Management Decision-Making by the Head of the Peasant Farm Enterprise under Conditions of Uncertainty

I V Popova

IRKUTSK state agrarian University named after A. A. Ezhevskey
City of Irkutsk, Molodezhnyi village 1, Russia, 664038

E-mail: irvinaks@mail.ru

Abstract. The article considers the uncertainty as one of the risk-forming factors of peasant farm enterprises, identifies the reasons for uncertainty in business activity, considers the trends of small business in agriculture of Irkutsk region, marks out one of the methods of management decision-making under conditions of uncertainty for the peasant (farmer) economy, considers the performance indicators of the peasant farm of Irkutsk region in dynamics, reveals the main problems consisting of worn-out equipment and lack of financial resources, the proposed options for management decision-making to improve the efficiency of a farm enterprise operation, determined the evaluation of variants for modernization, cooperation and equipment rental, has chosen the most optimal variant taking into account the probability of events and efficiency.

1. Introduction
The peasant farm enterprise (P(F)E) is a small form of entrepreneurship in the countryside. The diverse entrepreneurial activity of peasant farm enterprises (industrial, commercial, financial) is associated with some uncertainty in the development of the situation in future.

2. Relevance
Taking this or that decision connected to the choice of an alternative variant in a specific situation under present conditions of very mobile and aggressive environment, farmers are dealing with uncertain outcomes explained by insufficient, lacking or unreliable information in external and internal environment. Uncertainty is created by accidental circumstances, inaccuracy or lack of information and may eventually result in losses.

3. Basic part
In the economy, uncertainty is understood as an unclear, not exactly known situation, incompleteness or inaccuracy of information about the conditions of entrepreneurial activity, which substantiate partial or complete uncertainty of the final results of this activity and the costs concerned with it [1].

The reasons for uncertainty in entrepreneurship are three basic groups of factors: acknowledge, randomness and counteraction.

The absence of knowledge, i.e. incompleteness, lack of knowledge, information, data of external economic and environment related to its instability, and, as a consequence, about the future event or the expected result of the actions which are necessary for decision-making. This factor is very typical
for farmers, especially in present economic conditions, rapidly changing political, climatic, technological and other factors. Besides, the lack of knowledge or insufficient information from farmers may be caused by limitations in the qualification of the head of P(F)E or of specialists working at the farm.

The second group - chance, a future event that occurs differently under similar conditions. The breakage of new equipment, natural disaster, loss of crops or animal disease, changes in demand for products, unexpected failure of contractual obligations refer to the reason of chance. The third group - counteraction conditioned by the negative impact of competitors, conflicts between a contractor and a customer, labor conflicts in the team and others.

Uncertainty reflects multivariance of future development of the situation, i.e. the ambiguity of the outcome. Herewith, there may be favorable, unfavorable and zero outcomes. The possibility of unfavorable outcomes is usually assessed by risk, so risks can be considered as a consequence of uncertainty [2-6].

In Irkutsk region in 2018 2418 P(F)Es undertook the activity, they operated in the field of animal husbandry and plant growing and produced 14.1 % of all farm products in the region. The farmers in Irkutsk region are actively busy with the manufacture of many types of agricultural products including grain (52.6 % of total production in Irkutsk region in 2018), milk (12.2 %), potatoes (8.9%), vegetables (14%), meat (8%) and other types of production [4].

IE the head of P(F)E Kakharov S.K. specializes in manufacturing farm products. The outcomes of IE the head of P(F)E Kakharov S.K.’s activity have been shown in table 1.

| Indicators                      | 2016  | 2017  | 2018  | 2018 2016, % |
|--------------------------------|-------|-------|-------|-------------|
| Dividend, thousand rub.        | 4671  | 4744  | 5015  | 107         |
| Full prime cost, thousand rub. | 5994  | 5845  | 5953  | 99.3        |
| Financial outcome (+ profit, -loss), thousand rub. | -1323 | -1101 | -938  | -           |
| Cost recovery, %               | 77.9  | 81.2  | 84.2  | -           |

Table 1. Financial outcomes of IE the head of P(F)E Kakharov S.K.

Thus, P(F)E in 2016-2018 did not cover its cost, but the increase of the level of cost recovery promises positive changes, it happened due to the fact that the revenue in 2018, in comparison to 2016, raised at 1.1 times, and the prime cost reduced by 0.7 %. The manufacture of dairy products is one of the main production directions of IE the head of P(F)E Kakharov S.K.

In IE the head of P(F)E Kakharov S.K. the equipment is very worn-out, which affects the volume and quality of products. The range of products is small and requires expansion. Thus, it is necessary to make a management decision on the way of increasing the efficiency of dairy production. Three variants of the decision are proposed: 1. The cooperation of IE the head of P(F)E Kakharov S.K. with other peasant farmer’s enterprises for using the equipment available in the cooperative. The cooperation involves mutually beneficial cooperation, joint participation in production and marketing activities.

2. Modernization of own equipment and partial re-equipment of milk processing production line. The realization of this project will enable to solve the problems of improving the efficiency of P(F)E’s activity, however, assumes the need to conclude a loan agreement with the bank to assign the necessary amount for the purchase of equipment and technological installation.

3. The rent of the necessary equipment and technological installation involves the conclusion of a lease agreement for the use of equipment. However, the probability that there is equipment of the required quality and power is very small.

All dairy products are produced from cow’s milk produced in IE the head of P(F)E Kakharov S.K. and in private farms. Milk for processing will come at the actual prime cost, and the sale will take place without intermediaries and additional costs.
For making a decision it is necessary to build a decision tree and to assess the probability of occurrence of this or that event with a certain result. The probability of favorable and unfavorable environmental conditions is 0.5 [2].

**Table 2.** The table of wins / losses on the variants of a management solution of the head of P(F)E Kakharov S.K.

| Number of a variant | Actions of P(F)E | Profit (loss) in an environmental condition*, thousand rub. |
|---------------------|------------------|----------------------------------------------------------|
|                     |                  | favorable  | unfavorable |
| 1                   | Cooperation      | 250        | -8500        |
| 2                   | Modernization    | 650        | -1690        |
| 3                   | Rent             | 150        | -8500        |

On the basis of this table of wins (losses) it is possible to build a decision tree (figure 1).

![Decision tree](image)

**Figure 1.** Decision tree.

The next stage in taking a decision is to calculate the expected monetary estimates for each treetop with the account of probability of occurrence of an event. Determine the monetary value for variant 1: 

\[ = 0,5 \times 250 + 0,5 \times (-8500) = 125 - 4250 = -4125 \text{ thousand rub.} \]

For variant 2: 

\[ = 0,5 \times 650 + 0,5 \times (-1690) = 325 - 845 = -520 \text{ thousand rub.} \]

For variant 3: 

\[ = 0,5 \times 150 + 0,5 \times (-8500) = 75 - 4250 = -4175 \text{ thousand rub.} \]

4. **Conclusions**

Thus, accounting monetary assessment of each event and probability of the development of events it is recommended for the head of P(F)E Kakharov S.K. to take the second variant of management decision, that is, modernization of own equipment and technological line for milk processing and production of a wide range of dairy products for sale. It should be noted that the final decision requires integrated analysis of all factors (financial, technical, personnel, technological, marketing and others) which will affect the implementation of this decision. The considered method is very relevant and useful, because in the practice of production activities of peasant farm enterprises the situations of uncertainty are quite spread.

5. **References**

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