

Why Companies Need Micro Trends Analytics

DRIVING MORE SAVINGS AND MORE
REVENUE GROWTH WITH
MICRO TREND ANALYTICS



EXECUTIVE SUMMARY

The increasing growth of the IoT and connected devices has led to a virtual tsunami of big data and more specifically time series data which is collected at very granular intervals – typically minutes, seconds and even milliseconds. Businesses are overwhelmed by the scope of data they collect and by the complexity to analyze and find patterns in time series data. Thus, they fail to utilize the time series data which contains many valuable insights.

In the past, it's usually taken a specialist, known as a data scientist or a statistician, to analyze big time series data sets on all levels and then advise decision-makers on how to proceed to meet their goals. This process creates a time-lag when it comes to companies making the right decisions at the right time.

Micro trend analysis is an analytical approach that puts companies in contact with the information they need—when they need it. This type of analysis allows business professionals to gain insights from the data quickly and set alerts for the occurrence of micro trends in real-time, allowing organizations to make decisions to keep business processes on track.

In addition, micro trend analysis offers real-time management of issues before they become problems. Not only that, but micro trends provide additional monetization opportunities that companies would otherwise overlook. All of this can be done without the need for a data scientist or custom application development.

Trendalyze has created an easy-to-use, innovative self-service platform which gives companies the ability to empower professionals to make decisions and react to data trends as they happen—even up to the minute or second. There's no need for a business to fall behind when it comes to data analysis. Trendalyze is a cost-effective platform that businesses can easily and quickly utilize, without the need of a data scientist.

Why Your Company Needs Micro Trends Analytics

The past few years have seen the rapid growth of the Internet of Things (IoT) and connected devices, which have led to an increase in the amount and scope of time series data collected by organizations. This unprecedented growth has increased the value of data and analytics; however, most businesses fail to make use of this essential resource. Time-series data captures the detailed footprints of every event, process, action, condition, behavior and many more. Those foot prints contain patterns that reveal the root causes of all outcomes. Knowing them and monitoring for them will enable organizations to improve every aspect of their operations.

Yet, many businesses are being left behind when it comes to using the mass volume of data they gather. The complexity of the data requires the use of a wide range of tools from BI (Business Intelligence) tools to advanced statistical modeling tools. Most companies have already made investments in such tools and platforms and yet they are not getting the returns that they expected. For most organizations, accessing and analyzing the volume of data has been a complicated process without a definitive outcome.

Very granular time series data poses special problems that the BI tools cannot solve and which very few people know how to custom solve in advanced analytics tools. Analysis of time series data has traditionally been done either with simple descriptive statistics which do not provide much insight, or required data scientists, who are specifically trained to analyze and interpret time series data. The first approach has created dissatisfaction due to the lack of sufficient meaningful insights, while the second has created a lag when it comes to response time and corrective measures taken by decision-makers.

This is where micro trend analysis and the Trendalyze self-service platform come in to play.

What is Micro Trend Analysis?

Micro trend analysis is the method and process of discovering patterns (also referred to as motifs, anomalies, sequences) in time series data and also searching for and finding similar patterns at specific points in time across multiple time series. Micro trend analysis looks for “fingerprints” of all types of behaviors or events giving a company the ability to understand and control various types of monitored activities. Micro trends analysis makes use of machine learning and matching algorithms to detect patterns and make predictions or forecasts to help business professionals to form expectations about the future and manage specific outcomes.

Micro trends analysis and monitoring works in three steps:

Step 1: Some people refer to this step as “finding the needle in the

haystack”, i.e., the process of discovering some interesting pattern or trend in a very long time series. Trendalyze does this in two ways. We provide interactive visualizations and various navigations controls to allow the business professional to discover quickly micro trends. We also provide automatic machine profiling of the entire time series to classify the various sub segments in it. The user can use the classification to navigate to particular sections and pick up the micro trends of interest.

Step 2: At this stage the user wants to use the micro trend he or she has selected in Step 1 and pull out all similar needles from the haystack. Why is this needed? Micro trends are typically discovered within individual time series such as store sales, patient monitoring and tracking, etc. Thus, if you find a particular trend in some retail store, you may want to find all other stores that experience the same trend. Once you find all the stores, you can devise some action to enforce or reverse the trend.

Step 3: At this stage users can leverage known micro trends to monitor for their occurrence or for deviations from the trend in real time data. The micro trend becomes the benchmark against which you can judge all future events. Complex algorithms do real time comparisons, as well as prediction and forecasting about the likely occurrence of the micro trends.

All in all, micro trend analysis is a tool used to manage and utilize the large amounts of time series data businesses continue to gather. This type of analysis aims to discover sub segments in very large time series that exhibit interesting trends. Those trends typically reveal the root causes of events that business professionals want to manage. It is the Trendalyze unique visualizations and user experience that makes it easier to spot patterns (trends) in a time series as they occur—even right up to the minute or second. It is also Trendalyze unique google like search for similar patterns that allows business professionals to quickly go from individual observations to grouping similar cases.

When applied to real time data streams micro trend analysis gives a company the ability to use micro trends to predict and even prevent problems before they arise or to make business decisions that can save costs or drive new incremental revenues.

The Need for Speed to Monetize Data

Today, the speed to react in real time is critical when it comes to business. The instant gratification offered by IoT is more in demand now than ever by customers and clients because instantaneous decisions can alter the course of events. They also expect tailored experiences in the moment, whether shopping for their next smart device or making essential business decisions. Businesses that react to trends fast can cannibalize the customer bases of their competitors and bring new innovations that can disrupt entire markets.

Customers and clients don't have time to waste and need answers now. As a result, businesses who want to stay relevant must act on the data they're receiving or fall behind other companies that are utilizing the new types of analytics that provide real-time benefits. In real time you react to micro trends and not to general trends. When trends become too general the opportunities have been marginalized as everyone has been acting on the same data. Hence it is important to act on smaller and more differentiated trends. All customers want deep personalization, but this requires companies to understand and analyze the small details in the data, i.e. the micro trends.

But how can you do that at scale? How can you analyze and monitor 1MM customers? This is where technology, like Trendalyze, comes handy and allows to augment and scale the human ability to analyze data and act on it in order to monetize the insights.

The Benefits of Micro Trend Analysis

Micro trend analysis helps companies to identify and respond in real time to threats or opportunities discovered in factual data. They also can use the factual trends to innovate and develop strategies to differentiate from their competitors and to capture more market share. Micro trends analysis provides many benefits:

- If you are analyzing event data it identifies problem areas before the problem even occurs, giving enough time to avert or fix a problem before it happens. For example, micro trends analysis can reveal trends that lead to equipment failure. Monitoring for the occurrence of the trend allows engineers to prevent future failure and avoid a bigger and more costly damage.
- If you are analyzing sales data it identifies areas where a company may be underperforming. For example, retailers can identify when particular products or stores sales start trending downwards and take corrective action. This may sound trivial, but is it practically impossible to be done by a human analyst with traditional BI tools when you have thousands of products and hundreds of stores.
- If you are analyzing behavioral data it identifies interesting changes that can be used to nudge subjects to take particular actions or move in particular direction. For example, marketers monitor the online activities of game players and when they see a decline in activity they trigger campaigns to reactivate players before then move to another gaming site.
- If you are analyzing transactional data, such as banking data, it identifies sequences that may indicate fraudulent activities and prevent them. For example, in anti money laundering (AML) it is critical to monitoring transaction sequences for smurfing. But how do you do it effectively in such large volumes of transactions. Banks use rules to make it simpler, but this results in 90% false positives which

makes the cost of AML prohibitive.

- Micro trends analytics makes not only the detection and understanding of patterns easy and intuitive, it also makes prediction and forecasting much easier. As a pattern starts to evolve, it is easy to assess the likelihood of the end results. Hence, professionals can make decisions with high degree of confidence.
- Micro trends analytics offers real time business performance monitoring and alerting when a specific trend is likely to occur. Professionals can be alerted on positive trends to capitalize on them, on undesirable trends to try to prevent them, and on anomalies in order to investigate the issue.

Micro trend analysis gives a company the power to identify cases and learn quickly which patterns lead to outcomes that they want to control. It also allows them to monetize this knowledge through real time monitoring and alerting.

Micro Trend Analytics at Work Across Various Industries

Retail: micro trend analytics gives business users the power to achieve highly accurate price sensitivity estimates, promotion optimization, and demand forecasting.

Distribution: micro trends analytics gives engineers the power to optimize food and other temperature sensitive packaging for energy and cost savings using climate and IoT data.

Healthcare: engineers and researchers use micro trend analytics to optimize image guided robotic surgery, as well as other sensor enabled medical devices.

Energy: business professionals leveraging detailed climate data for micro trend analysis and deep learning to optimize energy prices and forecast demand.

Utilities: analysis and monitoring of micro trends in climate and IoT data allows companies to implement cost effectively predictive maintenance and better asset utilization.

Engineering: micro trend analysis provides highly interactive self-service tools for engineers to visualize and analyze complex patterns and correlations in equipment and sensor data.

Banking: using micro trend analytics for AML transaction monitoring and card processing fees monitoring reduces false positives and settlement errors.

Telecommunications: micro trends analysis and monitoring allows for reliable subscriber attrition prediction, ARPU optimization, and

product and services innovation.

Gaming: using micro trend analytics makes it possible to accurately detect player attrition and revenue decline where traditional statistical approaches have failed due to high behavioral variability.

Why Are Businesses Slow to Utilize the Value in Time Series Data?

With the proven advantages of time series data analytics, businesses are still slow to adapt and utilize this valuable resource. Why is this the case?

Time series data analysis is a complex process, especially when considered with the growth of connected smart devices and the IoT. The volume of data is vast—so vast that most businesses are inundated and overwhelmed with information they're not sure how to use. Finding the needle in such a big haystack is not a trivial task.

The variety of data, too, is an issue. Information of all types comes from a variety of sources and is created by people and machines. In addition, the data comes in extremely fast—and information is gathered 24/7. Many businesses, regardless of their size and industry, are not sure how to deal with the virtual tsunami of data. Technology, too, can be daunting when it comes to data analysis—which platform, software is best, etc. and what skills are required.

Self-Service is The Only Way to Advance Micro Trends Analytics

Trendalyze has created an innovative self-service platform which leverages machine-based analysis and pattern matching that makes it easy and intuitive for non-IT specialists to discover, analyze, search for and monitor fore micro trends in time series data.

Self-service is an approach that combines usability design and technology to simplify previously complex tasks in order business users to be able to perform analysis in a Do-It-Yourself manner. In the case of time series analytics, a self-service solution takes the complex tasks performed by data scientists and statisticians and redesigns them in a unique workflow that can be understood and used by business professionals. Innovative visualizations and automatic algorithmic processing on the back end allow business user to see and interact only with the information that they need. The many steps that data scientists had to code in order to be able to analyze the data are automated and hidden from the business professional. The iterative tasks that data scientists and statisticians do to refine the analysis have been automated and placed in simple UI controls that the business user understands immediately.

By implementing a self-service approach to micro trends analytics, data is put into the hands of those who make the decisions, without the help of a data scientist. Trendalyze empowers business professionals to find and monetize micro trends, to increase their bottom line. Not only that, but Trendalyze gives businesses the power to improve outcomes, save costs and optimize revenues--all based on the discovery of micro trends captured in huge volumes of detailed data. It's easy to monetize micro trends, while using predictive pattern detection to watch for problems before they happen.

Trendalyze is cloud-based platform allowing you to start your micro trends analytics journey instantly. The platform is highly scalable and can ingest and manage massive volumes of time series and IoT data, all the while using a Google-like search function to discover and manage micro trends across all business dimensions. Finally, Trendalyze is a cost-effective platform that businesses can easily and quickly utilize, without a data scientist and IT specialists.