

Forecasting the Consumer Trends of Tomorrow for the Survival of Retail Today

Transitioning from correlation to causation to improve demand sensing models



[TruckX Inc](#)
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A hearty welcome to the sixth edition of The Logistics Rundown, a weekly digest that aims to put some perspective on what's brewing within the logistics industry. This is a space where we religiously dissect market trends, chat with industry thought leaders, highlight supply chain innovation, celebrate startups, and share news nuggets.



Imagine heading to the nearest grocery store for some peanut butter. While peanut butter is an easy find across any store, it also happens to be one of those products with no dearth of brands, blends, or flavors. True to that, we all have our 'favorite' peanut butter choices. Brand loyalty within peanut butter is strong and retail stores often understand this consumer trait.

Demand sensing for most products lining supermarket shelves is at its elementary form—if a product routinely flies off the shelf, there's every reason to believe it would continue to happen.

...unless there's a disruption. And in the age of e-commerce and constant carpet bombing of brand awareness ads, it is critical for retail chains to future-proof their inventories from disruption.

However, this is easier said than done. Forecasting sales of established products were fairly simple a few decades before—pull up the historical sales data, check for growth drivers, existing competition, and a few other parameters to arrive at a satisfactory estimate to stock up inventories. But competitive moats of established products have been waning considerably, making it harder for retailers to predict demand and streamline it with their inventory holdings.

This holds true even for the unlikeliest of consumables to get disrupted—the meat product line. While meat producers have had to only fight amongst themselves for a piece of the market, ‘alt meat’ players are steadily carving themselves a new niche within the industry. The alt meat industry accounts for all kinds of meat that do not directly impact the lives of livestock, be it plant-based or tissue-based. Constant innovation and millions of dollars in venture capital have resulted in replacements that feel, smell, and taste similar to the meat they replace.

Herein lies the predicament. How can retailers anticipate the future sales of products that have no historical precedent? Demand sensing is incredibly crucial within retail, especially within the consumables segment that comes with short shelf lives.

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“Margins in the retail business are so thin that they are nearly a commodity business. You can potentially make more money by optimizing inventories,” said Drew Ryder, the president of food tech firm [Deken Technologies](#), while talking to *The Logistics Rundown*. “Costs include holding inventories, the warehousing space to hold them, the people employed to manage the inventories, and the transport capacity to haul them. A lot of this can be optimized if we anticipated future demand better.”

Companies use a deterministic form of averaging on historical consumer purchasing data, which, although useful at a basic level, has a lot of room for error. Greg Foster, the CEO of demand sensing company [Vizen Analytics](#), contended that the accuracy of demand sensing was around 60% in most cases as deterministic forecast models do not help build resilient supply chains.

Foster explained that the trick to improve demand sensing accuracy is to develop dynamic probabilistic algorithms that look at product demand and the factors that impact its demand at a very granular level. These algorithms get better and better over time the more the data that is fed into it.

In a world where the retail market constantly faces disruption, probabilistic models are inherently better than deterministic models. This is because the former seeks inferred causality rather than correlation. While both the models would work relatively well in an isolated setting, inferring causality helps forecast sales figures of products that are fresh on the shelf with no prior historical data.

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Probabilistic demand sensing models go well beyond direct product-related parameters to understand the local demographic deeper—by leveraging intelligence on disparate data sets like weather, unemployment, health, and socioeconomic status. Over time, these data sets create a synergy that incrementally improves retailer decisions.

Consider toilet paper, for instance. When the pandemic caused a widespread frenzy last year, toilet paper was surprisingly one of the products quickly running out from the supermarket aisles. Let’s say the supply constraint caused people to buy toilet paper from Brand X that they’ve never bought from—considering Brand X to make toilet paper targeted at restaurants and offices.

A deterministic model could have inferred that Brand X is more popular amongst consumers now and could recommend stocking more of it in the future. A probabilistic model would have recognized the circumstances that led to the popularity of Brand X and treat this as an isolated incident. While this is an overly simplified example, the picture is this—probabilistic models help retailers stay resilient against demand volatility.

With the world conceivably at the fag end of the pandemic, several questions on consumption patterns persist. Would people go out to the restaurants more? Would people get back to shop at brick-and-mortar stores again?

The answer, Foster believes, lies in demand sensing algorithms. “The questions on how consumers are going to purchase items moving forward has significant ramifications for the food supply chain. Using a probabilistic model helps companies adjust much quicker than in the past,” he said.

Forecasting demand more accurately would reduce overhead costs on inventories and warehousing while solving for questions on contracting freight capacity. Understanding consumers and forecasting their buying attributes of tomorrow is one way retail operations could make data work for them today, and excellently so.