??????????????????

??????????????????

???Wayne Akoka



The United States is facing an alarming baby formula shortage. As a result, mothers who rely on baby formula to help babies develop and grow lack access to the nutrients they need from this crucial product. Unfortunately, retailers and manufacturers expect a lengthy delay until a full supply of formula hits shelves again. Could a better application of technology such as artificial intelligence make a difference going forward?

The Nature of the Problem

A number of factors are converging to cause a national crisis, such as:

- **A supply chain disruption** caused by the COVID-19 pandemic. This problem began in 2021 as a disruption in labor, transportation, and raw materials rocked the distribution of goods including baby formula.
- **Panic buying**. Anxious parents, sensing a supply chains shortage, began to panic buy and

stockpile baby formula in 2021.

- **A recent recall from Abbott Nutrition**, one of the largest suppliers for baby formula in the United States. This is notable because Abbott and Enfamil owner Reckitt Benckiser Group were responsible for 80% of baby formula sales in the United States in 2021.

In light of the shortage, retailers such as Target and Walmart are keeping limited supplies on hand. They're also restricting purchases. For instance, CVS and Walgreens limits three per customer. Target limits purchases to four per person when buying online.

The good news is that on May 16, Abbott and the Federal Drug and Food Administration reached an agreement to re-open a factory in Michigan that had been closed due to the recall. But it will take another six to eight weeks before new products hit store shelves. Government authorities are taking steps such as allowing faster importation of formula made overseas (to complement the vast amount of baby formula distributed domestically).

Retailers and Baby Formula Manufacturers Have Been Struggling for Months

One of the challenges that retailers face with any shortage is anticipating where surges in demand are happening. It's important to note that the shortage was already happening before the Abbot recall. One reason is that amid the pandemic, retailers have struggled to forecast demand and align supply with that demand amid panic buying and supply chain disruptions.

As *The Wall Street Journal* reported in January 2022, "Retailers are struggling to predict demand at individual locations, as many Americans have relocated and are spending long periods away from home during the pandemic. Meanwhile, manufacturers are struggling with staffing and shortages of ingredients and packaging materials."

Moreover, panic buying, sometimes, triggered by social media posts, caused surges in demand regionally. Laura Modi, co-founder of Bobbie, an online organic baby-formula startup, told *The Wall Street Journal* that her company saw a spike in demand from parents alarmed by the lack of availability of big-name formula brands. "It can take one post in a Facebook moms group to send some into a panic," she said.

How Retailers Can Improve with Machine Learning and Real-Time, Third-Party Data

How can retailers and manufacturers adapt? Artificial intelligence (AI) is part of the answer, but not all of it.

Models based on AI are superior to traditional approaches. According to McKinsey, businesses applying AI-driven forecasting to their supply chains can reduce errors by between 20% and 50%.

AI alone won't solve the problem especially with panic buying. It is difficult for demand forecasting models that rely on machine learning -- a form of AI in which a machine teaches itself to make better decisions with data -- to account for sudden shifts in demand.

But AI can help when machine learning models are complemented by real-time data from third-party sources.

Let's take a look at social media behavior, for instance. The panicky Facebook posts that Laura Modi of Bobbie mentioned to *The Wall Street Journal* are an example of real-time data from a third-party

source (in this case, Facebook). The social media chatter is a signal from consumers that panic buying is about to happen.

Retailers need to know more than the fact that parents are posting these signals. Retailers need to know when. Where. And to what extent. Are 80 percent of posts clustered around a particular city? How rapidly are they occurring?

Armed with that precise data, a retailer could act sooner. The retailer might not stop a nationwide increase in panic buying, but it could quickly allocate more baby formula to the location (or locations) where 80 percent of the posts are happening.

This real-time data is unstructured, meaning it's not the result of a formal survey mechanism or other tool managed by a company. No human being can keep track of all of that social media chatter, much less look for trends it reveals.

Here is where machine learning could help. With machine learning, retailers could sift through and find patterns and associations that would go undetected by manual means.

Machine learning is especially adept at finding nonlinear connections that are crucial for demand forecasting, such as the less obvious search behavior cited above, where the intent to purchase is not overt. (“I am concerned about a baby formula shortage” is not as overt as “I need to buy baby formula.”) Even an automated platform would have difficulty uncovering those nonlinear associations without machine learning.

Social media posts are but one example of real-time, third-party consumer signals. Another is search. Google processes 8.5 billion searches a day. Those searches provide potential clues about what consumers are interested in buying and what topics they care about. According to Google, during the height of the pandemic, there was an uptick for searches for “candle making kits” (a 300-percent increase). Searches for “patio heaters” increased by 600 percent as people moved to eating outdoors. Savvy retailers, armed with machine learning, can read search signals to understand a surge in demand and developing hot spots of panic buying.

Research has shown that by using machine learning and third-party data such as search trends and real-time data to sense demand throughout the pandemic, retailers and manufacturers in other sectors have "cut forecast error by more than one-third, reduced the volume exposed to an extreme error by half and drove a six-fold increase in realized value from investments in people, processes and technology related to planning."

Next Steps

This kind of interplay does not happen by magic. It requires the ability to source data properly, prepare it, and monitor it with humans in the loop. This is what Centific does through our solution, Meerkat.

Meerkat leverages state-of-the-art, pre-trained AI models that are fueled by your own company data, alongside a broad range from our extensive data partner ecosystem, to solve challenges such as forecasting and demand planning, pricing, and promotion planning.

Our solution allows organizations to jumpstart better decision-making by seamlessly integrating with existing enterprise platforms. Not only does this allow you to leverage and maximize ROI on past

investments, but you are also able to scale rapidly, regardless of your organization's readiness level.

To learn more, contact Centific.

-
-
-
-
-