EU requirements	0.0379026
the problem of redistribution of the market in the market self-organization	0.021057
increased dependence on public funding	0.02021472
low level of innovation activity	0.0042114
the limited geography of foreign trade	0.0042114
the difficulty of obtaining financing from external sources	0.0042114
the complexity of the product sales by small farmers and individual farms	0.0294798
low economic efficiency of agricultural production compared with other countries	0.02063586
low efficiency of the Agrarian Fund	0.0126342
Production	
failure to comply with storage technologies	0.033783
the use of outdated technology	0.0281525
non-compliance with agricultural technology	0.022522
failure to capture technologies	0.0168915
low levels of organic production	0.011261
Environmental	
soil degradation	0.021021
changes in temperature	0.014014
change the water regime, reducing water levels in rivers and reservoirs	0.0112112
pollution environment, including CO ₂	0.0084084
changes in the natural biological cycle	0.0056056
inefficient use of waste	0.0049049
lack of control over the use of veterinary preparations	0.0035035
lack of control over the planting material	0.0014014
Social	
rising unemployment	0.0538475

demographic (reduced life expectancy, an aging working population)	0.0292315
social exclusion	0.015385
low level of staff	0.0323085
increase in the incidence	0.015385
high rates of alcoholism and drug addiction	0.0076925
Infrastructure	
insufficient condition of fruit and vegetable warehouses	0.0580359
lack of technical support for producers of agricultural machinery and low service	0.0353262
running state of social infrastructure (medical and educational institutions, libraries, clubs)	0.0328029
unsatisfactory level of engineering and transport infrastructure of rural settlements	0.0378495
lack of financing of the development of depressed areas	0.0201864
a low level of veterinary service	0.0176631
lack of port facilities	0.0151398
low level of gasification	0.0126165
lack of access to technologies using alternative energy sources	0.0126165
a low level of sanitation and water supply	0.0100932

Represented in Table 4 rating problems of Ukrainian agriculture is the base and foundation on the analysis of the peaceful development of the country. But between exacerbations an economic of crisis and force majeure (occupation of the country, conducting combat operations) it necessary refined based on additional research.

Table 4: Rating problems of agriculture in Ukraine

Problem	Coefficient of problem importance
small-scale production	0.0758052
insufficient condition of fruit and vegetable warehouses	0.0580359
weakness of non-productive cooperatives	0.0547482
rising unemployment	0.0538475
opacity of land relations	0.0505368
inconsistency with international standards of quality and safety	0.042114
low investment	0.042114
adaptation of Ukrainian legal acts to EU requirements	0.0379026
unsatisfactory condition of engineering and transport infrastructure of rural settlements	0.0378495
lack of technical support for producers of agricultural machinery and low-sales service	0.0353262
non-compliance with agricultural storage technologies	0.033783
running state of social infrastructure (medical and educational institutions, libraries, clubs)	0.0328029
low level of staff	0.0323085

the complexity of the product sales by small farmers and individual farms	0.0294798
demographic (reduced life expectancy, an aging of working population)	0.0292315
the use of outdated technology agricultural production	0.0281525
non-compliance with agricultural technology	0.022522
the problem of redistribution of the market in the market self-organization	0.021057
soil degradation	0.021021
low economic efficiency of agricultural production compared with other countries	0.02063586
increased dependence on public funding	0.02021472

Ranking the problems on the importance enabled the prioritization of government regulation and therefore the development and implementation of adaptation mechanisms of Ukrainian agriculture to globalization.

Conclusion

Based on the analysis of the problems of agriculture of Ukraine the author highlighted categories of problems of agriculture in Ukraine and with the help of the Thomas L. Saaty analytic hierarchy and identified their rating. The first place in the category value is “economic”, the second – “infrastructure”, the third – “social”, the fourth – “production”, in the last fifth place – “environmental” problems. The results of peer review for each issue were ranked within the category and compiled an overall rating of the most significant problems in agriculture of Ukraine in the context of globalization. On the basis of which the priorities of implementation of adaptation mechanisms of Ukrainian agriculture to globalization are:

- improvement of market regulation, reduction of bureaucratic barriers to the development of agricultural enterprises (completion of land reform, deregulation, improvement of the legislation on agricultural cooperatives etc).
- encouraging farming and large-scale production;
- development of regional wholesale markets, etc.
- improving the quality of product safety to the international standards requirements which including development tools to improve the quality of citizens production;
- to promote retailers to domestic harvesting of vegetables, fruit and potatoes (evaluating the effectiveness of credit conditions, compensation for the creation of storage farms etc.);
- adaptation of Ukrainian legal acts to EU requirements;
- introduction of a set of measures to create new jobs and the development of social infrastructure in rural areas;
- improving the institutional framework for environmental management and environmental protection.

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