Time series

Time series refers to a chain of data points observed and recorded in a time order over a specific period. It represents the output obtained from monitoring and tracking specific events or processes.

It is also known as time-stamped data and plays a major role in analysis and forecasting processes. It involves noting measurements at equally spaced time intervals. Its construction helps academics study how a variable changes over time. For instance, it can be applied to study the price movements of a security over time.

Components of Time Series

Secular Trend

It indicates the long-running pattern identified from the chain of data recorded. It can be increasing or decreasing, indicating the future direction. Although it is commonly known as an average tendency of any aspect, the trend may vary in specific parts oscillating between upward and downward. Still, the overall trend will depict a single movement only, either upward or downward. For example, in summer, the temperature may rise or decline in a day, but the overall trend during the first two months will show how the heat has been rising from the beginning.

Seasonal Trend

Seasonal variations represent the presence of rhythmic patterns. Certain pattern repeatedly occurs at the same period or point every year. For example, the sale of umbrellas increases during the rainy season, and air conditioners increase during summer. Apart from natural occurrences, man-made conventions like fashion, marriage season, festivals, etc., play a key role in contributing to seasonal trends.

Cyclical Variations

It represents a cyclical pattern composed of up and down movement. It may span more than one year and go from phase to phase to complete a cycle. A **business cycle** is a significant example of a cyclic variation, denoted that a business goes through four stages in its life. Starting from the introduction, expansion, prosperity, and decline. How well the company can perform and stretch its phases depends on its performance.

Irregular Variations

It refers to variations that are uncontrollable and inevitable. It occurs randomly, opposite to regular changes or occurrences, and does not associate with a pattern. These fluctuations are unpredictable and unexplainable. Forces like natural and man-made disasters can trigger irregular variations.