

Prekert Behavioral Analytics

Easy and Accurate Retail Order Analytics

The State of Retail Order Analytics Today

Every 30 seconds, about **\$1.5 million in revenue is generated via eCommerce**. The average consumer spends **\$1,300 a year** online, with the top eCommerce sites seeing hundreds of orders per minute. In November of 2015, Alibaba set a record for **Singles' Day** (a major Chinese holiday) sales, racking up **\$10 billion in just 14 hours**. Needless to say, if you're at an eCommerce company, you already know that this is big business. You probably also know that it's absolutely vital that you deliver a consistent, positive user experience, minimize downtime and catch security risks and fraud as quickly as possible.

Online retailers, whether multichannel enterprises, direct-to-consumer manufacturers, or global eCommerce entities, rely on an expanding set of technology components to implement their digital infrastructure—digital commerce platforms, back office integration, Internet of Things beacons, social commerce, and increasingly advanced analytics or business intelligence platforms.

The challenge is that many business intelligence platforms can be difficult to deploy, requiring huge investments of time and money. Even after they've been deployed, companies often don't know how to get the full value out of them. Worse, many of these platforms require significant hand-holding, with operations teams having to manually monitor systems, make decisions about how and when to add new alerting thresholds and sort through seemingly endless amounts of false positive alerts.

One reason for these shortcomings is that most platforms aren't able to perform automated analysis. They require manual human input, in the form of developing rules and thresholds in order to be able to alert. Even then, they alert only on the issues that were anticipated by the analysts. Unknown or unexpected problems go undetected until it's too late.

Finding revenue-impacting events, such as a broken checkout button or slow load time as quickly as possible can be a make-or-break capability for eCommerce companies. Below, we'll explain how automated machine learning has proven itself to be the preferred solution for companies who want to stay competitive in today's eCommerce landscape, and we'll highlight some of the key mathematical challenges involved in accurately analyzing retail operations data.



Prelert Behavioral Analytics

Easy and Accurate Retail Order Analytics

Why Automatic Periodicity Detection is Key to Effective Retail Order Analytics

A key use case common to many online retailers is understanding typical transaction behavior for the business (e.g. orders per minute, carts created per minute, etc.) If behavior significantly deviates from what is expected for a particular hour of day and/or day of week, retailers need to receive an alert so that the root cause can be quickly identified and remediated, minimizing negative business impact.

Inherent in the above description is the concept of periodicity. Most critical metrics for eCommerce companies have this characteristic in common. Let's take, for example, the metric of orders per minute. You can imagine that an online retailer like Amazon naturally sees changes in order-per-minute volume from hour to hour throughout the day. They also see variation throughout the week, since, for example, shoppers may be more active on the weekends than on a Monday morning while sitting at their desks. Due to the varying nature of periodic data, writing rules that can accurately monitor constantly changing behaviors is nearly impossible.

Machine learning algorithms can model periodic behavior far more effectively than humans.

What it comes down to is that humans can't—and shouldn't—be expected to create perfectly accurate baselines of normal behavior for every minute of every day, or to monitor dashboards 24/7/365 with the hope of catching every potential issue.

Machine learning algorithms can model periodic behavior far more effectively than humans. Specifically, the key to effective retail order analytics is unsupervised machine learning with automatic periodicity detection, which automates data analysis, baselines normal behaviors, even in the presence of hourly or daily periodicity, and identifies abnormal behaviors even within changing data patterns. But not all machine learning algorithms are equal. In our recent [tech brief](#), we explained how a classical statistical method, Holt-Winters filtering, is not accurate enough to reliably detect anomalies in periodic time-series data such as online retail order metrics.

Prelert: A Smarter Approach to Retail Order Analytics

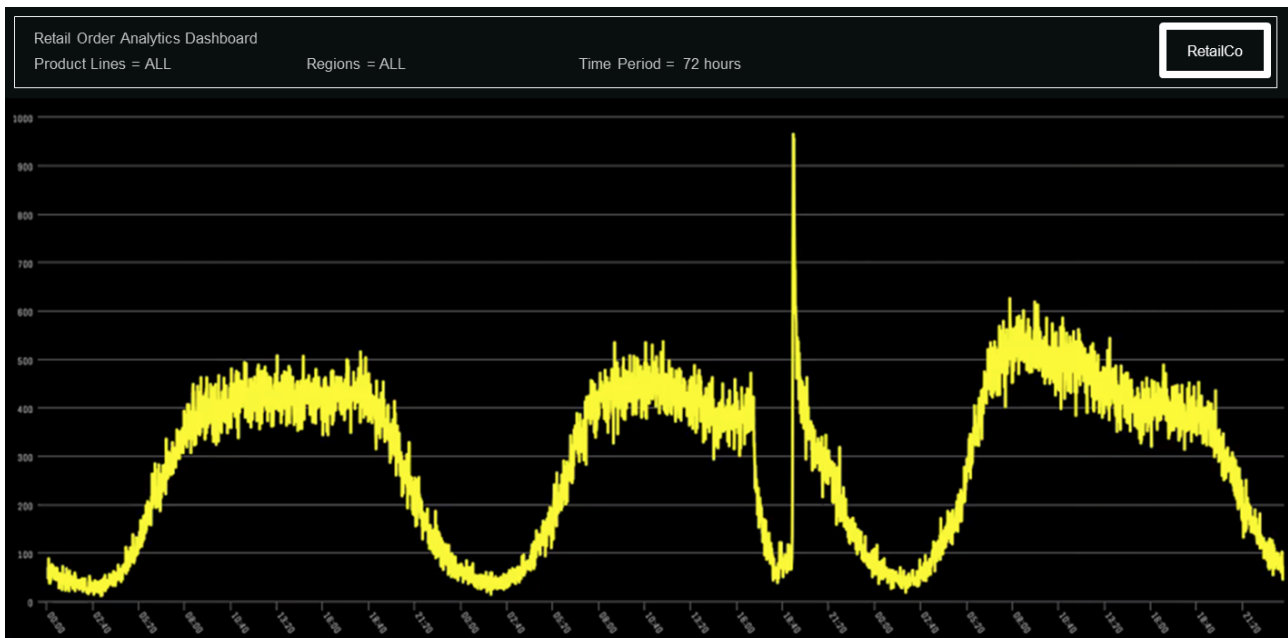
In addition to the approaches listed above, some eCommerce companies have tried to implement their own machine learning algorithms, but have found the task to be huge and technically very challenging.

Prelert's behavioral analytics solution was built specifically to address these challenges. Our "math" is the most accurate and effective way to baseline the behavior of retail order metrics, while simultaneously detecting anomalies. We've documented how our approach is better able to detect anomalies than Holt-Winters filtering and other classical statistical methods—not to mention it far outperforms the rules and thresholds written by humans.

Prekert Behavioral Analytics

Easy and Accurate Retail Order Analytics

While our solution can be applied to everything from cybersecurity threats to operational challenges, it is especially useful to eCommerce companies who need to quickly and accurately detect anomalies in their retail order metrics, and create actionable insights.



Example retail orders showing revenue-impacting anomaly in order stream

Prekert's behavioral analytics as applied to retail order metrics provides one of the most critical functions of advanced analytics, which is near-real-time anomaly detection on key business performance metrics. This enables early detection of events that could cause a negative impact to the overall business. For businesses running thousands, millions, or even billions of dollars' worth of transactions every day, the impact of this can't be overstated.

Prekert's Retail Order Analytics Solution in Action



Company: Large Online & Brick and Mortar Retailer

The Challenge: This company's eCommerce team needs to track how many orders they receive per minute online. Any anomalies in this data could indicate an outage or other issue that, because of the volume of their commerce, could easily cost hundreds of thousands of dollars.

How Prekert Helps: Prekert's behavioral analytics provides them with precise, periodicity-aware anomaly detection that helps minimize losses by catching issues faster and allowing them to resolve issues in a timely manner. Using Prekert, this company has detected a number of different issues that could have had a major impact on revenue if not detected early, ranging from process-related issues such as failure to renew an SSL certificate, operational issues such as server failures or application errors, and even external factors such as aggressive competitive marketing campaigns.

Prekert Behavioral Analytics

Easy and Accurate Retail Order Analytics



Company: Online Dating Website

The Challenge: Like any revenue-generating website, this company knows that operational problems can cost money, so the faster they are found, the more money they will save. Before adopting Prekert's behavioral analytics solution, they set thresholds that required manual configuration and maintenance. These rules couldn't account for periodicity, such as typically slow days or slow hours, or any other periodic dips, so their incident response teams were continually deluged with false positives—and still missed real incidents.

How Prekert Helps: With Prekert, the company now monitors hundreds of key metrics related to revenue and user behavior in near-real-time. Since implementing Prekert, they have been able to quickly discover anomalies in revenue metrics, pinpoint the cause(s) and resolve issues. For example, they were able to spot a bug in their USD to JPY conversion code that was costing them 40 cents on the dollar on every Japan-originating transaction. They were also able to spot a bug on their payment screen and analyze revenue across countries, ISPs, platforms, and more—capabilities they did not have before implementing Prekert.



Company: Consumer-Facing Division of Telecommunications Provider

The Challenge: This division sells mobile telecommunications services and products online. They need to be sure that there are no outages or errors so their customers can purchase products and services online with minimal friction.

How Prekert Helps: Using Prekert's anomaly detection technology, the company is able to receive alerts when any anomalous dips in total volume or individual type of online orders are seen. With Prekert, this division has reduced the number of alerts they need to investigate, and investigated far fewer false alarms than before, allowing them to focus on the real issues.

DOWNLOAD FREE TRIAL

www.prelert.com

Or call us to learn more: (888) PRELERT or +1 (508) 319-5322

About Prekert

Prekert is the leading provider of behavioral analytics for IT security, IT operations, and business operations teams. The company's solution analyzes an organization's log data, finds anomalies, links them together and lets the data tell the story behind advanced security threats, IT performance problems, and business disruptions. Leveraging machine learning anomaly detection and other behavioral analytics capabilities, the solution automates the analysis of massive data sets, eliminating manual effort and human error. Hundreds of progressive IT organizations rely on Prekert to detect advanced threat activity, reduce false positive alerts and enable faster root cause analysis. Prekert lets your data tell the story.