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## The multidimensional methods of assessing the competitiveness of farm enterprises

**Scientific problem.** Managerial decision-taking refers to the system of goals which is traditionally based on the current problems which either hamper the development and the efficient functioning of management object or restrict them. The substantiation of the goals of managing the enterprise competitiveness as the basic criterion for their efficient functioning under contemporary conditions must be based on analyzing the competitiveness current level, its standard (or model) level, as well as on revealing the reasons for the insufficient competitiveness. The flows of the corresponding information are formed by the results of assessing competitiveness which envisages the qualitative assessment of competitiveness, in general, and its separate factors, in particular, This will make it possible to specify the spheres of the economic process in which the enterprise lags behind its competitors and/or leaves them behind: Thus, the formation of the efficient mechanism of managing competitiveness is based on

the applied technique of assessing its level. The above technique must reflect most accurately your competitive positions as compared to those of your competitors. The problem proves most topical for domestic farm enterprises. Having lost Russian sales markets domestic enterprises have to compete with European commodity producers on both internal and external markets.

**Analysis of recent researches and publications.** The problems of assessing the enterprise competitiveness have been widely studied in the domestic scientific sources, especially in the works of A.Kendiukhov [2], O.Yankovy [3], O.Ulianchenko, L.Yevchuk, I.Gutorova [7], M.Malik, O.Nuzhna [4], T.Pietiesheva [5], O.Shkolny [8] etc. At the same time, foreign economists do not practically investigate the problems of assessing competitiveness on the micro level, thus focusing on the assessment of competitive positions of states and separate industries. Nevertheless, the research papers of D.Depper and D.Cerrato [11], T.Lalinski [2], H.Oral [13], M.Porter [14, p.58-80],

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D.Cetindamar and H.Cilitoglu are devoted to the methodical aspects of assessing and analyzing the enterprise competitiveness. With respect to the specific characteristics inherent to the activities of farm enterprises (including the dependence on natural and climatic conditions), the above researchers have developed and substantiated the methodical approaches to assessing competitiveness which must be adapted to the peculiarities of management of agricultural producers.

**The objective of the article** at developing the technique of assessing the level of competitiveness of farm enterprises that would fully correspond to the contents of this concept and take into account the specific features of the economic process of agricultural producers.

**Statement of the main results of the study.**

The enterprise competitiveness serves as its description which reflects the degree of implementing its actual and potential ability to form, keep and use stable competitive advantages. Taking into account the above cited definition the assessment of competitiveness has to generalize the efficiency of using advantages which is manifested in the form of financial and economic indices which are bound to be compared with the results of competitors. The practical realization of the above mentioned requires the use of multidimensional methods, especially the method of the basic components the results of which can be generalized by means of the taxonomical method.

It is noteworthy that the practical realization of multidimensional methods for assessing the level of competitiveness is becoming possible under the available data about competitors. This assessment can be made by the bodies of state power and local authorities, consulting companies, information agencies which can obtain information about separate enterprises which are at the disposal of central bodies of executive power or their territorial offices, agencies for statistics, as well as from other sources. The corresponding research conducted by the above listed subjects are aimed at revealing the basic tendencies and problems of development of both the totality of economic entities and the branch on the regional and state levels.

The process of assessing competitiveness of farm enterprises can be exercised in several stages:

1) the identification of indices which reflect the effects from competitive advantages. Besides, the systematization of factors is based on the division of the economic process into the subprocesses of the resource supply, production and produce marketing. The factors that refer to the sphere of resource supply cover job security, the quantity of tractors per 1ha of tillage (as a modified analogue of capital-labor ratio), power supply, per capita power consumption. The factors of the production sphere also include the volumes of expenditures per 1 ha of farmlands, the level of yields of grain crops and grain legumes, average annual milk yield from 1 cow, average daily meat gain of cattle under outdoor keeping, fattening, raising, labor productivity. The indices of sales sphere include the level of sales profitability, profit margin per 1 ha of farmlands, profit margin per 1 employee, the level of profitability of economic activities.

2) the coefficients of competitiveness ( $k$ ) were determined through the method of the basic components by several stages which cover standardization of actual values of the above indices [3, p.144], verification of aggregate data with respect to the availability of correlation through constructing the correlation matrix and determining its own value, the percentage of general variance and factor loads. Afterwards, the basic components are determined and they are characterized by the most powerful effects on the general variation. Traditionally the first basic component is chosen for further assessment. As a result, the calculation of competitiveness latent indices for each separate sphere of the economic process is made. On the basis of these indices the rating of a separate object of assessment is determined.

3) the ratings of the objects investigated in accordance with the three spheres of the economic process (resource supply, production and marketing) which are obtained through the method of the basic components must be summarized into the generalized taxonomical coefficient ( $\mu$ ) which reflects the degree of similarity to the model [6, p.10-24; 1; 9]. The higher is

the absolute value of the rating, the less competitive is the enterprise.

The assessment of competitiveness for domestic farm enterprises has been made in the context of Ukraine's oblasts and the Autonomous Republic of the Crimea (ARC). For the last five years the persistent positions of leaders

have been taken by Volyn and Transcarpathian oblast farm enterprises (table 1). The economic entities of Luhansk, Mykolayiv and Ternopil oblasts belong to stable outsiders. Negative tendencies related to the level of competitiveness in the sphere of provision are observed at Chernihiv and Sumy oblast enterprises.

Table 1

**The values of the basic components and the rating of farm enterprises of Ukraine in accordance with the level of their competitiveness within the framework of resource supply**

Oblast	Year									
	2010		2011		2012		2013		2014	
	<i>k</i>	rang	<i>k</i>	rang	<i>k</i>	rang	<i>k</i>	rang	<i>k</i>	rang
ARC	0,30	9	0,71	9	-0,08	8	-1,51	19	–	–
Vinnitsia	1,04	7	0,88	8	5,46	2	-7,19	24	7,30	1
Volyn	5,80	2	6,39	2	3,16	3	-4,06	23	2,37	3
Dnipropetrovsk	-1,58	16	-1,41	16	-0,66	12	-0,98	14	-0,41	10
Donetsk	-0,74	14	-0,48	13	-1,23	16	-0,72	10	-2,17	25
Zhytomyr	0,75	8	1,26	6	0,08	7	-1,22	17	-0,81	16
Zakarpattia	8,48	1	8,71	1	9,60	1	-9,92	25	5,60	2
Zaporizhzhia	-2,30	23	-2,38	22	-1,51	19	-0,52	8	-0,53	13
Ivano-Frankivsk	2,27	3	1,71	3	2,13	4	-1,37	18	-0,60	14
Kyiv	1,89	5	1,55	4	-0,23	9	-2,06	21	0,33	6
Kirovohrad	-2,13	21	-2,19	20	-1,08	14	-0,85	12	-0,34	9
Luhansk	-2,98	25	-2,94	25	-1,34	17	-0,05	2	-1,47	21
Lviv	1,91	4	0,66	11	0,40	5	-1,00	15	-0,50	11
Mykolaiv	-2,92	24	-2,71	24	-1,99	24	-0,21	4	-1,01	19
Odesa	-1,63	17	-1,69	17	-1,20	15	-0,37	6	-0,99	18
Poltava	-0,40	12	0,06	12	-0,85	13	-1,13	16	0,10	7
Rivne	0,10	11	0,66	10	-0,32	10	-0,83	11	-0,98	17
Sumy	-1,75	18	-2,13	19	-2,05	25	-0,89	13	-1,48	22
Ternopil	-2,29	22	-2,46	23	-1,90	23	-0,08	3	-1,13	20
Kharkiv	-1,96	19	-2,35	21	-1,71	22	-0,38	7	-0,63	15
Kherson	-2,09	20	-2,12	18	-1,51	20	-0,55	9	-0,53	12
Khmelnysk	-0,67	13	-1,22	15	-1,37	18	-0,26	5	-2,15	24
Cherkasy	0,22	10	0,94	7	0,19	6	-1,74	20	0,46	5
Chernivtsi	1,49	6	1,39	5	-0,41	11	-2,10	22	1,10	4
Chernihiv	-0,80	15	-0,87	14	-1,59	21	-0,01	1	-1,51	23

\* *k* – the coefficients of competitiveness.

Source: own research.

The level of competitiveness in the sphere of resource supply of these enterprises has gradually reduced to its lowest values. In recent years, as far as the production sphere is concerned and according to the results of applying the method of the basic components, Ivano-Frankivsk oblast enterprises are characterized by the most persistent competitive positions. In the period of 2010-2014 they have improved their competitive position, ranking 1<sup>st</sup> in the rating (as compared to their former 4<sup>th</sup> position) (table 2). Cherkasy oblast enterprises which retained their leading position in 2010-2013, decreased their level of com-

petitiveness by 8 points. During the last 4 years commodity producers of Transcarpathian, Zaporizhzhia, Luhansk, Mykolayiv and Odessa oblasts proved stable outsiders in the economic spheres under study.

The results of assessing competitive advantages within the framework of agricultural produce sales prove that during 2010-2014 the leading positions were held by Lviv, Kirovograd and Cherkasy oblasts. There were no stable outsiders as concerns the level of competitiveness in the sphere of sales. At the same time Ternopil and Ivano-Frankivsk oblast enterpris-

es( as the leaders of 2010-2013) held the last positions in the rating of 2014 (table 3). Instead, the enterprises of Mykolayiv, Odessa and Rivne oblasts which were characterized by weak competitive positions at the beginning of the period under study, appeared most competitive among the totality investigated in recent

years. With respect to a considerable variation and instability of calculated latent indices of competitiveness one can say that any positive change in a certain status of agricultural enterprises can be stipulated through the efficient management of competitiveness within the framework of marketing policy.

Table 2

**The values of the basic components and the rating of farm enterprises of Ukraine in accordance with the level of their competitiveness within the framework of the production sphere**

Oblast	Year									
	2010		2011		2012		2013		2014	
	<i>k</i>	rang	<i>k</i>	rang	<i>k</i>	rang	<i>k</i>	rang	<i>k</i>	rang
ARC	-0,09	22	0,18	19	-1,87	24	-2,64	25		
Vynnytsia	4,14	5	4,42	6	3,05	9	3,68	6	-0,82	5
Volyn	0,29	19	-0,05	21	1,43	15	0,52	17	-4,47	19
Dnipropetrovsk	3,20	9	2,25	13	0,37	18	1,50	14	-2,94	14
Donetsk	1,64	14	0,88	16	0,46	17	-0,01	19	-4,31	18
Zhytomyr	0,26	20	0,63	17	1,70	14	1,32	15	-4,21	17
Zakarpattia	-1,62	25	-1,40	24	-0,75	21	-1,62	21	-6,29	21
Zaporizhzhia	0,38	18	-0,82	23	-1,74	23	-1,65	22	-6,49	22
Ivano-Frankivsk	4,63	4	4,60	4	6,02	2	4,72	3	-1,83	9
Kyiv	5,83	2	5,90	2	5,74	3	4,86	2	0,48	1
Kirovohrad	2,22	11	2,30	12	0,90	16	2,03	11	-3,73	16
Luhansk	-0,40	23	-0,74	22	-0,44	20	-1,68	23	-7,96	24
Lviv	2,68	10	2,65	10	3,76	6	2,73	10	-1,95	10
Mykolaiv	0,89	16	0,16	20	-1,13	22	-0,16	20	-5,34	20
Odesa	-0,55	24	-1,74	25	-2,94	25	-1,75	24	-6,60	23
Poltava	3,76	6	5,00	3	3,56	7	3,97	4	-0,56	4
Rivne	0,22	21	0,23	18	1,87	13	1,11	16	-3,44	15
Sumy	0,83	17	2,53	11	2,90	10	3,33	8	-2,06	11
Ternopil	3,75	7	4,45	5	4,63	4	3,47	7	-0,43	3
Kharkiv	1,76	13	3,21	9	2,27	12	2,85	9	-2,35	12
Kherson	1,92	12	1,86	14	-0,10	19	0,42	18	-2,69	13
Khmelnysk	3,35	8	3,78	8	4,42	5	3,82	5	-0,93	6
Cherkasy	7,65	1	7,83	1	6,85	1	5,69	1	0,39	2
Chernivtsi	4,82	3	3,94	7	3,07	8	1,80	12	-1,77	8
Chernihiv	0,95	15	1,60	15	2,46	11	1,59	13	-1,61	7

\* *k* – the coefficients of competitiveness.

Source: own research.

Table 3

**The values of the basic components and the rating of agricultural enterprises of Ukraine according to the level of their competitiveness within the framework of the marketing sphere**

Oblast	Year									
	2010		2011		2012		2013		2014	
	<i>k</i>	rang	<i>k</i>	rang	<i>k</i>	rang	<i>k</i>	rang	<i>k</i>	rang
ARC	-2,47	17	-1,62	19	-5,44	25	-5,86	24	–	–
Vynnytsia	1,24	10	2,53	8	-0,94	15	-1,60	19	-3,65	20
Volyn	-0,43	11	-1,42	18	-0,08	13	0,50	11	0,17	12
Dnipropetrovsk	-2,46	16	2,63	7	-0,58	14	2,56	4	0,76	11
Donetsk	-2,41	15	1,16	9	0,13	10	1,62	9	-2,16	18

Continued Table. 3

Zhytomyr	-1,59	12	-3,66	22	-3,11	19	-5,03	23	-5,88	23
Zakarpattia	-4,89	25	-5,48	23	-3,48	20	-0,81	16	-0,48	13
Zaporizhzhia	-2,49	18	0,45	11	-3,08	18	-0,92	17	1,69	8
Ivano-Frankivsk	11,10	1	2,64	6	5,56	3	6,02	2	-4,92	21
Kyiv	4,14	4	5,33	2	6,42	2	2,73	3	2,78	6
Kirovohrad	-2,63	22	5,03	3	4,12	4	2,52	5	7,56	1
Luhansk	-2,58	19	0,15	13	1,04	8	2,13	7	-3,04	19
Lviv	3,29	6	-1,15	17	11,16	1	10,19	1	5,80	2
Mykolaiv	-2,61	20	-0,55	14	-2,42	17	0,07	14	1,20	9
Odesa	-2,61	21	-1,84	20	-4,24	23	0,38	13	2,43	7
Poltava	3,20	7	4,94	4	1,75	7	2,21	6	5,16	3
Rivne	-3,96	23	-6,10	24	-4,44	24	-7,63	25	3,36	5
Sumy	-4,44	24	-2,88	21	0,02	12	-2,18	20	-0,98	15
Ternopil	3,52	5	3,75	5	0,06	11	-3,50	21	-5,89	24
Kharkiv	-2,32	13	1,11	10	0,41	9	0,49	12	-1,08	16
Kherson	-2,37	14	-0,67	15	-3,62	22	-0,06	15	1,09	10
Khmelnysk	1,32	9	0,35	12	2,14	6	0,72	10	-0,83	14
Cherkasy	4,20	3	5,53	1	3,19	5	1,64	8	3,93	4
Chernivtsi	2,20	8	-0,83	16	-3,48	21	-1,40	18	-1,39	17
Chernihiv	6,05	2	-9,39	25	-1,11	16	-4,80	22	-5,62	22

\*  $k$  – the coefficients of competitiveness.

Source: own research.

The results of the assessment made prove of Lviv, Poltava and Cherkasy oblasts appeared that in the period of 2010-2014 farm enterprises most competitive (table 4).

Table 4

**The values of taxonomy indices and the rating of farm enterprises of Ukraine according to the level of their competitiveness**

Oblast	Year									
	2010		2011		2012		2013		2014	
	$\mu$	rang	$\mu$	rang	$\mu$	rang	$\mu$	rang	$\mu$	rang
ARC	0,22	21	0,35	15	0,17	23	-0,03	25	–	–
Vinnitsia	0,70	6	0,72	4	0,61	6	0,19	21	0,49	9
Volyn	0,42	13	0,34	16	0,55	8	0,21	19	0,44	11
Dnipropetrovsk	0,42	14	0,49	8	0,41	13	0,49	7	0,52	8
Donetsk	0,41	15	0,47	9	0,42	12	0,41	11	0,12	23
Zhytomyr	0,44	12	0,32	17	0,44	10	0,16	23	0,20	22
Zakarpattia	0,18	23	0,20	21	0,33	19	0,05	24	0,39	13
Zaporizhzhia	0,18	24	0,19	22	0,19	21	0,25	18	0,35	15
Ivano-Frankivsk	0,90	1	0,84	3	0,91	1	0,53	6	0,35	14
Kyiv	0,87	2	0,92	1	0,80	4	0,45	8	0,81	3
Kirovohrad	0,25	20	0,44	11	0,51	9	0,58	3	0,56	5
Luhansk	0,16	25	0,14	24	0,37	16	0,38	12	0,08	24
Lviv	0,79	3	0,47	10	0,84	2	0,55	5	0,66	4
Mykolaiv	0,21	22	0,18	23	0,14	24	0,37	13	0,30	18
Odesa	0,28	18	0,13	25	0,13	25	0,28	17	0,27	19
Poltava	0,68	7	0,71	5	0,64	5	0,56	4	0,82	2
Rivne	0,34	17	0,24	19	0,33	18	0,18	22	0,45	10
Sumy	0,25	19	0,27	18	0,32	20	0,36	15	0,31	17
Ternopil	0,46	10	0,43	12	0,40	14	0,43	10	0,23	20
Kharkiv	0,44	11	0,41	13	0,39	15	0,59	2	0,40	12
Kherson	0,41	16	0,35	14	0,18	22	0,36	14	0,53	7
Khmelnysk	0,63	9	0,52	7	0,56	7	0,71	1	0,32	16
Cherkasy	0,77	5	0,85	2	0,84	2	0,45	9	0,87	1
Chernivtsi	0,78	4	0,58	6	0,43	11	0,20	20	0,53	6
Chernihiv	0,65	8	0,23	20	0,34	17	0,34	16	0,20	21

\*  $\mu$  – taxonomical coefficient.

Source: own research.

It is noteworthy that Ivano-Frankivsk oblast enterprises were gradually losing their competitive positions from the 1<sup>st</sup> in 2010 and 2012 up to the 14<sup>th</sup> in 2014. First of all, it is connected with the decrease in their competitiveness as to the sphere of the produce marketing. Nevertheless, none of the producers of the above region was characterized by stable positions of leaders. The similar situation refers to outsiders whose list was changing from year to year.

**Conclusions.** The technique of assessing the competitiveness of farm enterprises with the use of the methods of the basic components and the taxonomical analysis makes it possible to calculate a unified generalized index of competitiveness that takes into account the ability of commodity producers to compete in the sphere of resource supply, production and farm produce marketing. In the majority of cases

outsider-producers prove noncompetitive within the framework of the specified stages of the economic process, whereas it is only Cherkasy oblast enterprises that appeared the indisputable leader during 2010-2014. The main peculiarity of the activities of domestic economic entities is their inability to retain their competitive positions within several years. But on the other hand, this makes it possible for noncompetitive agricultural producers to considerably improve their positions on the market in a relatively short period of time.

As far as the assessment of competitiveness of agricultural enterprises is concerned, the developed technique can be supplemented by a promising approach to assessing the competitive positions under the conditions of lack of information about competitors.

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