

Putting Micro Trend Analysis into the Right Hands

HOW TO USE MICRO TRENDS ANALYTICS TO DISCOVER NEW OPORTUNITES TO SAVE COSTS AND INCREASE REVENUES



EXECUTIVE SUMMARY

The Problem with Current Trends Analytics

These days, businesses face a sheer amount of data—data that they generate. It's difficult for anyone, including a data scientist, to sift through all the data to find micro trends within the data.

Micro trends are beneficial to a business' bottom line if they can be found and monetized. The current methods used to analyze data trends are expensive and time-consuming. In addition, current methods don't offer the results and accuracy needed to find and identify patterns within the data. This is the key issue with current data analyzing trends.

The Trendalyze Solution

Trendalyze was created to solve these problems. The platform is built to operate like Google; rather than searching for words, Trendalyze searches for patterns/sequences/motifs within time series data. Just like Google can find similar web pages within trillions of webpages, the platform can pull similar patterns from billions of trend lines for analysis. The ability to pull these trend lines helps business analysts, engineers and others to spot a costly or profitable trend.

Trendalyze Benefits

The Trendalyze platform can benefit a business in several ways:

- Lower costs: finds problems as they happen, making it easier to find a solution sooner, rather than later
- Increase profitability: searching for microtrends to find opportunities for new growth and monetization
- Set up forecasting and monitoring: get alerts for trend shifts to monetize real-time data

Trendalyze takes the pain out of analyzing micro data trends. We offer highly specialized interactive visualization and search functions to pinpoint micro trends in time-series data with just a few clicks. Our program unlocks the value of time patterns, helping your company find new revenue streams and increase profitability.

Putting Micro Trend Analysis into the Right Hands

In the past 5 years, the Business Intelligence (BI) market has moved away from the IT organization to the business side, taking advantage of business analytics used by business analysts, who not only know the tools but also better understand the business drivers. Business analytics tools have taken over, along with visualization tools or data discovery. These new approaches to business analytics have yielded great adoption and better outcomes but still need to go a lot farther.

The same changeover has happened to the BPM (Business Process Management) vendors that transformed to low-code products and now provide the citizen data scientist with the capability to assemble process improvements with minimal help from the IT organization.

The Predictive Analytics Lag

So why has predictive analytics lagged behind, as can be observed by the creation of the data scientist position? One could argue that the data scientist position was created due to the exponential amount of data today. However, big data is only part of the reason.

The other part is the need for highly skilled people that understand statistics, modeling, data management and how to bring a variety of data types together to gain a competitive advantage. What if we could make the same leap in predictive analytics that we made in BPM and BI. We could do this by giving LOB the capability to use tools that allow them to identify anomalies or micro-trends and take corrective action to drive better outcomes without the need for a data scientist.

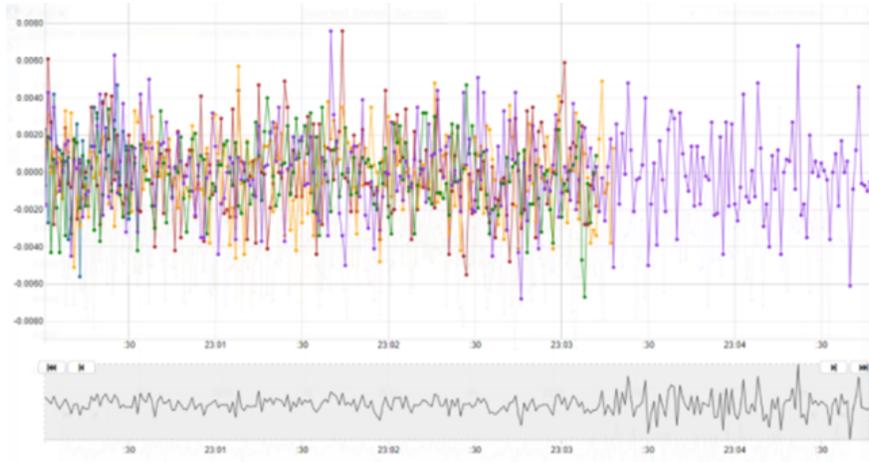
The Trendalyze Solution

Trendalyze is built to solve this problem. The platform is built to operate like Google but instead of searching for words, we search for shapes (patterns, sequences, motifs) in time series data. Google can find similar web pages within trillions of web pages. We can pull similar patterns from billions of trend lines. If you spot a single pattern, you can pull all similar patterns together for analysis. It's easy for business analysts and engineers to spot a costly or profitable trend. It's hard for them to find each and every occurrence of this trend. This is what we make easy with Trendanalyze.

IoT data mostly consists of three things: time, dimensions and measures. In other words, IoT data is time-series data. Granted this is not always the case, but this is true more often than not. Another thing to consider is that a lot of data is or can be converted to time-series data. For example, medical data such as EKG measurements, streaming audio or video, point of sale data, financial trades, etc. are all forms of data that either are or can be converted to time-series data. What data do you have in your industry that fits this definition?

The Problem with Current Data Analyzing Trends

What is it about time-series data that becomes very interesting? Simple, it can be graphed very easily across time, dimensions and measures. We have been doing this for years--the data is compiled into a graphical presentation called a line chart, which shows trends occurring over time.



The difficulty now is the sheer volume of data that is generated, and the difficulty in finding micro-trends within the data, that when found and understood, predict future outcomes. The needle in the haystack comes to mind or nowadays, the needle in the haystack field. The way we've been identifying these patterns has been through an expensive and time-consuming modeling process, which often doesn't provide the results and accuracy we need. This has led to projects being abandoned due to high costs and time delays.

Move Some of the Data to Other LOBs

What if we could take time-series data off the table for the data scientist and give them more time to focus on other types of data. Then we could place the tools in the hands of engineers in Manufacturing, a financial analyst in Finance or the marketing organization in most companies. All of these LOBs and many others have people who are highly skilled in analytics and statistics. They have computer skills as a natural part of their job function. Engineers use CAD, financial analysts use forecasting models, etc...

Take manufacturing as an example. Engineers design many things, but in this example let's take a look HVAC equipment for large buildings. The engineers design the layout of the equipment based on factors such as number of floors, square footage, the height of the ceiling, type of windows, building use and so many other factors.

These engineers are well versed in statistics and mathematics, as these are required for their profession. They are also the same people that develop and test the equipment and understand the anomalies that are associated with the testing outcomes. If you put the tools for predictive analytics in

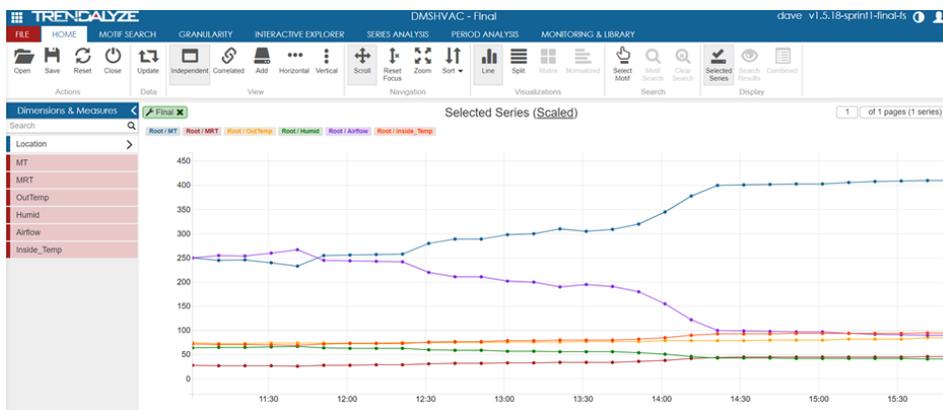
their hands, they are completely capable of using the tools and understanding very quickly when equipment abnormalities happen because they are the SME.

They can also design the equipment to cast off information from sensors that can be monitored to help prolong the life of the equipment, reduce energy consumption, predict equipment malfunctions and help with condition-based maintenance. If you provide these engineers with the right type of tools to analyze information from their HVAC equipment (in this case), that is easy enough to use. However, the powerful benefit comes from the ability to identify trends in the granular data that predict future outcomes; thus, you create tremendous value by putting the tools directly into the hands of the person who can best understand the data produced.

An Example of Micro Trends Analysis at Work

Let's take one example in our HVAC discussion above, conditioned based maintenance. For simplicity let's assume that there are six metrics that predict an optimal timeframe for maintenance to avoid equipment failure. These metrics are not singular in their ability to predict but have to be correlated to do so. In this example, we are going to use motor temperature (MT), airflow, humidity, motor run time (MRT) inside and outside temperatures.

Here is what our hypothetical might look like in Trendalyze:



In this simplistic example, all these dimensions affect the ability to predict maintenance cycles. For instance, a motor run time when compared to inside temperature may predict a coolant or compressor issue. Restricted airflow might impact humidity and could be a predictor of ventilation issues, malfunctions in damper performance or humidifier issues.

Each of these metrics taken independently only indicates a problem but taken together they may help pinpoint the exact problem that needs to be addressed. For example, a singular spike in motor temperature may not indicate anything, but continuous spikes followed by reduced

airflow and a decrease in humidity might indicate a damper problem, due to the motor working harder to get cool humid air to a location in the building that is being restricted.

In this example Machine Temperature is running higher, Humidity in the first floor is decreasing and Machine Run Time is increasing. The Outside Temperature has minimal impact and the Inside Temperature is increasing.

There are some conclusions and actions, in this hypothetical example, which can take place that create real value for the company. For our sakes, we are going to go with the notion that the analysis indicates a damper problem.

From a Maintenance perspective, this could predict the need for maintenance to be scheduled. However, the value could be even greater if based on this knowledge you knew what parts are needed for maintenance repair. In this case, we believe it is a damper issue. Cost is reduced for the maintenance call because the problem that needs to be fixed is narrowed down to a specific point based on information provided by Trendalyze and the proper materials can be loaded on the response vehicle to reduce the need for rescheduling the appointment.

Saving Money with Micro Trend Analysis

In our HVAC example let's make these assumptions:

- The company has 10,000 clients and a maintenance call costs \$1,000 per call.
- If 10% of your clients have an issue that requires a maintenance call, then that is \$10 million in costs.

The results: If 20% of these maintenance calls can't be resolved due to insufficient diagnostics, we have now wasted \$2 million in unresolved responses and created another \$2 million in costs for a follow-up call. The \$4 million represents the best-case savings scenario but gives an organization a tremendous opportunity for savings, especially when this type of situation is re-occurring year after year.

This is a relatively simple example, but let's consider the possible added complications. What if this was a 10-story building? Then we would have ten times the metrics, and for a fifty-story building 50 times the metrics.

In our example, we only had 6 metrics with measurements taken at 10 minute intervals. What if there were 30 sensors taking measurements at 2 second intervals. And finally, what if the predictions have to be in order? In other words, metrics 1, 2, 3, etc. have to become abnormal in a certain sequential order. Sounds like a permutation.

While this can be figured out in today's environment of detailed analytics, it is far easier to find order in patterns than in the midst of a large volume of granular data. You need a data scientist for the latter, and Trendalyze for the former.

Trendalyze Can Help Your Business

We take the pain out of analyzing micro data trends. Trendalyze offers highly specialized interactive visualizations and search functions to pinpoint micro trends in time-series data with just a few clicks. Our program unlocks the value of time patterns, helping your company find new revenue streams and increase profitability.

Call us for more information on how we can help your company find, monitor and monetize micro trends, making them into new opportunities for your business.