



PROBLEMS OF RISK MANAGEMENT IN FARM ACTIVITIES

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Abstract: In this article, the problems of risk management in the activities of farms and the increased attention to risk management as an important direction of strategic management of the enterprise in the conditions of modern economic activity. Ideas and considerations are given that the correct organization of risk management tasks in the enterprise management system is considered a guarantee of successful economic activity in the conditions of risks.

Key words: farms, risk management, business activity.

Farms come during the implementation of entrepreneurial activities faces risks of different origin, exposure level and scope. They are constantly faced with the choice of two paths, that is, the goal of high returns by taking risks, or the choice of a stable return based on extreme caution. Therefore, in order to adapt the farms to the current conditions in the market, achieving the implementation of effective risk management strategies in their activities will increase the possibility of eliminating the imbalance between income and risks.

Today, various methods and strategies are widely used in risk management in world practice. Risk mitigation through market instruments (for example, crop insurance, forward pricing), payments that partially cover the producer's losses (for example, income insurance, countercyclical payments), as well as direct market intervention (intervention) of the state in some countries the practice has developed very widely.

Research on risk management has shown that farm-related risks differ from sector- or regional-level risks, and that farms have certain priorities in managing risks associated with their own farm activities. In most cases, farms have shown that it is possible to obtain maximum profit based on the inverse correlation between price and yield or by coordinating the ratio between the yield and price of different agricultural crops at the expense of diversification of production.

The increase in farm incomes directly depends on the yield of agricultural crops, selling prices of cultivated products, production costs and various forms of financial assistance, as well as the variability of all the above elements and diversification of production.

A survey was conducted among more than 140 farms operating in the Namangan region in order to assess the risks in the activities of farms and to investigate what problems exist in their management. In the questionnaire, 21 types of factors affecting the effective operation of farms were given, and they were asked to evaluate them on a scale of 1 to 5, respectively, the weakest factor's influence is 1 point, and the strongest factor's influence is 5 points.

The compatibility of factors evaluated by farmers (experts), the degree of mutual agreement of their opinions was checked based on Kendall's concordance coefficient. According to the

Harrington verbal-numerical scale, the concordance coefficient varies in the range of numerical values $0 \leq W \leq 1$. According to him, if the value of the concordance coefficient is close to one, the level of agreement of the opinions expressed by the experts is high and the results of the survey are reliable. Kendall's concordance coefficient is determined by the following formula (2.5):

$$W = \frac{12 \times S}{d^2 \times (m^3 - m)} \quad (2.5)$$

Here: W – concordance coefficient, d - the number of involved experts, m - the number of objects (factors) being evaluated, S - the quantitative value for determining the concordance coefficient, which is determined according to the following formula (2.6):

Table 1

Harrington verbal-numerical scale

No	Concordance coefficient numerical values	The level of consensus of experts
1	$0 \leq W \leq 0,2$	Agreement is very low
2	$0,2 \leq W \leq 0,37$	Agreement is low
3	$0,37 \leq W \leq 0,64$	Agreeableness is medium
4	$0,64 \leq W \leq 0,8$	Agreement is high
5	$0,8 \leq W \leq 1,0$	Agreement is very high

In this r_{is} – i - to the object s -is the rating or color given by the expert, which is determined based on the following formula (2.7):

$$r_i = \frac{1}{d} \sum_{s=1}^d r_{is}, \quad (i = \overline{1, m}) \quad (2.7)$$

(2.6) in Eq r_i the average of (\bar{r}) is calculated using the following formula (2.8):

$$\bar{r} = \frac{1}{m \cdot d} \sum_{i=1}^m \sum_{s=1}^d r_{is} \quad (2.8)$$

Table 2

Results of a survey on the assessment of factors influencing the activities of farms

No	Influencing factors	Sum of points	Absolute difference from average	Mean squared difference
1	Impact of climate change on agrotechnical processes	577	143	20449
2	Effects of pests and diseases	572	138	19044
3	Effects of water supply	540	106	11236
4	Effect of soil fertility	537	103	10609
5	Impact of skilled labor and staffing	521	87	7569
6	The effect of mineral and organic fertilizers	509	75	5625
7	Monopoly high prices of machinery, fuel and mineral fertilizers	507	73	5329
8	Effect of seasonality on production	497	63	3969
9	The effect of the provision of techniques	474	40	1600
10	Effect of the situation on the product market	457	23	529
11	Impact of the relationship with the bank	444	10	100
12	The influence of agroclimatic conditions	429	-5	25
13	The effect of administrative intervention on the activities of farmers	403	-31	961
14	The effect of the supply of fuel and lubricants	379	-55	3025
15	Impact of accounts receivable	378	-56	3136
16	The influence of the ecological environment	367	-67	4489
17	Impact of government decisions on farm activity	336	-98	9604
18	Effect of product storage options	315	-119	14161
19	Effect of product delivery options	304	-130	16900
20	The effect of the tax regime	289	-145	21025
21	The effect of lack of information	279	-155	24025
	Total	9114	0	183410

The following calculation was made based on the Kendall concordance coefficient determination formula (2.9):

$$W = \frac{12 \cdot 183410}{143^2 \cdot (21^3 - 21)} \approx 0,01165 \quad (2.9)$$

Since the number of evaluated factors is $m \geq 7$, the correlation coefficient of the points given by farms is very small, i.e. $W = 0.0116$. Author development Therefore, its level of relevance is determined by Pearson's "chi-square" criterion. Empirical value (2.10):

$$\chi^2 = d(m - 1) \times W \quad (2.10)$$

Calculated critical criterion for robustness degree $df = n - 1$ and significance degree $\alpha \chi^2(n)$

– 1) compared to If the empirical value is the critical criteria range $\chi^2 > \chi^2 (m - 1)$, the concordance value is significantly different from zero. That is zero ($h_0: W = 0$) In this case, the opinions of experts do not agree with each other.

According to Pearson's "chi-square" criterion, the following (2.11) empirical value was calculated:

$$\chi^2 = 143 \cdot (21 - 1) \cdot 0,01165 \approx 33,3139 \quad (2.11)$$

The empirical value is compared with the critical criterion calculated for the maleness degree number $df = 21 - 1 = 20$. Empirical value $\chi^2 = 33,3139$ corresponds to the critical interval. The concordance coefficient is significantly different from zero. Therefore, there is a consistency between the scores given by farms on the assessment of factors affecting economic activity ("see Appendix 1.10").

Factors related to weather changes, pests and diseases, water supply, soil fertility, lack of qualified workers and employees, supply of mineral and organic fertilizers, agricultural machinery, monopolized high prices of fuel and mineral fertilizers have a strong influence on the activities of farms in the province. shown to be

In particular, 76.3 percent of the 143 farms that participated in the survey believe that climate change strongly affects agrotechnical processes in their activities.

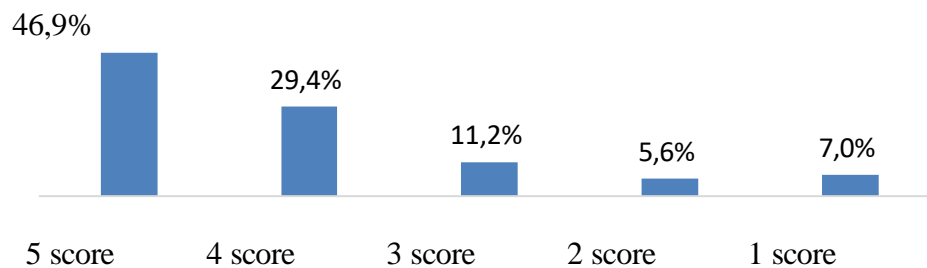


Figure 3. Scores on the impact of climate change on agricultural processes

46.9% of the respondents evaluate this factor with 5 points, 29.4% with 4 points. Therefore, they believe that the influence of the natural factor on the final results of farm activities is high. Farms that express the influence of this factor with 1 and 2 points are, in most cases, livestock farms, which consider their activities not related to climate change.

A different situation can be seen in relation to the impact of agroclimatic conditions. 43.4% of the total respondents rated the impact of this factor as average with 3 points. 25.9 percent of the respondents rated the factor above the average, and 4.9 percent rated the factor with the highest 5 points. Therefore, farms consider themselves ready for the risks associated with agro-climate change.

As one of the factors that have a high impact on production efficiency, the respondents cite the impact of pests and diseases of agricultural crops. 30.8% of them evaluate this factor with 5 points, respectively, 46.2% with 4 points, that is, 77% of the respondents rate the influence of this

factor highly.

Such a situation is expressed by the low level of effectiveness of measures to combat agricultural pests and diseases in the region. At the same time, the high prices of pesticides, herbicides, rodenticides and other means against various pests are related to the lack of sufficient knowledge and experience in their use.

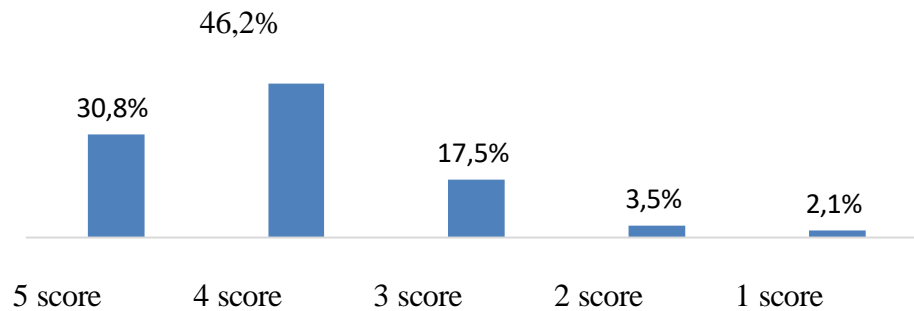


Figure 5. Scores for exposure to agricultural pests and diseases

One of the most important features of the agricultural sector is the direct relationship between soil fertility and water supply. In 2019, irrigated land in the region is 232.9 thousand hectares, and its share in agricultural land is 83.1 percent. As can be seen from the above, the issue of water supply is one of the main issues on the agenda. The opinions of respondents in this regard also confirm this. 30.1% of respondents evaluate the impact of this factor with 5 points, 39.2% with 4 points. It can be seen that 69.3 percent of respondents consider the issue of water supply to be crucial.

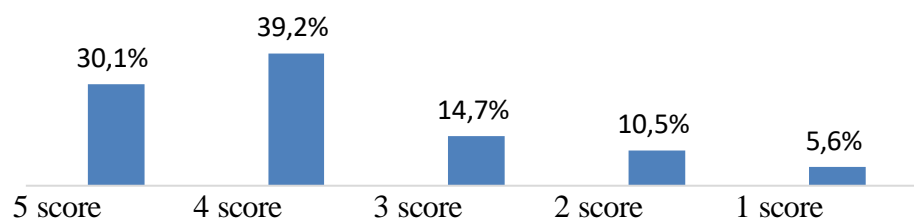


Figure 6. Scores for water supply impacts

Interruptions in water supply, especially during the growing season, have a negative impact on the final results of production. It should be noted that the high dependence of agriculture on water supply, the preservation of the use of traditional methods of irrigation of crops, the lack of formation of a culture of water use, and the sharp increase in drought as a result of climate change lead to the deepening of the problem. Therefore, the use of cost-effective methods of water supply in the agricultural sector, namely the widespread use of drip irrigation, creates a need.

Soil fertility is one of the important factors in increasing the yield of agricultural crops. However, in the following years, the decrease in attention to the maintenance and increase of soil

fertility, the supply of nutrients to the soil in agricultural lands, the violation of the norms of mineral fertilizers for agricultural crops, and the failure to use mineral fertilizers in accordance with the condition of the soil and the type of crop, created a risk of a decrease in soil fertility.

In our opinion, the information factor in the agricultural sector has a direct impact on the final results of production. Armed with the necessary information plays an important role in ensuring production efficiency. Therefore, it is desirable to form a separate system that undertakes to provide farms with the necessary and quick information.

When the results of the survey were analyzed in terms of agricultural sectors, the factors affecting the increase in the risk of production (productivity) such as climate change, pests and diseases, water supply, soil fertility and seasonality were highly evaluated. Also, it was noted that factors related to the supply of agricultural machinery, fuel and mineral fertilizers, monopoly high prices, lack of qualified workers and employees have a significant impact. The analysis of the results of the assessment of the factors affecting the activity of farms showed that in almost all districts of the region the influence of factors related to necessity and diseases, weather changes, water supply, soil fertility, supply of mineral and organic fertilizers is equally high. In particular, it was noted that the influence of these factors is relatively strong in Yangikurgan, Uychi, Norin, Torakurgan and Namangan districts of the region. The highest scores for the total impact of factors were registered by farms of Chortoq (88 points), Yangikurgan (87 points), Namangan (86 points) and Torakorgan (83 points) districts. Therefore, it means that it is necessary to organize agricultural production in these districts, to improve the activity of the infrastructure system serving farms.

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