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Customer-Centric Predictions

A Better Way to
Forecast Retail Demand

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Customer-Centric Predictions: A Better Way to Forecast Retail Demand

It starts with understanding *why* - not *what*.

What if retailers could increase their full-margin sales by making informed, customer-centric predictions about what shoppers are most likely to buy in the coming seasons? It all starts with understanding *why* - not *what* consumers are buying.

Given what we already know about the modern problems with supply chains, shipping logistics, and unpredictable consumer shopping patterns, it's no surprise that the world of retail e-commerce demand forecasting is a tricky one.

There are a number of cascading challenges that start from a lack of customer-centric product attribution data. From item set-up to checkout, it's important to understand what product attributes really move merchandise out the (virtual) door. To meet the challenges of demand forecasting head on, the key for retailers lies in forecasting demand using a language of customer-driven product attributes - **not** legacy, spreadsheet-driven attributes.

In this guide, we'll take a look at some of the main challenges impacting the retail supply chain, demand forecasting in 2022, the pivotal role of proxy products, and more. You'll also learn about customer-centric product attribution and how leveraging Lily AI in your demand forecasting efforts can lead to a retail e-commerce business that thrives. Plus, we'll share results from a **real** Lily AI multi-brand apparel and accessories retailer.

The Challenges of the Retail Supply Chain

Without a doubt, the only true constant in e-commerce is change, and businesses have dealt with more change in the last two years than in the last two decades. With the push of the COVID-19 pandemic driving the need for and accelerating growth of e-commerce, these times of massive change require building resilience in a retailer's supply chain.

¹ National Retail Federation forecasting that retail sales will grow in 2022 between

6 to 8%

¹ <https://nrf.com/media-center/press-releases/nrf-forecasts-annual-retail-sales-grow-between-6-percent-and-8-percent>

Maintaining the appropriate inventory mix at the right time and delivering a quality customer experience are among the top challenges that all retailers face. But despite such challenges, consumer demand will continue to be strong in 2022, with the National Retail Federation forecasting that retail sales will grow between six and eight percent in 2022 (1), putting additional pressure on the supply chain and retailers.



According to the Shopify report “The Future of Commerce 2022,” (2) concerns surrounding the supply chain in regard to shipping delays, shipping costs, and manufacturing delays are some of the top concerns for businesses. But supply chain issues affecting e-commerce retailers have also been exacerbated by out-of-sync dilemmas, in particular:

Out of Stock: If a customer cannot even order the item they want to begin with, the resulting negative customer experience can cause costly repercussions for the retailer. A retailer’s overall shelf health should be in good standing and free from the “Out of Stock” blues in order to compete.

Overstock: When a retailer isn’t on top of the latest trends and misses the fashion window to sell such styles, the only option left is to clear overstocked merchandise sitting on shelves or in storage by marking items down at the end of the season. This is key to bear in mind when one considers that **just 60% of garments** are even sold at full price as is, according to “The State of Fashion 2021 Report” from McKinsey & Company (3).

More is not always better. As stated in the report, brands that reduce complexity and rely less on discounting as a way to prop up sales often outperform those that do not.

In a recent 2022 Disruption Index (4) survey of over 3,000 chief executives conducted by the consulting firm Alix Partners, fewer than half said they were taking longer-term action to alleviate supply chain challenges, while a majority said they were relying on short-term measures such as paying more for materials and raising prices to manage the issues at hand. Regardless of their approach, more than three-fourths of chief executives were skeptical that their plans would prove to be effective.

Although there are some experts who think that supply chain problems are the “new normal” in retail, predicting demand in retail accurately enough to combat these “new normal” challenges isn’t impossible. What retailers need is the right help in keeping these complexities as least complex as possible. When combined with a demand-focused approach and intelligent assortment management, the overall impact is a more streamlined business model that is better suited to the global market.

2 https://www.shopify.com/research/future-of-commerce/future-of-retail?utm_source=blog&utm_medium=content&utm_campaign=2022-01-future-retail-report&utm_content=retail_foc_statisticspercent

3 <https://www.mckinsey.com/-/media/McKinsey/Industries/Retail/Our%20Insights/State%20of%20Fashion/2021/The-State-of-Fashion-2021-vF.pdf>

4 <https://disruption.alixpartners.com/>

Demand Forecasting in 2022

According to Gartner, demand forecasting is the most widely used Machine Learning application in supply chain planning. Accurate forecasting can help retailers effectively plan how much inventory to order and stock, what trends are going to be the next big things, and assist with combating the big uncertainties in retail that revolve around what happens next.

Demand forecasting is a critical input to many processes of planning and fundamental to running a retail business. In fact, it has downstream implications on revenue, profit margins, a retailer's brand image, and even stock price. However, too many retailers are still using **historical data sets** to forecast demand when they should be using **real-time intelligence** to tame growing volatility.

The truth of the matter is that even if a retailer has sophisticated statistical models and advanced tools in place to forecast demand, the product data they're using often isn't sophisticated and advanced. Rather, this vital input data is **thin, inconsistent, and often inaccurate**.



Demand Forecasting & the Language of the Consumer

One of the best ways to increase full-margin sales is by making informed, customer-centric predictions about what shoppers are likely to buy in the coming months. The key to this lies in forecasting demand using a language of consumer-driven attributes - **not** legacy, out-of-the-box attributes.

Legacy, generic attributes are those which can be classified as “out-of-the-box” and are provided directly by the manufacturer, distributor, or manually attributed by the end merchandiser themselves. But to create a shopping experience that converts, retailers must dive a bit deeper to understand how to plan their assortment accordingly and move past generic attributes.

Typical Retailer Product Attributes



What Shoppers Are Looking For





When a retailer focuses on product data provided solely by manufacturers and distributors, but stops there and doesn't try to expand, they're unable to grow and nourish the language that customers actually use. A retailer's product content enrichment taxonomy should be robust and take into account how **real** people search and shop for products in the real world.

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Consumer Attributes: Synonyms

DIFFERENT SHOPPERS SEARCH UNIQUELY Category: Loose Dress

Nap Dress House Dress Sun Dress Swing Dress

Relax Loose Dress Relax Nap Dress Relax Loose Nap Dress

Relax Loose Gown Relax Nap Gown Relax Loose Nap Gown

Spring Loose Dress Floral Loose Spring Dress Loose



The more insight retailers have into a customer's personal preferences, the better positioned they are to anticipate demand, sell at full margins, and eliminate the uncertainty that causes overstocking. Ignoring the language of the consumer means exacerbating the need to mark down inventory later, irrelevant product recommendations, and an increased likelihood that a consumer **will not** come back to a site - as it can't show them what they're looking for in their own unique words. The truth of the matter is inventory that doesn't match the inclination of the shopper is inventory **that doesn't sell**.

Demand Forecasting & Customer-Centric Proxy Products

A key facet in demand forecasting is proxy products, or products that most resemble those that have sold well in the past. But before that potential becomes a reality, retailers can look back at previous seasons and focus on what may have happened in similar types of products. This can then be used to help base projections for future products and decisions.

If a retailer is looking at top-selling styles from last season, they're going to want to know if they have products that are similar to this that can be used as a guideline or starting point. There are a number of ways in which a retail e-commerce brand can identify the proxy products that drove past sales, but often these methods are cumbersome and not streamlined.

One way the retailer can do this is by asking a team member involved with the sale of last season's styles. Or, the retailer may have to manually take the time to look through a directory of older images in order to find the right ones that are most similar compared to new products. By automating this process with the help of machine learning (ML), better choices about upcoming seasons can be made in a much faster, easier, and more consistent fashion.





How to Mitigate the Supply Chain Crunch with Customer-Centric Product Attributes

The supply chain is only as robust as the data that feeds into it at the source. In retail, granular, customer-centered product attributes can help reduce mountains of unsold inventory in the warehouse, while helping retailers reduce assortment complexity, clean up the product catalog, and use data analytics to identify the most profitable SKUs.

By infusing customer-centric product attribute data into your existing e-commerce stack to build a taxonomy of granular, intent-driven product attributes can help retailers to make significant progress in supply chain optimization, as well as:

- Replace wholesale pre-orders with a leaner, demand-led, made-to-order model that empowers product development, fueled by AI to launch lines that are guaranteed to sell out fast.
- Reduce assortment complexity, clean up the product catalog, and use data analytics to identify the most profitable SKUs.
- Lean more towards price optimization and dynamic discounting rather than big end-of-season markdowns by extracting more value from the products that remain with better analytics.
- Gather proxy products, defined through AI-powered computer vision, to accurately forecast demand for brand new product lines.
- Improve demand forecasting, particularly around seasonal spikes or emerging trends.

Lily AI's Demand Forecasting Capabilities

Lily AI, trusted by global retailers, brands and industry leaders like Bloomingdale's, the Gap, and thredUP, helps retailers by being able to assist with predicting demand, a newer technique in forecasting using our ML- and AI-based technology.

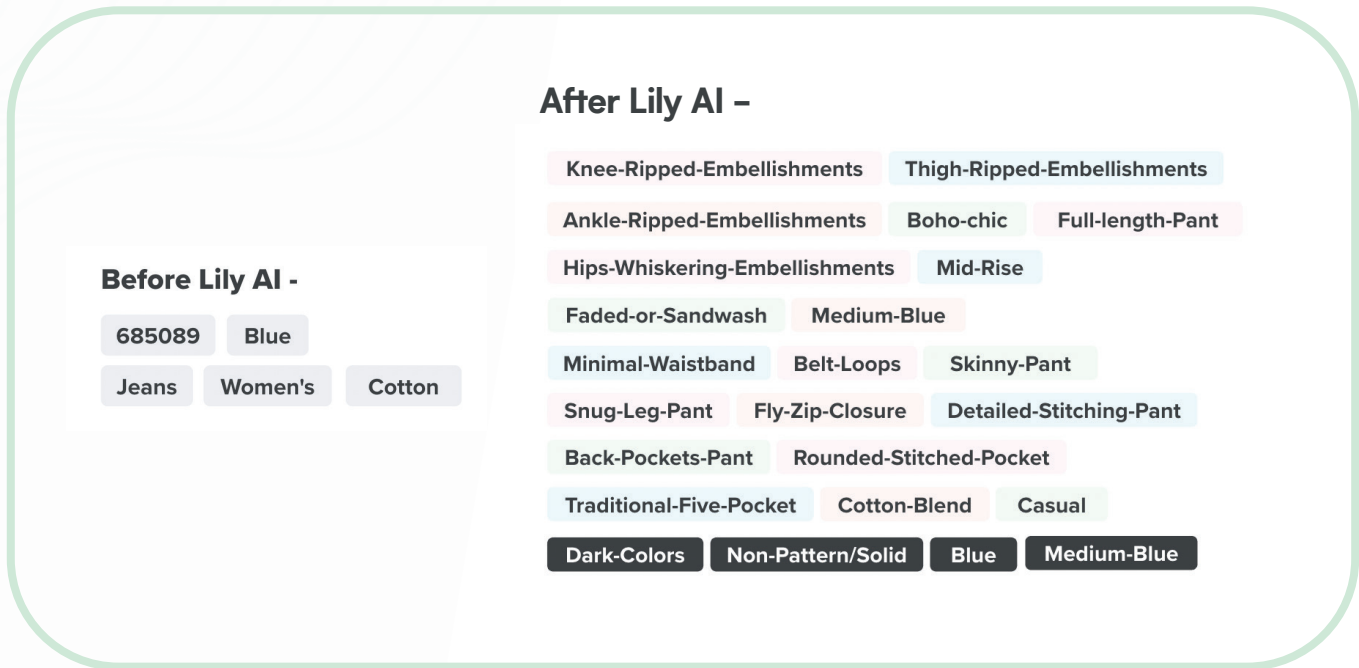
We're able to help determine not just *what* products sold - taking the cumbersome task of determining proxy products off your hands - but also *why* these products sold. We're able to give retailers a **roadmap** to understand previous seasons in a much more advanced and intricate way.

The Language of the Consumer & Proxy Products

When a product sells, Lily has the capabilities to determine exactly what it was about the product that drove demand in the first place - the sleeve length, the fabric, the pattern, etc. - by understanding the attributes. We can also build algorithms to replace processes and/or make existing processes for mitigating the seasonal apparel shift easier with attribution and tagging.

Accurate customer-centric product attributes that speak in the language of the consumer - not the manufacturer or distributor - are the focal point to our one-of-a-kind demand forecasting approach. With Lily AI-powered computer vision, proxy products will be equipped with 20 to 30 customer-centric attributes assigned per product. This can then be used to find visually similar products with the same attributes, resulting in a similarity value that is then assigned to help retailers accurately make their forecasts.





Overall, the entire process of finding the right products at the right time can be done in a much more streamlined fashion when a retailer is able to understand which attributes contributed to or were associated with higher sales. Lily AI helps by understanding exactly how these new products are similar to previous products and how they sold relative to others. This is an incredibly useful tool to predict demand and determine how a retailer may want to classify a new product – i.e., good, better, best, etc.

Style Expertise

One of the best ways for retailers to stay on top of their inventory and demand forecasting is to make sure their merchandise is updated with relevant attributes across a variety of styles, especially those based on the latest trends – whether that trend is six months, to a year, to two years down the road (or runway).

Lily AI is well-equipped to help you quickly understand which product attributes are actually moving merchandise. We have a team of style experts/trend analysts who are not only committed to researching short-term and long-term trends, they also identify the relevant tags that embody each of those styles. They then partner with our data science team to pull and highlight the specific attributes that resonate with each trend. The team not only is able to build an extensive list of styles under each category, but they're also able to capture other styles or sections that haven't even been mentioned yet.

Product Attribution Data Taxonomy

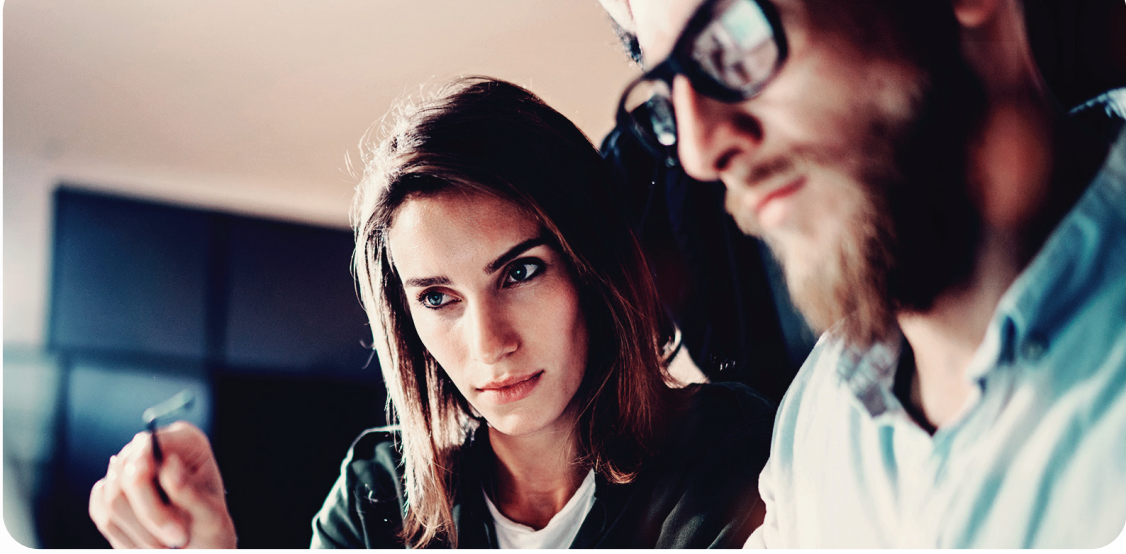
Lily has extensive product attribution coverage within our existing data taxonomy and can fully attribute products under a variety of styles that are going to resonate with the consumer and their own language.

What's great about this taxonomy is that Lily AI can actually look forward to upcoming trends and then rapidly build them into the taxonomy. The Lily AI platform is designed to take in retailers' data and attribute products using AI in an automated fashion. What this creates is a much richer way to describe products – not just “crewneck,” or “teal crewneck,” but also incorporating occasion-based and trend-based attributes as well.

This helps with predicting styles for next season when all of the previous styles from last season are attributed in-depth. When a retailer already has the tags that are relevant built in, then they can automatically get full coverage within their catalog which can be surfaced up to assist during the buying process.

Lily AI's product attribution data is easy to work with, can be incorporated into the tools a retailer uses today, and there is no specific set of products that have to be pre-integrated with.





Lily AI's Fashion Retail Customer Story

The Problem

When a large, multi-brand enterprise apparel and accessories retailer came to the realization that their reliance on tedious, time-consuming manual processes, minimal data, and 30% forecast accuracy for new products was no longer sustainable, they knew they had a problem.

After being unable to proceed effectively without enriched product attribute data to help better predict and forecast sales, they turned to Lily AI to ensure their forecasting model would be accurate and could scale to support their 34,000+ product catalog.

The Solution

Lily AI worked to ingest and process the retailer's previous season's products in order to establish a historical data set. With product renderings and/or images of new products, Lily AI was able to identify proxy products with the help of our proprietary product similarity and tagging pipelines in order to assign a "similarity score."

The retailer then utilized the similarity score, along with the similar products Lily AI provided as input for demand forecasting for upcoming seasons.

The Results

With the help of Lily AI's demand forecasting capabilities and associated proxy products, this retailer was able to reduce its forecasting timelines from **3 months to 1 month with automation at scale**. This increase in accuracy and time savings in the forecasting pipeline resulted in the right products being ordered at the right time, as well as the ability to get ahead of supply chain orders and sell more products at full margin.



By utilizing Lily AI product data for demand prediction and forecasting, this is **projected to positively impact this retailer's topline revenue by \$7-\$48 million**.

"We hired Lily AI to feed its extensive product attribution data into our demand forecasting algorithms to truly ensure that we're ordering the right products at the right times. They're helping us move away from manual demand planning, and their extensive visual similarity models to identify proxy products dramatically reduces our planning cycles and manual product identification."

Demand prediction accuracy has never been more critical and it all starts with having finely-tuned product data that measures across thousands of attributes to determine exactly why things sold in the past.

Having a strong sense of what inventory will actually move within high-margin windows, or which proxy products to order is something that goes a long way towards ensuring that the products that are ordered are the products that will sell.

The future of retail is not off-the-shelf, but rather, **on-demand**.



Lily AI is the **product attributes platform** that injects the language of the customer across your existing retail stack, accurately connecting your shoppers with the relevant products they're looking to buy. We drive 8-9 figure revenue uplift for retailers and brands by dramatically improving their on-site search conversion, relevant product recommendations and demand forecasting.

Learn more at www.lily.ai