



ANALYSIS OF RELATIONSHIPS IN ECONOMETRICS USING STATISTICAL METHODS

Journal Website:
<https://theusajournals.com/index.php/ijmef>

Copyright: Original content from this work may be used under the terms of the creative commons attributes 4.0 licence.

Submission Date: May 21, 2024, Accepted Date: May 26, 2024,

Published Date: May 31, 2024

Crossref doi: <https://doi.org/10.37547/ijmef/Volume04Issue05-09>

Matkarimova Intizor Atabaevna

Associate Professor at the Department of Economics at "Mamun University", Uzbekistan

Saburov Javohir

Teacher at the Department of Economics at "Mamun University", Uzbekistan

ABSTRACT

In this article, based on the methodology of econometrics, various special mathematical statistical methods of the main indicators are reviewed and analyzed.

KEYWORDS

National Accounts System, regression, correlation area, trend, correlation-regression analysis, correlation coefficient, coefficient of determination.

INTRODUCTION

The fundamental changes taking place in our country in connection with the transition to the market economy, the implemented reforms have not left the system of education and statistics aside. Currently, a

lot of work has been done to reform the education system in our Republic, that is, a new law "On Education" has been adopted. Taking into account that the role of statistics is increasing day by day, a new Law

of the Republic of Uzbekistan "On Official Statistics" fully conforming to today's requirements and international standards was developed and signed by the head of our state. The Law "On Official Statistics" was adopted on August 11, 2021. It consists of 7 chapters and 44 articles, and is fundamentally different from the previous law.

Indeed, the Law of the Republic of Uzbekistan "On Official Statistics" dated August 11, 2021, the Decree of the President of the Republic of Uzbekistan dated August 3, 2020 "On Measures to Improve the National Statistical System of the Republic of Uzbekistan" Resolution No. PQ-4796 and Resolution No. 691 of the Cabinet of Ministers of the Republic of Uzbekistan dated August 19, 2019 "On the introduction of the modern system of national accounts in the Republic of Uzbekistan" and other regulatory legal documents on the science of statistics serves for deep learning [1, 2, 7, 8].

MAIN PART

Correlational analysis is one of the methods of determining the connection between events. But only correlational analysis can give a simple estimate of the density of the connection. This situation makes it possible to widely use correlation analysis in economic research. When talking about correlational analysis, regression analysis should not be forgotten [3, 4, 5, 6].

Regression analysis is a method of statistical analysis of the relationship between phenomena and analyzes the forms of the relationship. The results of regression analysis have a qualitative expression in regression equations and coefficients.

Regression analysis determines the effectiveness of the factors influencing the result.

The word regression is derived from the Latin word *regressio*, which means backward movement. This term is associated with the names of the founders of correlational analysis, F. Galton and K. Pearson.

Regression analysis makes it possible to assess the effectiveness of the characteristics affecting the resulting characteristic with sufficient precision in practice. With the help of regression analysis, it is possible to estimate the prediction values of socio-economic processes for future periods and determine their probability limits.

In correlation-regression analysis, the regression equation of the connection is determined and it is estimated with a certain probability (confidence level), and then an economic-statistical analysis is performed.

ANALYSIS AND RESULTS

Based on the following data, we determine the relationship between the amount of manufactured products (thousand units) and production costs (million soums).

Table 1

Manufacturing company	(X) production quantity (thousands)	(Y) production costs (million soums)
1	78	133
2	94	139
3	85	141
4	73	127
5	91	154
6	88	142
7	85	135
8	77	132
9	89	161
10	95	159
11	72	120
12	115	160

The procedure for determining the type of equation. The association between two events or factors and the resulting trait is called pairwise correlation. Analytically, it is represented by regression equations of various shapes, such as straight line, parabola, hyperbola, and others. In order to determine the type of equation, it is necessary to describe the information about the connection through graphs and carefully examine them. But without using this path, it is possible to rely on somewhat more general

procedures. For example, if the factor and the resulting signs increase in the same, almost arithmetical progression, this case testifies to the presence of a straight line connection between them. If their relative growth rates are nearly the same, then there is a curvilinear relationship. If the factor sign increases slightly faster than the factor sign increases according to the arithmetic progression, the relation between them is represented by a parabola or a power function. [2, 4, 5, 6, 10]

Picture 1

Регрессионная статистика		Дисперсионный анализ						
Множественный	0,811407984							
R-квадрат	0,658382917							
Нормированный	0,624221208							
Стандартная оши	8,402940219							
Наблюдения	12							
	df	SS	MS	F	Значимость F			
Регрессия	1	1360,822623	1360,822623	19,27254077	0,001355954			
Остаток	10	706,0940432	70,60940432					
Итого	11	2066,916667						
	Коэффициенты	Стандартная ошибка	t-статистика	P-Значение	Нижние 95%	Верхние 95%	Нижние 95,0%	Верхние 95,0%
Y-пересечение	59,9621427	18,82518032	3,185209474	0,009732977	18,01702704	101,9072584	18,01702704	101,9072584
Переменная X 1	0,943814096	0,214989363	4,390050201	0,001355954	0,464787943	1,422840248	0,464787943	1,422840248

Based on the results of the analysis, we found a connection between the amount of produced products (thousands of units) and production costs (million soums).

As a result of calculations, we create the following regression equation.

$$Y = 59.962 + 0.9438 * X$$

So, a change in the amount of manufactured products by 59.962 billion soums means an increase in production costs by 0.9438 thousand soums.

Correlation coefficient

$$r_{yx} = \frac{\bar{x} \cdot \bar{y} - \bar{x} \cdot \bar{y}}{\sigma_x \cdot \sigma_y}$$

$$r_{yx} = 0.811$$

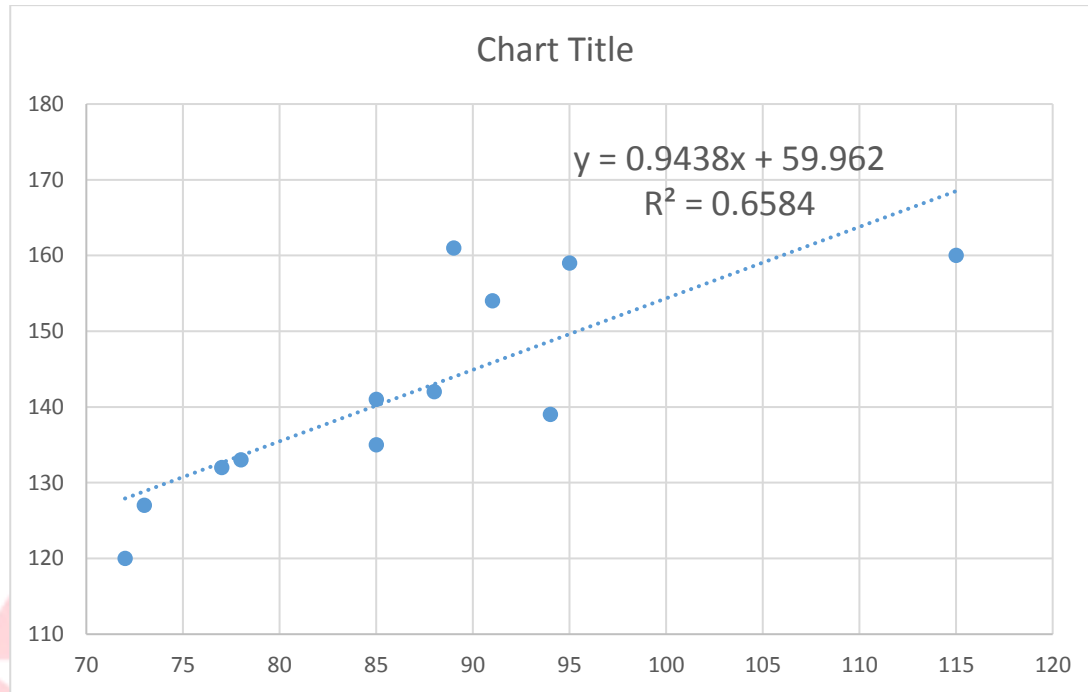
Therefore, there is a strong correlation between the output and production costs.

The coefficient of determination is equal to the square of the correlation coefficient.

$$R^2 = r^2$$

$$R^2 = 0.811^2 = 0.658$$

Picture 2



The coefficient of determination, like the correlation coefficient, takes a value between -1 and +1. According to the model, the closer the value of this coefficient is to 1, the closer the relationship between the resulting sign y and the factor x under study is understood to be.

CONCLUSION

In short, analysis of interrelationships based on the methodology of econometrics in various special statistical methods, their assessment leads to a realistic statistical description of the dynamics of economic development and a true assessment of the standard of living of the population.

REFERENCES

1. Основы национального счетоводства (международный стандарт): Учебник./ Под ред. Ю.Н.Иванова. – Москва: ИНФРА-М, 2011.-С.92-97.
2. G‘oyibnazarov.B.K. O‘zbekiston Respublikasida Milliy hisoblar tizimini ishlab chiqishning ilmiy – metodologik asoslari (Statistik aspekt) : Iqt. fan. dok. ilm. dar. u-n diss. Toshkent davlat iqtisodiyot universiteti. -T., 2006. 338 bet
3. Soatov N.M. “Statistika” . T.: “Abu Ali Ibn Sino nomidagi tibbiyot nashriyoti” , 2003
4. Berkinov B.B “Ekonometrika” .T.: “Fan va texnologiya nashriyoti ” O‘quv qo‘llanma , 2015
5. Abdushukurov A.A., Nurmuxamedova N.S., Sagidullaev K.S. Matematik statistika. Universitet, 2013 y.

6. Маткаримова И. А., Отажонова М. С.
Гармонизация бухгалтерского учёта и системы национальных счетов //Образование наука и инновационные идеи в мире. – 2023. – Т. 20. – №. 5. – С. 60-68.
7. Matkarimova I. A., Sharipova Z. A. MHT-2008 asosida yaimni hisoblashda inobatga olinishi zarur bo‘ladigan o‘zgarishlar //Internauka. – 2020. – №. 4-3. – S. 91-93.
8. Гойипназаров Б. К., Маткаримова И. А.
Основные изменения в системе национальных счетов 2008 года и их влияние на макроэкономические показатели //Молодой ученый. – 2015. – №. 17. – С. 441-444.
9. И Маткаримова .Формирование статистической информации в процессе глобализации (на примере Узбекистана).ФЭн-наука, 17-18
10. ИА Маткаримова.Совершенствование базы экономических статистических информации (на примере Узбекистана). Молодой ученый, 534-536
11. stat.uz

OSCAR
PUBLISHING SERVICES