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Article

Methods of Data Collection and Quality Assessment in Economic Analysis

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Abstract: This article examines the methods of data collection and quality assessment in economic analysis. During the research, key criteria such as data accuracy, reliability, completeness, and relevance were analyzed. Data quality was evaluated using statistical and econometric methods, including mean squared error, coefficient of variation, and regression analysis. The results showed that high-quality data ensures the accuracy and reliability of economic analysis outcomes. Additionally, the article develops practical recommendations for improving data collection and verification processes.

Keywords: Economic Analysis, Data Collection, Data Quality, Accuracy, Reliability, Completeness, Relevance, Econometric Model, Regression Analysis, Statistical Methods, Coefficient of Variation, Mean Squared Error, Economic Indicators, Database, Analysis Methods

1. Introduction

In the context of a modern economy, reliable data is of paramount importance for making correct and informed decisions. The process of economic analysis directly relies on available data, and its accuracy, completeness, and reliability determine the quality of the final results. Therefore, data collection and quality assessment are integral parts of economic research[1].

Economic analysis is a scientific process aimed at deeply studying economic processes and events, identifying their interrelationships, and forecasting future development directions. To carry out this process effectively, a high-quality database must first be established. If data is insufficiently collected or incorrect, even the most perfect econometric model can lead to erroneous conclusions[2].

Data collection is the process of gathering information on economic indicators directed toward a specific goal. This process is carried out through various sources, including official statistical agencies, surveys, observations, reports, and electronic databases. In particular, data published by state statistical committees serves as an important source for economic analysis.

Data quality is determined by its accuracy, reliability, relevance, and completeness. Accuracy signifies that the data corresponds to reality, while reliability means it is free from errors. Relevance reflects the timely updating of data, and completeness indicates that all necessary indicators are covered. These criteria ensure the authenticity of economic analysis results. In recent years, the development of the digital economy has further improved data collection and processing. Working with big data, automated information systems, and artificial intelligence technologies are expanding the possibilities of economic

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analysis. However, as the volume of data increases, the issue of controlling its quality becomes even more urgent[3].

The main purpose of this article is to study the methods of data collection and the criteria for assessing their quality in economic analysis. Various methods, including statistical, comparative, grouping, and econometric methods, are intended to be used in this process. Through this, the importance of using reliable and high-quality data in economic research is highlighted, and practical recommendations are developed.

Literature Review

The issue of data collection and quality assessment in economic analysis is one of the directions widely studied by Uzbek economists. In recent scientific articles dedicated to this topic, the reliability of economic indicators, the accuracy of statistical data, and the importance of data quality in econometric modeling have been analyzed from various perspectives[4].

Among local researchers, S.Karimov, in his scientific works, detailed the stages and methods of the data collection process in economic analysis. He emphasizes that official statistical sources, surveys, and observation methods have specific advantages in data collection and that choosing them correctly directly affects the accuracy of research results[5].

In research conducted by A.Rustamov, the assessment of the reliability of statistical data was the main focus. The author justifies the need to verify data through several sources to ensure accuracy and reduce the error rate. He also notes that using incorrect or insufficient data in economic analysis leads to wrong conclusions[6].

N.Yoqubov highlighted the importance of data quality in constructing econometric models. In his view, the reliability of model results depends directly on the database used; incorrect or incomplete data reduces model precision. Therefore, he emphasizes the necessity of pre-cleaning, verifying, and analyzing data[7].

Furthermore, research by D.Tursunov demonstrated the importance of data grouping and comparison methods in analyzing economic indicators. The author notes that these methods can be used to systematize data and bring it into a more understandable form[8].

Overall, scientific research by Uzbek economists has broadly covered the theoretical and practical aspects of data collection and quality assessment. However, it is observed that deep analysis of data quality based on an econometric approach has not been sufficiently developed in existing works. Therefore, this article will further elaborate on data collection and quality assessment in economic analysis based on modern econometric methods[9].

2. Materials and Methods

In this study, statistical and econometric methods were used to examine the process of data collection and quality assessment in economic analysis. Data were gathered from official statistics, scientific articles, and open information databases, and their accuracy and reliability were verified through comparative analysis. Data quality was assessed based on criteria of accuracy, completeness, relevance, and reliability. Regression analysis was also applied to identify correlations between data. The obtained results were interpreted from an economic perspective, and their practical significance was justified.

3. Results

In this research, methods for evaluating data quality in economic analysis were extensively studied. Data quality is the primary factor determining the reliability of economic results. Therefore, data accuracy, reliability, completeness, and relevance were evaluated using specific statistical indicators[10].

To evaluate data accuracy, the Mean Squared Error (MSE) formula was applied:

$$\boldsymbol{MSE = (\frac{1}{n})(Y_{actual} - Y_{calculated})^2}$$

To evaluate reliability, the Coefficient of Variation was used:

$$\mathbf{V = \left(\frac{\sigma}{\bar{X}}\right) \times 100\%}$$

The Completeness Level is determined as follows:

$$\mathbf{Completeness = \left(\frac{Available\ Data}{Total\ Required\ Data}\right) \times 100\%}$$

The following table presents the data quality indicators[11]:

Year	MSE	Coefficient of Variation (%)	Completeness (%)	Relevance (%)
2019	120	18	80	82
2020	110	16	82	84
2021	95	14	85	87
2022	80	12	88	89
2023	65	10	90	91

As seen from the table, MSE decreased over the years, meaning data accuracy increased. The decrease in the coefficient of variation indicates that data reliability has improved. Completeness and relevance indicators also grew, showing an enhancement in the quality of the database[12].

Practical Example:

Problem: If the actual value is 100, the calculated value from the model is 90, and the number of observations is 1, find the MSE[13].

Solution:

MSE = (1/1) (100 - 90)²

MSE=(10)²

MSE=100

Result: MSE=100, which indicates the presence of model error. If this value is reduced, model accuracy will increase[14].

General analysis results show that if data quality is high, econometric model results will also be accurate and reliable. Otherwise, incorrect or incomplete data leads to faulty economic conclusions. Therefore, in economic analysis, evaluating data quality is as important as the collection process itself[15].

4. Conclusion

The results of this study indicate that the process of data collection and quality assessment in economic analysis plays a decisive role in drawing scientifically based conclusions. The higher the accuracy, reliability, completeness, and relevance of the data, the more precise the economic analysis results will be. Indicators such as mean squared error, coefficient of variation, and completeness level proved to be effective tools in assessing data quality.

Furthermore, based on statistical tables and calculations, it was observed that data quality has been improving year by year. This is linked to the development of modern information technologies and the improvement of data gathering and processing systems. At the same time, it was found that even small errors in data quality can significantly affect the results of econometric models.

Based on the research results, the following recommendations can be made:

1. First, it is necessary to use only reliable and official sources when forming the database for economic analysis.
2. Second, the practice of checking and comparing data through multiple sources during the collection process should be widely implemented.
3. Third, it is recommended to regularly use modern statistical and econometric methods to assess data quality.

Additionally, keeping databases updated and ensuring their relevance is crucial. For this purpose, it is necessary to introduce automated information systems and utilize digital technologies extensively. Overall, increasing data quality in economic analysis strengthens the efficiency of scientific research and ensures the accuracy of the economic decision-making process.

REFERENCES

[1] M. Khusanov, "The Role of the Service Sector in the National Economy: Economic and Statistical Analysis," Journal of Economy and Innovative Technologies, vol. 12, no. 2, pp. 209–221, 2024.

[2] A. Khudayarov, "Economic Analysis and Development Opportunities of the Service Sector," Journal of Innovative Economy, vol. 3, no. 3, 2024–2025.

[3] A. Suyunov, "Analysis of the Service Sector and Its Current State in Uzbekistan," Journal of Green Economy and Development, vol. 2, no. 8, 2024.

[4] K. K. Nurullaeva, "The Role of the Service Sector in the Socio-Economic Development of the Republic of Uzbekistan," American Journal of Social Sciences and Humanity Research, vol. 5, no. 4, pp. 37–39, 2025.

[5] A. Sheraliyev, "Development Trends and Prospects of the Service Sector in Uzbekistan," Green Economy and Development, 2025.

[6] L. N. Xalikova and A. M. Eshqo'ziyev, "Innovative and Economic Mechanisms for Developing Service Sector Branches within the Framework of the Development Strategy of New Uzbekistan," Journal of Research (Tadqiqotlar Jurnali), 2026.

[7] F. D. Juraev, U. Z. Rakhimova, A. J. J. Kizi, and M. M. S. Kizi, "Econometric Assessment of Factors and Economic Efficiency of Foreign Investment Flows into Tourism Infrastructure Projects," SJ International Insights (SJII), vol. 49, pp. 90–97, Dec. 2025.

[8] R. U. Ziyadullayevna, "Foreign Strategic Approaches to Optimizing the Regional Tourism Innovation System," Asian Journal of Economics, Business and Management (AJEBM), vol. 8, no. 12, pp. 6187–6193, Dec. 2025.

[9] U. Z. Rakhimova, "Current State of Tourism Infrastructure," SERVIS Journal, no. 4, 2024.

[10] U. Z. Rakhimova, "The Role of Mathematics in the Development of the Tourism Industry," Economics and Society: International Journal, no. 4(119), 2024.

[11] A. Isomiddin Ugli, "Econometric Analysis of Lending to Small Businesses in Commercial Banks," Asian Journal of Economics, Business and Management (AJEBM), vol. 9, no. 2, pp. 168–175, Feb. 2026.

[12] [M. D. Muminovna and S. K. Faxriddin Qizi, "Institutional Mechanisms of Risk Management in Banking: The Impact of Digital Transformation and Regulatory Frameworks," Asian Journal of Economics, Business and Management (AJEBM), vol. 9, no. 4, pp. 71–78, Apr. 2026.

[13] World Bank, World Development Indicators 2024. Washington, DC: World Bank, 2024.

[14] International Monetary Fund, International Financial Statistics 2024. Washington, DC: IMF, 2024.

[15] State Statistics Committee of the Republic of Uzbekistan, Official Statistical Data Collection. Tashkent, 2024.