

## CORRELATION AND REGRESSION ANALYSIS OF THE PROFITABILITY OF PRODUCTION AND SALE OF CEREAL CROPS IN UKRAINE

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The grain industry occupies a leading position in the domestic agricultural market, and today, under the conditions of the 2022 war, the effective functioning of the grain market is extremely important to solve the problem of ensuring food and national security not only in Ukraine, but also in many other countries of the world. The purpose of the research is to conduct a correlation-regression analysis of the profitability of grain production in Ukraine, to single out the main influencing factors, to build a linear regression model based on the factors identified. Previous studies devoted to this topic (conducted by scientists from Ukraine, Great Britain, Egypt, Bangladesh, Iran, Niger, Nigeria, Zimbabwe and China) cover a wide range of factors influencing the profitability of grain production. However, the authors assume that to the greatest extent the studied indicator is influenced by precisely those factors that come from the essence of the definition of the profitability indicator. In order to test this hypothesis, the method of correlation-regression analysis was used, which allowed to identify factors that significantly impact the profitability of grain production in Ukraine. Model building and calculation of the regression coefficients were conducted using the software package STATISTICA. It was found that the most significant variables are yield, sales prices, costs of production and sales, on the basis of which a linear regression model was built, that reflects the dependence of the profitability of grain production in Ukraine on the above-mentioned indicators ( $y = -35,2396 + 1,2750x_2 + 0,0242x_4 - 0,0007x_5$ ). With an increase in yield per unit, profitability increases by 1.27 units. With an increase in the selling price per unit, the profitability increases by 0.0242. If the cost per unit of production increases, then the profitability of cereals will decrease by 0.0007. The distribution of the residuals of the model obtained by the authors is close to the normal distribution, and the histogram of the distribution of residuals is close to the graph of the normal distribution, therefore, we can conclude that this model is adequate. Based on the analysis of the distribution of residues, the model can be considered satisfactory. The analysis revealed a negative scale effect in the grain industry, which can be avoided if agricultural land is used effectively. The cancellation of the moratorium on the sale of land opens the way for the transfer of land to more efficient users, which will have a positive effect on the profitability of production.

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