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DEVELOPMENT OF STRATEGIES FOR THE DEVELOPMENT OF LOGISTICS INFRASTRUCTURE OF THE GRAIN MARKET

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ABSTRACT: In this article, the possibilities of introducing logistics suppliers into the agro-industrial complex by adding new participants in the logistics chain to the economic processes of the grain market were considered. During the modern economic development of the industry, issues of the introduction of logistics suppliers and improvement of the operations of the agrarian market in grain production have been considered.

Keywords: Logistics chain, probability distribution, ring routes, bimodal technologies, mathematical expectation.

INTRODUCTION

We can use it to develop balanced scores and strategic maps as the basis for strategy formulation. The macro-level development of logistics infrastructure is mainly due to the use of investment-based growth strategies and the increase in the level of interaction between market participants, while the strategic objectives for the development of logistics infrastructure are to optimally load the capacity of producers and suppliers of agricultural products at the meso level, it is aimed at combining the efforts of the organization of storage to combine the volume of cargo and ensure the efficiency of logistics processes. The development of the strategy for the development of the logistics infrastructure of the grain market requires the determination of concepts, which will have the greatest impact on the grain market situation. As a basis for the formation of the strategy, you can use it in the development of balanced indicators and strategic maps. The basis for the development of a balanced schedule of indicators is the tasks and prospects of the company, the priority goals, and the objectives of the activity, based on which the main indicators of performance are formed objects of logistics infrastructure.

Material and Methods

The high degree of uncertainty of the market conjuncture and the risks of commercial activity in the grain market place high demands on the rationality and speed of decision making and the implementation of strategic decisions. At the same time, the results of decision-making are influenced by information of a non-commercial nature and characterizing the intangible assets of the company: these include customer satisfaction, customer loyalty, quality of service, innovation of activity, and competent staff.

Results

Linear elevators interact (come and go) with two possible load currents in their work. As a result of the overlapping of these random load flows, the grain stock in the grain also changes randomly (see Figure 1).

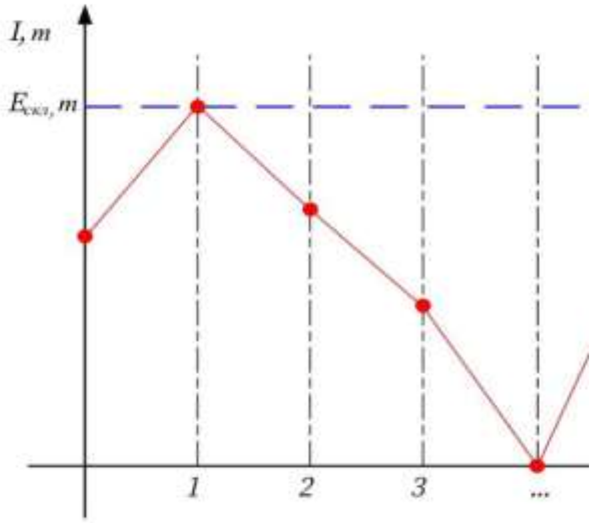

Figure 1. Possible changes in grain reserves: I - the value of grain stock, т; $E_{скл}$- lift's capacity, т; $t_{хр}$- grain storage period, days.

Often in the design of linear liens, the storage reserves and silage size are determined depending on the average shelf life of the grain. However, this method is not accurate, since it is difficult to determine the required period in market conditions (see Formula 1). Secondly, in the current calculations on the grain storage Reserve and silage capacity, the fall of grain from the lift and random fluctuations in the volume of daily load flows are not taken into account, which can change every day (see Formula 2).

$$E_{ел} = Q_{сут} \cdot t_{хр}, \text{ m}, (1)$$

where, $Q_{сут}$- estimated daily shipping, t/day; $t_{хр}$ - average shelf life of cereals, days.

The capacity of one silo is determined as follows:

$$E_{с} = [(\frac{\pi \cdot D^2}{4}) \cdot H \cdot \varphi + (\frac{\pi \cdot h}{2}) \cdot (D^2 + D \cdot d + d^2)] \cdot \gamma, \text{t}, (2)$$

Where, D - diameter of silage, m; d - diameter of silage feeder, m; H - silage height, m; h - the height of the cone section of the silo, m; φ - coefficient taking into account the uneven filling of the silage; γ - the mass weight of grain, t / m^3.

Determination of the required amount of silage in the lift:

$$Z_c = \frac{E_{ел}}{E_c}, \text{ silage } (3)$$

In this regard, this method of calculation gives an incorrect result in determining the total capacity of the lift, on which the management of warehouse reserves depends. All this affects the transport and logistics system of grain transportation.

Knowing the regularity of random fluctuations in load flows, it is possible to determine the number of reserves for calculating the total volume of $E_{скл}$ sclsilos. The essence is that the approximate value of grain stocks k-th is determined as a random phenomenon, this is a combination of the random values of the daily arrival Q^{np} and the departure Q^{om}:

$$E_{скл} = I_0 + Q_i^{np} - Q_j^{om}, \text{ t } (4)$$

$E_{скл}$ - the origin and departure of grain the value of the stock in the k-th combination of the values of the load currents. I_0 - grain starter and safety.

The safety reserve of grain in the lift is defined as the difference between the maximum grain shipment per day and the minimum arrival:

$$I_0 = m\,ax\{Q_i^{om}\} - min\{Q_j^{np}\}, \text{ t}(5)$$

Probability distribution has been established as preliminary data to address the issue of determining grain reserves and lift capacity:

The arrival of grain (t/day):

$$Q_i^{np} = \begin{bmatrix} Q_1^{np}, & Q_2^{np}, & \dots, & Q_n^{np} \\ P(Q_1^{np}), & P(Q_2^{np}), & \dots, & P(Q_n^{np}) \end{bmatrix}, (6)$$

Grain output (t/day):

$$Q_i^{om} = \begin{bmatrix} Q_1^{om}, & Q_2^{om}, & \ldots, & Q_m^{om} \\ P(Q_1^{om}), & P(Q_2^{om}), & \ldots, & P(Q_m^{om}) \end{bmatrix}, (7)$$

Where, Q_n^{np}- random values of grain falling load flow, t/day;
$P(Q_n^{np})$- the corresponding probabilities of the appearance of these random values of the daily arrival of grain; Q_m^{om}- random values of daily delivery from grain to lift, t/day; P(Q_m^{om})- the corresponding probability of the appearance of these random amounts of grain shipment; n and m – the number of intervals between the daily arrival and departure of cereals, respectively.
the intermediate number of n and m is usually taken in the range of 5-12, the sum of the probability of each shipping round should be equal to 1.00:

$$\sum_{i=1}^{i=n} P_i = 1{,}00 \quad \text{ва} \quad \sum_{j=1}^{j=m} P_j = 1{,}00 \qquad (8)$$

Also in the methodology, a level of confidence should be established. The confidence level is set in the range of 0,95-0,97.
The probability of a load-bearing Reserve on day k is determined by the formula of the theory of probability since the probability of these events is the probability of two independent random events equal to the yield:

$$P(E_{\text{скл}}) = P(Q_i^{np}) \cdot P(Q_j^{om}), \quad (9)$$

The sought-after reserve of grain storage in the elevator, the arrival, and departure of foods, whose number is equal to n and m, is defined as the mathematical expectation of all possible combinations of daily load flows.

Discussion

Then the normalization state is checked again:$\sum P_k = 1{,}00$, which indicates that all N and M combinations of load currents were considered for grain fall and departure. Continuing with the calculations, we can determine the volume of storage of grain with a certain degree of confidence.
The proposed method of determining the reserves of grain storage in the elevator allows you to calculate the reserve of grain storage for any accidental fluctuations in the daily arrival and departure loads.

Conclusion

To improve the efficiency of cargo transportation, it is necessary to base on the parameters of transport units, taking into account modern requirements, high speed, reduction in the number of passengers, the volume of cargo, and its optimal cargo turnover.
A distinctive feature of new generation trucks is that such working conditions are heavy and many factors adversely affect grain yield. In addition, the use of new generation trucks will reduce transportation costs several times.
Large investments are needed to update the moving content and develop the port infrastructure making the competition between the vehicle and the rail in short-haul transportation. For effective use of the advantages of the new moving content, it is desirable to use it in the composition of ring routes, separating it from joint work with the finished vehicles of the specified exploitation lines.

Acknowledgement

Transportation of grain cargoes in containers with the use of Bimodal technologies allows on the one hand to distinguish the turnover of containers and on the other hand the platform, and in this way in the case of delayed unloading of individual wagons, a large part of the trains arrange transportation through the ring roads without interruption.

References

1. Irisbekova M.N. Improving the methodology of simulation modeling of the activities of automobile operating companies. The Organizing Committee of the International Scientific Conference “Construction Mechanics, Hydraulics and Water Resources Engineering” CONMECHYDRO 2021 Scopus.
2. Irisbekova M.N. Methodological approach to quality assessment of transport and logistics services international Scientific Journal, Theoretical and applied science.Philadelphia, USA SOI: 1,1; DOI:10/5863 №5. 2019. 385-388 p .
3. Irisbekova M.N. Methodology of organization and quality assessment of transport and logistics services market. International Journal of Psychosocial Rehabilitation, Vol. 24, Issue 04, 2020
4. Astanaqulov K., Khamroev R. Yangi avlod yuk avtomobillari yordamida don tashish tehnologik jarayoni korsatkichlari [Technological process indicators of grain transportation using new generation trucks] // Internauka. Nauchniy jurnal. – M., 2019. – № 8 (90). – B. 75–78.
5. Obidov S., Khamroev R. MAN yuk avtomobillarining oziga hos jihatlari va ulardan yuk tashishda foydalanish imkoniyatlari [The peculiarities of MAN trucks and the possibilities of their use in cargo transportation]// Internauka. Nauchniy jurnal. – M., 2019. – № 19 (101). – B. 75–76.
6. Toshmirzaev M.A, Khamraev R.K. Yangi avlod yuk avtomobillarining oziga hos jihatlari va ulardan don tashishda foydalanish imkoniyatlari [The peculiarities of the new generation of trucks and the possibility of their use in grain transportation] // Materialy Mejdunarodnoi nauchno-prakticheskoi konferencii (Tashkent, 28 noyabrya 2018 g.). – B. 856–859.