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COMPUTER SIMULATION OF THE MARKET EQUILIBRIUM OF THE PRODUCTS OF MILAVITSA CJSC

КОМПЬЮТЕРНОЕ МОДЕЛИРОВАНИЕ РЫНОЧНОГО РАВНОВЕСИЯ ПРОДУКЦИИ ЗАО «МИЛАВИЦА»

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Abstract. The article discusses the possibility of using application software packages to determine the competitiveness of light industry products in the domestic market. Statistical analysis of the data was used as a research method.

Аннотация. В статье рассматриваются вопросы возможности использования пакетов прикладных программ для определения конкурентоспособности продукции легкой промышленности) на внутреннем рынке. В качестве метода исследования выбран статистический анализ данных.

The purpose of the study was to study the competitiveness of CJSC "Milavitsa" products (articles of the women's assortment of the corset group) on the domestic market, determine the equilibrium price and the elasticity of demand.

Research methods: correlation-regression statistical analysis, optimal planning.

Initial data: real data obtained by students of the VSTU at the trading floors of CJSC "Milavitsa".

Research tools: Maple computer mathematics (SCM) system (Statistics library) and MS Excel spreadsheet (functions of the Statistical category, tools Parameter selection and Solver).

The research algorithm in the Maple SCM environment can be represented as a sequence of the following steps:

1. Defining the source data (the producer price C and, corresponding to it, the values of the demand value Spr and the supply quantity Pr) as data arrays of the statsdata type.
2. Identification of the closeness and type of communication between the studied factors. Construction of a correlation field for demand and supply curves. Determination of the correlation coefficient.
3. The calculation of regression equations.
4. Determination of the equilibrium price of the goods and values of the elasticity of demand.
5. Conclusions.

The following results were obtained during the calculations. The value of the correlation coefficient between the price and demand R1 = -0.99482, which indicates a fairly close feedback between these indicators. The value of the coefficient of correlation between price and supply R2 = 0.99716, which means that the relationship between the price and the supply line and is also quite close.

The coefficients R1 and R2 in both cases are close to unity. Hence the possibility of calculating the regression equations for further determination of the equilibrium price is fully justified.

As a result of using the LinearFit (falg, Y, X, v, options) function of the SCM Maple Statistics library, two regression equations were obtained:

Demand = f (Price): F_lin1 = 181.-1.64*x   and

Supply = f (Price): F_lin2 = 9.52+0.152*x.

According to these equations by performing a simple substitution, you can easily calculate the predicted values of supply and demand at a given price.

So, for example, at a conditional price of the product, equal to 50 den. units value of demand = 99.00 den. units, offers = 85.51 den. units.

To determine the equilibrium price we solve equations of the form F_lin1 = F_lin2, composed of regression equations. The root of this equation is the equilibrium price. In Maple SCM, this solution looks like:

RavnCena := evalf(fsolve(F_lin1 = F_lin2), 2).

For the original data set, the result value RavnCena := 54.27.

The values of demand and supply size, corresponding to the equilibrium price, are determined by substituting the value of the equilibrium price in the corresponding regression equations:

RavnSpros :=evalf(subs(x = RavnCena, F_lin1), 4); result: 92.00

RavnPredl:=evalf(subs(x = RavnCena, F_lin2), 4);   result: 92.00

A study of the elasticity of supply and demand is of sufficient interest. For the group of goods under study, the elasticity coefficient, determined by the known formula, was Elasticnost = -0.8835, that < 1.

This means that in this case there is inelastic demand, that is, the buyer reacts poorly to a large price change.

The studies carried out in the MS Excel environment confirmed the results obtained in the SCM environment of Maple.

Based on the analysis of the competitiveness of CJSC «Milavitsa» products, the following conclusions can be drawn.

1. The use of modern software packages as a tool for both symbolic and numerical solution of economic and management problems made it possible to conduct a comprehensive analysis of the competitiveness of the products of the selected assortment group.

2. Since the correlation coefficients R1 and R2 in both cases are approximately 0.99, and the coefficient of determinancy $R^2 = 0.99^2 = 0.98$, we can say with certainty that the change in supply and demand by 98% is determined by the change in the price of the commodity. Accordingly, the values of the size of the equilibrium price, supply and demand can be considered adequate, real and used for analysis and determination of the strategy for promoting the goods of the assortment in question.

3. Since the coefficient of elasticity <1, in this case there is inelastic demand, that is, the buyer reacts poorly to a large price change. So, the decision-makers of CJSC Milavitsa can be recommended to develop an appropriate plan of measures, including a new strategy to attract customers, in order to increase the competitiveness of the products produced by the women's assortment, the group considered.

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