# Use of Econometric Models in Marketing Research

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**Annotation:** The article examines the problems of growing, processing, and selling fruits and vegetables and highlights the issues of conducting marketing research and using econometric methods to solve them.

**Keywords:** marketing studies, econometric models, "Field" research, "Benchmarking", market subjects, marketing strategy.

This is due to the fact that the potential and opportunities of 66 districts specializing in growing fruits and vegetables in our country have not been developed enough, marketing studies have not been conducted in these places, and there are no strategic marketing plans based on marketing principles.

For this, it is necessary to search for new markets for product sales in Russia, Kazakhstan, Turkmenistan, Ukraine and the Republic of Belarus through marketing research. In the "Year of Active Investments and Social Development" of the Action Strategy for Five Priority Areas of Uzbekistan's Development in 2017-2021, necessary programs to be implemented in sectors and industries were determined. In particular, the following were determined in agriculture and the cultivation and sale of fruits and vegetables:

➢ Farmer and farmer farmsby cultivated increase the export volume of products.

➢ organization of agricultural products storage, processing and trade cooperatives.

➢ online trade and establishment of Habs abroad.

The role of marketing research is very important in finding an effective solution to the issues of filling the domestic market of our country with domestically produced, high-quality and low-cost goods, satisfying the growing demands and needs of the population, and actively increasing the export of finished products. Marketing research is conducted in two directions and phases: "Cabinet" and "Field" research. "Cabinet" is the first step in the process of research, and all available economic and social information about the object, statistical and accounting reports, collections, monographic research results, industry-related literature, magazines, newspapers, websites from other sources are collected, compiled, re-checked and analyzed. .

The object of marketing research is the market of all types of goods and services (regions, regions, states, continents, and on a global scale), the activities of market subjects in all sectors (industry, agriculture, services), raw materials, labor, real estate, financial resources, intellectual property markets. The second stage of marketing research is the so-called "Field" research, in the process of the so-called "Field" research, additional scientific-technical, economic-social, customer behavior, product assortment, competitive environment in the market, competitor's behavior and other necessary to achieve the goal of researching the object. information is collected, aggregated and analyzed by econometric methods based on the "Benchmarking" method, through special questionnaires, observations. The effectiveness of econometric analysis in marketing research plays an important role in solving problems related to doing business in a market economy. Before conducting an econometric

analysis, the relationship between the studied phenomena should be carefully analyzed in every way. If there is indeed a relationship, it is possible to use econometric analysis and obtain results of real significance.

As the main problem of marketing research, the content and character are completely different, different and unique methods and identify the main problem of finding connections with visible research methods. If this problem is not solved, it will be superfluous to talk about the means and factors that ensure the process of their interaction, which have different characteristics.

It is not about the way of researching one field per se, but also the need to engage simultaneously with methods of work related to two or more fields.

In recent years, the development of information technologies is reflected in the work of existing enterprises and organizations. Processing statistical indicators of marketing research, making conclusions is improving a little. General for mathematical modeling of statistical data related to marketing research

$$Y \square F(x_1, x_2, x_3, \ldots x_n, a_1, a_2, a_3, \ldots, a_n)$$

purpose in view function is selected. Here $x_1, x_2, x_3, \ldots x_n$ _ statistical indicators $a_1, a_2, a_3, a_n$-constant parameters. Usually $X = (x_1, x_2, x_3, \ldots x_n)$ is a vector of statistical indicators, Y-objective function, $a = (a_1, a_2, a_3, \ldots, a_n)$ – statistical indicatorsis called a vector of parameters.

The choice of the best forms of connection between the considered factors plays a big role in the modeling of data on the analysis of statistical indicators of marketing research with correlation-regression analysis methods.

When choosing the form of the regression equation, it is necessary to pay attention to the following:

1. A professional understanding of the general form of the bond and the nature and character of the bond should be appropriate.
2. Whenever possible, the simplest forms of equations that are easy to interpret and apply should be used. A graphical representation of the initial data - scatter diagram and empirical lines of regression help in choosing the form of the regression equation.

The parameters here are found based on the methods of mathematical statistics. Parameters are evaluated using G'-Fisher test, t-Student test and other tests. Also, statistical data processing algorithms and package programs are prepared.

In general, analysis of statistical indicators based on mathematical models in marketing research increases the level of reliability of information about the studied objects.

As an example, we will consider the processes of fruit and vegetable production in Jomboy district, Samarkand region, based on mathematical modeling.

**Indicators of fruit and vegetable production in Jomboy district.**

| Agricultural products | 2018 year | 2019 | 2020 | 2021 | 2018-2021 % growth in years |
|---|---|---|---|---|---|
| Vegetables | 101382 t | 114135 | 115405 | 120200 | 118.5% |
| Fruits | 18256 t | 21559 | 21875 | 22540 | 123.4% |
| Arable land | 13118 ha | | | | |
| Irrigated lands | 13118 ha | | | | |

By analysis, we introduce the following notations $x^{(i)}$ - valid production volume at prices, $x^{(i)}$ - the volume of fruit $x^{(i)}$ - vegetable cultivation, $^3$ cultivation volume, $x^{(i)}$ - export volume, let Y be net profit. $^4$ Mathematical model

$$Y = \alpha_0 + a_1 \ln x_1(i) \cdot a_2 \ln x_2(i) \cdot a_3 \ln x_3(i) \cdot a_4 \ln x_4^{(i)} \quad (16)$$

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look for it.

In particular, we create economic factors affecting net profit and methods of their evaluation. If the coefficients of the system of normal equations are calculated, and then the system of equations is solved, the net profit

$$Y = 88.4 \cdot \lambda v\, \xi_1 + 146.6 \cdot \lambda v\, \xi_2 + 246.11 \cdot \lambda v\, \xi_3 - 119.15 \cdot \lambda v\, \xi_4 + 142.25$$

can be calculated by the formula. The analyzed mathematical models are significant with a probability of 0.95 according to the Fisher statistic.

Conducting marketing research in all sectors of the economy, rational use of available opportunities and resources in the sector, allows to gain huge economic benefits, achieve high success and take a worthy place in the international world market along with stable economic growth. The increase in the volume of fruit and vegetable production in our country allows for stable provision of the domestic consumer market's need for them, as well as the establishment of modern processing plants and storage systems, mainly in rural areas. This, in turn, creates a basis for creating new jobs, providing employment to the population, and raising their income and standard of living.

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