ON THE ISSUE OF COMPILING MATHEMATICAL MODELS OF ECONOMIC PROCESSES

Ishniyazov B.N.\textsuperscript{1}, Safarov B.Q.\textsuperscript{2}, Ishniyazov Z.N.\textsuperscript{3}, Atabaeva D.Sh.\textsuperscript{4}

\textsuperscript{1}Ishniyazov Bakhrom Normatovich - Senior Lecturer, Tashkent State Agrarian University
Tashkent, Uzbekistan

\textsuperscript{2}Safarov Bunyod Qurbonovich - Senior Lecturer, Tashkent State Agrarian University
Tashkent, Uzbekistan

\textsuperscript{3}Ishniyazov Zakhid Normatovich - Lecturer, Samarkand Institute of Veterinary Medicine
Samarkand, Uzbekistan

\textsuperscript{4}Ataboeva Donokhon Sherzodbek qizi - Student of Tashkent State Agrarian University, Tashkent, Uzbekistan

Abstract: the article analyzes, the support of theoretical data for the solution of agricultural issues directly in the teaching of the subject of mathematical modeling of economic processes to students, the lead of students to better mastering of science, their professional preparation has been studied with the help of pedagogical experiments.

Keywords: labor productivity, production, economic knowledge, mathematical modeling, equation.

К ВОПРОСУ СОСТАВЛЕНИЯ МАТЕМАТИЧЕСКИХ МОДЕЛЕЙ ЭКОНОМИЧЕСКИХ ПРОЦЕССОВ

Ишниязов Б.Н.\textsuperscript{1}, Сафаров Б.К.\textsuperscript{2}, Ишниязов З.Н.\textsuperscript{3}, Атабаева Д.Ш.\textsuperscript{4}

\textsuperscript{1}Ишниязов Бахром Норматович - старший преподаватель, Ташкентский государственный аграрный университет
Ташкент, Узбекистан

\textsuperscript{2}Сафаров Бунед Курбонович - старший преподаватель, Ташкентский государственный аграрный университет
Ташкент, Узбекистан
Ишниязов Захид Норматович - преподаватель, Самаркандский институт ветеринарной медицины
Самарканд, Узбекистан

Атабоева Донохон Шерзодбек кызы - студентка Ташкентского государственного аграрного университета
Ташкент, Узбекистан

Аннотация: в статье исследует педагогический опыт в обучении студентов математическому моделированию экономических процессов, используя теоретические данные непосредственно для решения сельскохозяйственных проблем, и помогая студентам овладеть наукой и улучшить их профессиональную подготовку.

Ключевые слова: производство, экономические знания, математическое моделирование, уравнение.

УДК 631.6: 631.8: 628.179 (999.6)

Having economic knowledge of the younger generation, its use in its activities leads to the development of the economy of the country, the increase in labor productivity, the improvement of the quality of the products produced, the decrease in the cost of products, the increase in production efficiency. At the same time, economic knowledge at every age makes us feel that our country is the owner, to be in a conscious attitude to Labor, to be active, disciplined and organized in life [1, 2, 3].

The study of the basics of Science provides a great opportunity for the consecutive and systematic formation of economic knowledge [4].

The role of mathematics in the acquisition of economic knowledge, the solution of its problems, in particular, is great. Usually in economic calculations, the fact that mathematics occupies a fundamental place is manifested in the solution of certain issues [5, 6, 7]. Where possible, along with the transition from "abstract mathematics" to "exact mathematics", economic issues are also addressed. In this it is important to build mathematical models of economic issues.

In most cases, mathematical models of economic issues are expressed through functions, equations. Using the knowledge of mathematics, appropriate functions are
studied, equations are solved. On the basis of these, economic conclusions are drawn. The solution of economic, production and agricultural issues using mathematics is carried out in the following stages [8, 9]:

1. Full understanding of the contents of the economic, production and agricultural issues being considered, knowledge of the concepts presented in it [10];
2. To have the necessary mathematical knowledge;
3. Construction of a mathematical model of the issue (moving the issue into the language of mathematical theory) [11];
4. Solve the problem within the model (analyze the model, pinch using mathematical data adapted to the mathematical theory);
5. Transfer of the mathematical solution of the problem to the language of the given economic issue;
6. Draw conclusions and make recommendations.

Now we will address the issues:

1st exercise. Find the annual growth rate, if the volume of the crop grown to fulfill the 5-year plan of farming should increase by 90%. Loosening. 1) the year of issue is N=5 (it can be an optional natural number instead of 5). The size of the crop after 5 years (the amount of money the farm pays in the fund after 5 years)

\[ K_5 = K + 0,9K \Rightarrow K_5 = 1,9K \quad (1) \]

Here K is the initial amount of money invested in the fund

2) if ,on the second hand, this issue is considered in a complex percentage, after a year, it will be

\[ K_1 = K(1 + \frac{p}{100}) = K + \frac{p}{100}K \]

After 2 years, it will be

\[ K_2 = K + \frac{p}{100} K_1 = K_1(1 + \frac{p}{100}) = K(1 + \frac{p}{100})(1 + \frac{p}{100}) = K(1 + \frac{p}{100})^2 \]
With the same considerations, it will be

\[ K_3 = K(1 + \frac{p}{100})^3, \quad K_4 = K(1 + \frac{p}{100})^4, \]

\[ K_5 = K(1 + \frac{p}{100})^5. \]

From these (1) especially

\[ 1,9K = K(1 + \frac{p}{100})^5 \quad \Rightarrow \quad 1,9 = (1 + \frac{p}{100})^5 \]

\[ 1 + \frac{p}{100} = \sqrt[5]{1,9} \]

or it will be

\[ \sqrt[5]{1,9} - 1 = \frac{p}{100}, \]

then, it is \[ p = 100 \cdot \sqrt[5]{1,9} - 100 \] (2)

If \( \sqrt[5]{1,9} \approx 1,1152 \) is used as this, it will be \( p = 100 \cdot 1,1152 - 100 = 11,52 \).

So, yearly increase should be in the amount of 11,52 %.

2nd exercise. Every member of the association gave an equal amount of money to buy a spare part of the agricultural machine for 1100000 soums. For some reason, before collecting money, 3 people left the association. The remaining members paid more than 6000 soums to collect the intended amount of money. How many members are there in the association?

Let's say that initially the number of members of the association was \( x \) units. Then,

\[ \frac{1100000}{x}, \]

but after two people left, the rest paid a sum \( \frac{1100000}{x - 3} \). This is equal to \( \frac{1100000}{x - 3} \). It is known that,

\[ \frac{1100000}{x} + 6000 = \frac{1100000}{x - 3} \]

\[ \Rightarrow 1100000(x - 3) + 6000x(x - 3) = 1100000x \]

\[ x^2 - 3x - 550 = 0 \]

Then the mathematical model built to solve \( x^2 - 3x - 550 = 0 \) the problem comes to the solution of the quadratic equation. We solve this equation \( x = 25 \) and find the division.

So, the members of the association consist of 25 people.

3rd exercise. One person A and B bought shares of the company which cost 10000$. It is known that this will bring a profit of 855 dollars per annum. A company's stock costs 24 dollars and makes a profit of 2,5 dollars per year, B Company's stock costs 16 dollars and makes a profit of 1,2 dollars per year. How many shares does the
same person have in each company? through x, a let us determine the number of shares in the company, and through it B the number of shares in the company. Then, for A company shares 24x dollar, for B company shares 16y dollars will be spent. The amount of money spent on shares of both companies is $24 \cdot x + 16 \cdot y$, equal to $24 \cdot x + 16 \cdot y = 10000$. On the second hand, the profit from the shares of a company $2.5 \cdot x$ dollars, the profit from the shares of the company B is equal to $1.2y$ dollars $2.5 \cdot x + 1.2 \cdot y = 855$. As a result,

$$\begin{align*}
24 \cdot x + 16 \cdot y &= 10000 \\
2.5 \cdot x + 1.2 \cdot y &= 855
\end{align*}$$

this is

$$\begin{align*}
72 \cdot x + 48 \cdot y &= 30000, \\
100 \cdot x + 48 \cdot y &= 34200
\end{align*}$$

Dressing system of linear equations is. This system represents the mathematical model of the issue presented. (1) We solve the system:

$$\begin{align*}
72 \cdot x + 48 \cdot y &= 30000, \\
24 \cdot x + 16 \cdot y &= 10000, \\
100 \cdot x + 48 \cdot y &= 34200 \\
28 \cdot x &= 4200 \\
x &= 150 \\
y &= 400
\end{align*}$$

So the same person bought 150 units from the A company's stock, and 400 units from the B company's stock [12, 13]. In conclusion, it can be said that teaching to solve the issues arising in the agricultural process will help in the formation of skills in the students. Illuminates theoretical and practical connectivity [14, 15].

**Conclusion.** With the help of pedagogical experience, it was determined that each passing topic, the transition to support the solution of agricultural issues, allows students to better master the science and solve practical issues in their specialties, changes their professional preparations to the positive side.

**Bibliography**


