E-ISSN: 2997-934X

American Journal of Business Practice
https://semantjournals.org/index.php/AJBP

| Research Article

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Economic Data and their Processing

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Abstract: This article provides detailed information about the content of economic data, their classification and sources. It also covers the stages of collecting, cleaning, analyzing and visually presenting economic data. The article emphasizes the role of modern technologies, in particular Business Intelligence systems, in processing economic data. The importance of using data correctly in making effective economic decisions based on analysis is substantiated.

Key words: economic data, economic analysis, data processing, statistical methods, regression analysis, visualization, macroeconomic indicators.

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Introduction

Economic data possess a statistical nature and play a vital role in studying the dynamics of economic processes over time. This is because all economic phenomena and processes are subject to temporal changes. By analyzing economic processes using economic-statistical models, it becomes possible to scientifically assess and forecast the current state and future trends of various economic indicators.

Economic data are obtained through several types of statistical observations. A statistical observation refers to the systematic recording and collection of information about studied phenomena and processes based on a unified scientific-organizational framework. The more precisely such observations are conducted—following thoroughly tested and expert-reviewed methodologies—the more accurately they serve the intended analytical objectives. The most crucial step, however, lies in the correct processing of the gathered data to derive sound conclusions.

Depending on the source categories providing the data, statistical observations are divided into:

By organization method: regular statistical reports and specially organized surveys.

One of the key principles in statistical observation is the inclusion of all relevant units within the defined spatial and temporal boundaries. Accuracy, reliability, and objectivity of collected data

must be unquestionable. If there is even the slightest doubt (regardless of scope), each data point should be verified independently by experts.

Data collection must be conducted using a single methodology and program across all observed units; otherwise, the data may become inconsistent or unusable.

Statistical observations typically result in the collection of large volumes of varied and scattered data. These raw data alone are insufficient for analysis due to their diversity and fragmentation. Therefore, the next essential task is to systematize, organize, and summarize the data—an objective achieved through the method of statistical summarization (svodka), marking the second phase of statistical research.

It is important to note that statistical summarization differs significantly from general informational updates broadcasted daily by media. It is not merely operational information but is the basis for structured analysis.

One of the long-established tools in statistics is the grouping method, which is not aimed at arbitrary classification but at revealing inherent characteristics of the phenomenon, evaluating trends and patterns, and understanding transitions between qualitative and quantitative changes. This method also enables classification of statistical units into types and study of structural relationships and interdependencies.

Grouping is divided into three types:

Typological grouping – classifying based on shared characteristics.

Analytical grouping – assessing cause-effect relationships.

Structural grouping – analyzing distribution within the total population.

For instance, to determine which segment of the population constitutes the labor force, grouping by employment status is applied.

Secondary grouping is also used in statistics to form larger interval groups based on previously grouped data. This process helps generalize findings and derive broader insights. It is implemented by enlarging the class intervals and is exemplified in illustrative tables such as Table 1.

Table 1 – Grouping of Goods by Price at a Retail Outlet

No.	Price Range of Goods (thousand UZS)	Number of Goods	Total Volume of Goods (thousand UZS)
1	Up to 10,000	15	93.0
2	10,000 – 15,000	8	112.0
3	15,000 – 20,000	13	200.0
4	20,000 – 30,000	3	68.0
5	30,000 – 50,000	9	378.0
6	50,000 – 60,000	7	385.0
7	60,000 – 70,000	6	180.0
8	70,000 – 100,000	10	600.0
9	100,000 – 200,000	22	2,400.0
10	200,000 and above	12	3,744.0
	Total	**100**	**8,160.0**

It is evident that the grouping data presented above is not sufficiently clear and does not adequately reveal any general patterns. At most, we can only discern the structural composition of the dataset.

In order to determine the degree of correlation between the total volume of goods and the price groups of the goods, we will consolidate the ten initial groups into five broader groups and recalculate the relevant indicators accordingly.

This method involves combining adjacent initial intervals into larger, goal-oriented groupings. For example, based on the new scheme, the second group will include items from the 10,000 to 20,000 UZS range, originally represented by groups 2 and 3. The number of items in this new group will be the sum of items from both original groups (8 + 13), and similarly, the total volume of goods will be the sum of their turnovers (112 + 200).

This re-grouping approach results in a more compact and clearer classification, allowing for easier identification of general patterns and trends within the data.

Table 2 – Secondary Grouping by Interval Enlargement Method

No.	Price Range of Goods (thousand UZS)	Number of Goods	Total Volume of Goods (thousand UZS)
1	Up to 10,000	15	93.0
2	10,000 – 20,000	21	312.0
3	20,000 – 50,000	12	446.0
4	50,000 – 100,000	18	1165.0
5	100,000 – 200,000	22	2400.0
6	200,000 and above	12	3744.0
	Total	**100**	**8160.0**

The collected and grouped economic and statistical data, in turn, are depicted in tables and graphs.

Graphs are one of the scientific study tools of modern statistics, and today it is impossible to imagine any lecture or public speech, presentation, article published in newspapers, magazines, special broadcasts on television, and even the advertising industry without statistical graphs.

Graphs, while quickly attracting the reader's attention, create a basis for memorizing and visualizing information. They play an important role in identifying and describing certain laws that are difficult to see and understand.

Statistical graphs are a conditional depiction of numerical quantities and their ratios in the form of points, lines, figures, and other geometric shapes.

Line diagrams are widely used, with the help of which indicators of dynamic series, relationships between events, indicators of distribution series, etc. are depicted. They are constructed on the basis of a coordinate space or a digital grid.

Let's represent the following data in the form of a line diagram.

Table 3 – Changes in the Volume of Imported Goods (2014–2019)

Year	Import Volume (tons)	Import Volume (thousand tons)
2014	1726	1.73
2015	1624	1.62
2016	1503	1.51
2017	1734	1.73
2018	1654	1.66
2019	1625	1.62

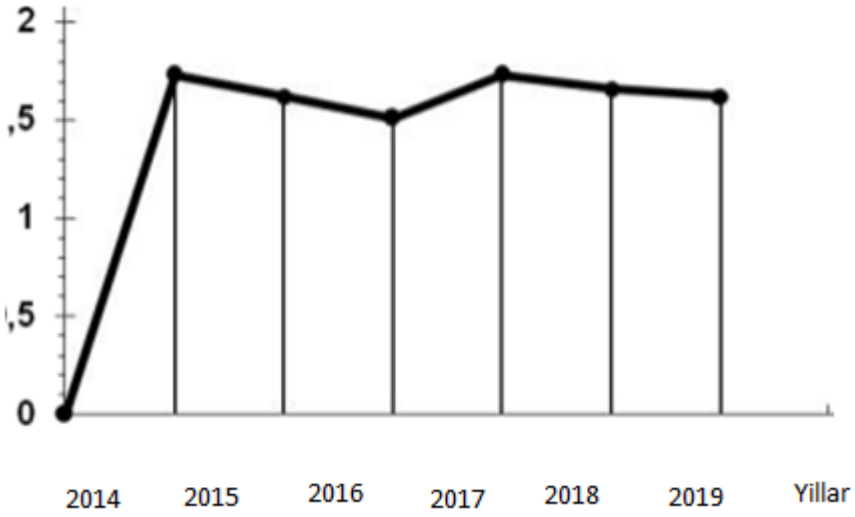

Figure 1. Dynamics of imports of goods

A line chart can also depict the dynamics of several events. In this case, the broken lines should be drawn in different colors or in a way that distinguishes them from each other.

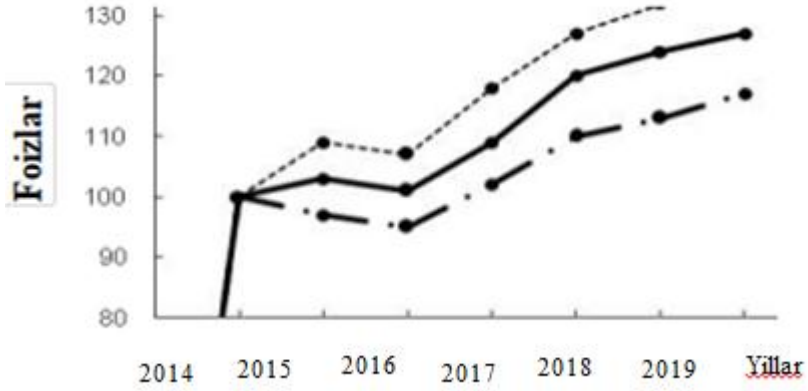

Figure 2. Dynamics of trade in food and non-food products

Conclusion

Economic data and its processing are the basis of economic analysis and decision-making. By systematically collecting, cleaning, analyzing and visualizing them, it is possible to gain a deeper understanding of economic processes and make effective management decisions. In the context of digital transformation, these processes are becoming even more important.

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