MODELING THE IDENTIFICATION OF COMPETITIVE MARKET GRAPE VARIETIES.

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Abstract. The development of viticulture is one of the current areas of development of the agro-industrial complex. The article shows the results of studies to determine the prospects for the development of the grape cluster in the Republic of Uzbekistan. The authors made an analysis of the development of viticulture, as well as proposals for improving the development of the industry in the regions.

Keywords. Grape cluster, industry development, strategic planning and forecasting, region, harvest, yield.

Introduction. The development of strategic models of the grape cluster is of particular importance to justify the development strategy of viticulture based on planning and forecasting. The concept of the development of grape growing and processing in changing market conditions should establish the basic rules of strategic planning. The implementation of the strategic development plan should include innovative approaches to the implementation of the set strategic task, aimed at achieving the highest possible economic results, taking into account the influence of external and internal factors.

In the Republic of Uzbekistan, the quality of wines is determined by organoleptic evaluation on a 10-point system: the transparency of the wine is assessed with 0.5 points, color – 0.5 points, aroma – 3 points, taste – 5 points, typicality – 1 point. In European countries, they are assessed on a 100- point system.

The functional purpose of the industrial model in the system of forecast-analytical calculations in the grape industry is to coordinate economic and industrial indicators at each stage of the production process. On its basis, there is a step-by-step calculation of the main tables of the MOB, compiled on the basis of data provided by all cluster entities.

Main part. The complex composition of grapes, the existence of various methods of their processing and the quality control of finished wine products, taking into account their compliance with quality, require forecasting the type and name of finished wine products. Based on the quality attributes and characteristics out, with grape balls is evaluated and to group V divided (Table 1).

Table 1

Criteria for grape quality groups

No.	Types classification	Points
1	Works	9.5-10
2	Wonderful	8.8-9.4
3	Good ones	8.0-8.7
4	Satisfactory	7.7-7.9
5	Bad	From 7.6 low

Evaluation criteria: grapes taste and fragrance 1-5 points for; External appearance 0.1-2 points for and skin strength 1-3 points for Forecast for high-quality grapes according to Navi

$a_{ij} = a_{1j} + a_{2j} + a_{3j} + \ldots$ oh my god

a - indicator of the assortment of grapes of group 1; i – number of farms growing wine grape varieties (i = 1, 2, ... n); j - grape variety

$b_{ij} = b_{1j} + b_{2j} + b_{3j} + \ldots b_{nj}$

b - indicator of the assortment of grapes of group 2; i - number of farms growing wine grape varieties (i = 1, 2, ... n); j - grape variety

$red = r_{1j} + r_{2j} + r_{3j} + \ldots r_{nj}$

r - indicator of the assortment of group 3 grapes; i - number of farms growing wine grape varieties (i = 1, 2, ... n); j - grape variety

$s_{ij} = s_{1j} + s_{2j} + s_{3j} + \ldots s_{nj}$

s – indicator of grape assortment 4; i – number of farms growing wine grape varieties (i = 1, 2, ... n); j - grape variety

$t_{ij} = t_{1j} + t_{2j} + t_{3j} + \ldots t_{nj}$

t - indicator of the assortment of grapes of group 5; i - number of farms growing wine grape varieties (i = 1, 2, ... n); j - grape variety

Total volume of grapes grown in the region (V)

$V = \sum(a + b+r+s+t)_{ij}$

Planning in industry is carried out on the basis of forecast calculations, which refers to a seasonal period when the volume of the grape harvest is not known in advance. In the general system of solving a set of interrelated problems in functional planning, industry, volume forecasting For raw materials, single-factor and multi-factor regression models were used.

It takes into account the effect on the variable Y, and as a result, it becomes possible to predict the quality and assortment of the finished product.

$y = a_0 + \sum_{j=1}^{N} a_j x_j$ j = 1, 2, 3... N

Therefore, with the above information, it is possible to form an optimal range of high-quality wine products.

Block 1 - competitive grapes varieties was need forecast to do ;

Block 2 – determination of grape planting areas by variety;

Block 3 – forecasting and planning grape harvest by variety;

Block 4 – Design and planning of grape supply volumes to ZPV ;

Designing annual grape processing and planning ;

Block 6 – Designing a range of finished products and planning ;

Block 7 – planning the volume of exports of finished products;

Block 8 – planning the sale of finished products in the domestic market;

Block 9 – distribution of profits for cultivation, processing and sale (Figure 1).

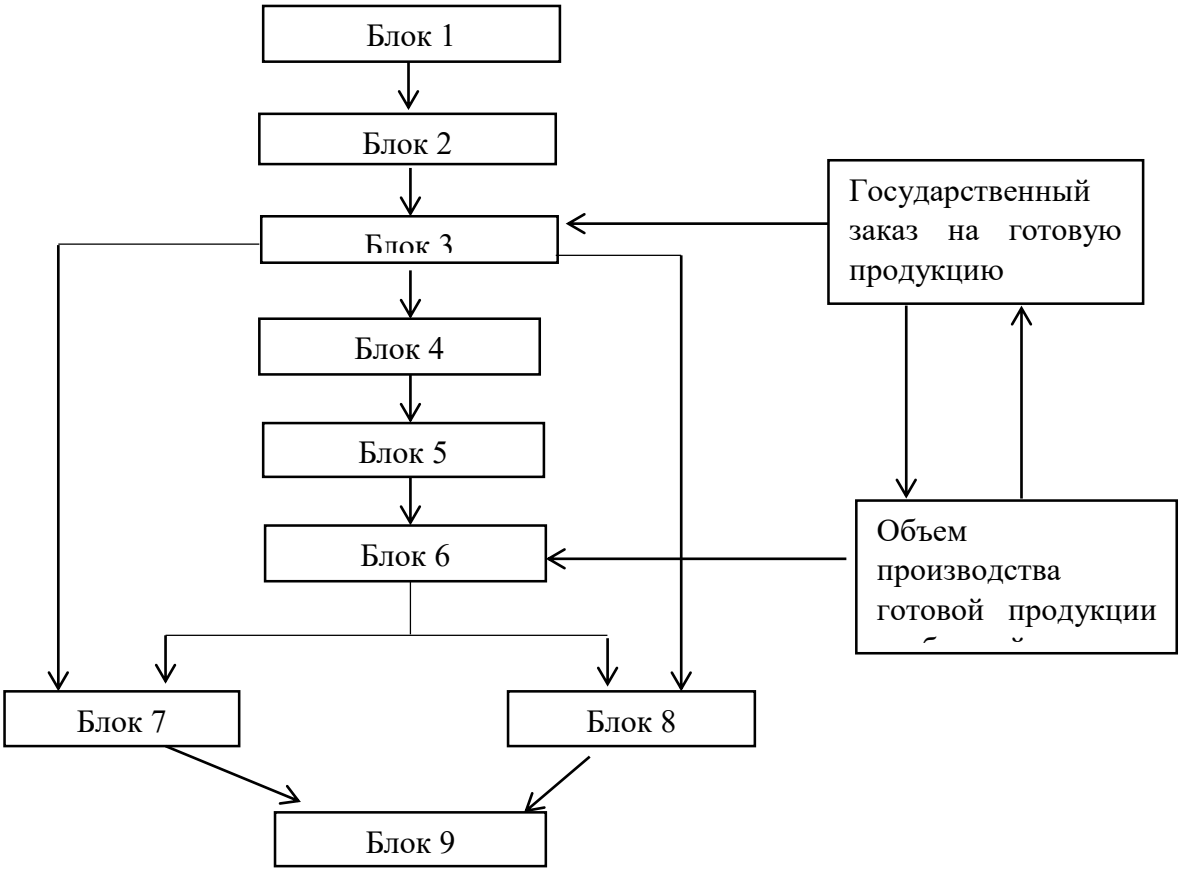

Figure 1. Design in the viticulture industry and planning for innovative of the scenario structure.

Many general coefficient determination formula competitiveness (K_k)of wine production is determined by the formula :

$$K_k = \frac{P_p}{P_e}$$

Where: P_p - price products; P_e - price standard, products main conditions.

For the price standard accepted price level turned on products Togo the same types, What is being implemented turned on market by highest price. In a grape cluster No opportunities determination reference products, this indicator More suitable for industry products. for reference Offered to take meaning indicator V the most useful year and take it as a basis year . For viticulture , return is recommended To whom methodology definitions prices main conditions, differs by varieties. IN viticulture for basis is taken level sugar content 28%. for every percent need go away additional payment To whom price turned on level, For example, 5-6%. Like this in this way, determining equation prices (P) with taking into account adjectives has Next view:

$$P = P_e + \sum_{i=1}^{n} P_e * P_i$$

Where Ri - quantitative change parameter adjectives products by compare With standard (i = 1,2,3 .... n), n - amount parameters.

Here is the rating cost seems important element, because is a factor formations competitiveness . What is it? our to see, this indicator reflects only level demand turned on products, n on e takes into account offer. Competitiveness grapes - This In addition and preparation high quality products, includes additions V no the youngest expenses. This

There is desired V Calculating the competitiveness of grapes to take into account And him/her cost price. Also at definition grape competitiveness will be appropriate apply V calculations level profitability, because this complete reflects importance released products. But at this arises question , approach To whom to this, What in some wineries in the process production acceptance losses. IN so case We we offer determination difference between indicators analyzed.

The role of marketing in identifying competitive products is based on the study of product demand. Here, marketers determine the level of demand for finished products, determine the composition of these products, their origin, aging, etc. Having reached a certain conclusion, recommendations are developed for each entity of the grape cluster to concentrate production.

Result. Each branch of agriculture has its own level of influence on the gross growth of agriculture. In our study, using the STATA program, we studied the level of influence of 14 factors on the growth rates of agriculture, where the following signs were adopted (Table 2).

1. Agricultural economy growth (y)
2. Grape production volume (million tons) (x1)
3. Grape cultivation area (thousand hectares) (x2)
4. Number of employees (thousand people) (x3)
5. Yield (kg / ha) (x4)
6. Nitrogen (thousand kg) (x5)
7. Phosphorus (thousand kg) (x6)
8. Potassium (thousand kg) (x7)
9. Gross collection (trillion soums) (x8)
10. Water (million (m^3) (x9)
11. Number of sunny days per year (x10)
12. Average annual temperature (x11)
13. Precipitation amount (mm) (x12)
14. Average yield per capita (kg) (x13)
15. per hectare (million soums) (x14)

Table 2

Statistical indicators of the impact of viticulture on the growth of agriculture in the Republic of Uzbekistan

	SHE IS	X_1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14
2010	106.1	1.0	107	10.7	914	6 , 4	9.6	9.8	2.7	489.6	322	15.7	376	2798	26.5
2011	104	1.1	111	11.1	961	6.7	10.0	10.3	3.6	536	323	14.9	380	3063	29.8
2012	102.9	1.2	111	11.5	1062	6.7	10.0	10.2	4.5	589.9	318	14.5	298	3371	33.5
2013	103	1.3	114	11.4	1137	6.8	10.2	10.5	5.4	647.0	318	15.6	303	3697	37.6
2014	102.8	1.4	125	12.5	1116	7.5	11.3	11.5	6.6	698.5	321	14.2	352	3991	42.3
2015	102.9	1.5	136	13.6	1113	9.2	12.3	12.5	7.8	759.1	322	15.6	398	4338	47.5
2016	103.1	1.6	122	12.2	1322	7.3	11.0	11.2	9.0	806.5	321	16.1	370	4609	50.4
2017	101.2	1.6	104	10.4	1569	6.2	9.3	9.5	11.2	812.7	318	15.3	340	4644	58.8
2018	100.3	1.6	101	10.1	1576	6.0	9.1	9.3	19.0	794.9	319	15.3	283	4542	68.7
2019	103.1	1.6	105	10.5	1534	6.3	9.4	9.6	17.5	801.6	317	15.9	341	4581	80.9
2020	102.9	1.6	106	10.6	1551	6.3	9.5	9.7	18.1	819.6	320	14.9	297	4683	91.1
2021	104	1.7	110	11.0	1547	6.6	9.9	10.1	20.8	847.6	323	16	221	4844	100
2022	103.6	1.8	113	11.0	1557	6.8	10.2	10.4	27.8	880.3	320	16.1	410	5030	114
2023	104.1	1.7	114	11.3	1524	6.8	10.2	10.5	28.2	865.8	318	16.7	300	4948	125

Factors influencing the nature of the result are selected, we take the logarithm, obtain a linear equation, and determine the degree of correlation between the factors.

Table 3.

Logarithmic values of data for the "hypothesis" of factors affecting viticulture efficiency

	ln y	ln x2	ln x3	ln x8	ln x10	ln x11	ln x12	ln x14
2010	4.664382	4.673763	9.278933	10.22353	5.774552	2.753661	5.929589	3.278065
2011	4.644391	4.714025	9.319195	10.49309	5.777652	2.701361	5.940171	3.394599
2012	4.633758	4.710431	9.315601	10.7084	5.762051	2.674149	5.697093	3.511133
2013	4.634729	4.734443	9.339613	8.589923	5.762051	2.747271	5.713733	3.627667
2014	4.632785	4.829912	9.435083	8.793324	5.771441	2.653242	5.863631	3.7442
2015	4.633758	4.915592	9.520762	8.964286	5.774552	2.747271	5.986452	3.860734
2016	4.636669	4.804021	9.409191	9.107288	5.771441	2.778819	5.913503	3.919423
2017	4.617099	4.640537	9.245708	9.328603	5.762051	2.727853	5.828946	4.074908
2018	4.608166	4.61413	9.2193	9.850946	5.765191	2.727853	5.645447	4.229225
2019	4.635699	4.649187	9.254357	9.771144	5.758902	2.766319	5.831882	4.3941
2020	4.633758	4.660605	9.265775	9.806508	5.768321	2.701361	5.693732	4.511758
2021	4.644391	4.696837	9.302008	9.945296	5.777652	2.772589	5.398163	4.605849
2022	4.640537	4.728272	9.333443	10.23298	5.768321	2.778819	6.016157	4.736527
2023	4.645352	4.732684	9.329012	10.2459	5.762051	2.815409	5.703782	4.828314

After calculations, we obtain the following equations, as a result of which we can draw the following conclusions

1) lny = 4.5 + 0.03 x 2

in grape growing areas leads to a 3% increase in agricultural output .

2) lny = 4.38 + 0.027 x 3

A 1% increase in the number of workers leads to a 2.7% increase in agricultural output .

3) lny = 4.6 + 0.01 x 8

A 1 percent increase in gross grape yield leads to a 1 percent increase in agricultural output.

4) lny = 0.65 + 0.92 x 10

increase in sunny days affecting viticulture leads to a 92% increase in agricultural production

5) lny = 4.4 + 0.09x11

The resulting equation shows that a 1 degree increase in average annual temperature, which affects grape production, leads to a 9% increase in agricultural production.

6) lny = 4.55 + 0.02 x 12

% increase in precipitation affecting grape production compared to the annual precipitation level leads to a 2% decrease in agricultural growth .

7) ln = 4.61 – 0 , 0 1 x14

Here an inverse relationship is shown, i.e. A 1 percent increase in costs per hectare of vineyard leads to a 1 percent decrease in agricultural growth.

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