

FORBES INSIGHTS

# WELCOME TO THE ERA OF SMART FASHION

Stitch Fix has ushered in a new kind of clothing company, where the wardrobes are designed by AI.

Style may be a form of self-expression, but shopping is only as personal as designers and the stockroom dictate. You might ask a salesperson how you look in that dress or hire a stylist if you have the resources. You can order a bespoke look, but only if you're willing to shell out top dollar. Personalization in fashion is largely about how to make designs grab your attention — not about creating and curating designs you're most likely to love in the first place.

In the midst of such limited options, along comes Stitch Fix, the popular San Francisco-based online fashion service, now in its eighth year and valued at more than **\$2 billion**, that has turned personal styling upside down. Stitch Fix has built its business on studying the way customers live in their clothes to curate wardrobes specially chosen for them — and with a constant stream of shopper feedback,



the company has the capability to design new clothes it all but knows they want to buy.

"It's real, honest one-to-one personalization," says Brad Klingenberg, vice president of algorithms at Stitch Fix. "As a personal styling service, we're getting to know every one of our clients, as opposed to what happens in brick-and-mortar stores, where someone tries something on, walks away and nobody knows why — or what to learn from that." The key to Stitch Fix's success is learning from those interactions — every pair of jeans you love, or top you hate, is another data point that makes its algorithms better equipped to understand what makes an outfit so you.

## "LIKE A FASHION LABORATORY"

Stitch Fix has 3 million active clients and many more millions of data points collected about users, all of which

get translated into ready-to-wear insights. The initial batch of data comes directly from customers, who fill out a detailed online profile covering everything from sizing and budget to style preferences (Boot cut or flare?) and lifestyle (Do you have kids? Constantly travel?).

Algorithms suggest clothing a client is likely to love, and a human personal stylist (each customer has one) makes the final call. Packages (known as “Fixes”) arrive at the door, and customers pay only for what they keep — plus a \$20 styling fee, applied toward any clothing purchase they make. Returns are free and can be mailed in a prepaid envelope. As far as shopping experiences go, this is about as seamless as it gets.

“You can think of Stitch Fix like a fashion laboratory where we can learn empirically what types of fashions will work with which clients,” Klingenberg says. “We send them things, and they send us feedback. It’s about getting to know customers better over time.”

The algorithms learn as more data is collected from customers — both about individuals’ tastes and in the aggregate. With the latter, computers use collaborative filtering to figure out what you might like based on purchases and clothing ratings you have in common with other Stitch Fix customers — creating affinity models or “lookalikes.”

Machine learning has helped fine-tune Stitch Fix’s algorithms considerably; the items purchased from each Fix box more than doubled between 2015 (9%) and 2017 (22%). Meanwhile, Stitch Fix posted 2018 sales of \$1.2 billion in an apparel industry that generates \$334 billion annually.

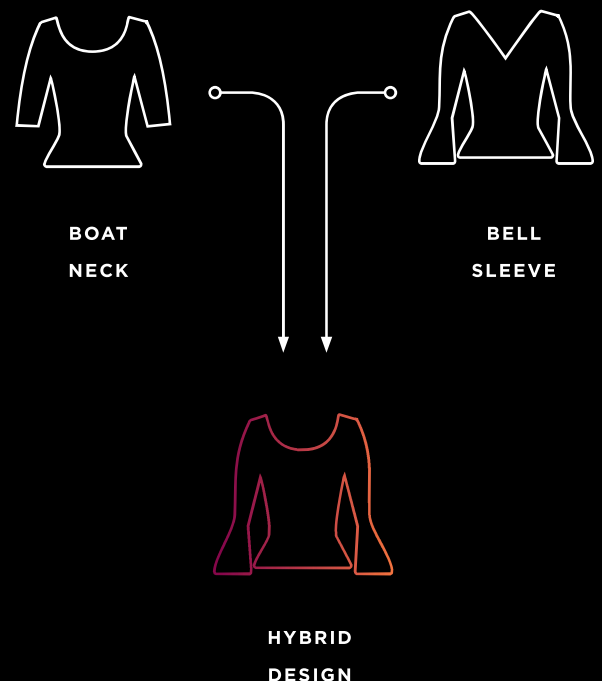
## HIGH RATINGS FOR HYBRID DESIGN

Outside the box, the data can also foreshadow new clothes and lines that customers want, leading to the creation of what Stitch Fix calls Hybrid Designs — original looks crafted in-house, entirely by machines, and simply greenlit by human stylists to make sure no fashion disasters make it into production.

**“** We take characteristics with different clients and across different styles and ask,

**‘WHAT CAN WE  
CREATE THAT  
THEY  
WILL LOVE?’”**

**BRAD KLINGENBERG,**  
VICE PRESIDENT OF  
ALGORITHMS, STITCH FIX



These are created by “looking at all the data we have and trying to find gaps in the inventory,” Klingenberg says.

The result could be a shoe for which there’s lots of demand but little supply or a blouse that combines top-rated features from other popular shirts (if customers raved about boat necks and bell sleeves, why not try both?).

The AI, it seems, has real design chops. Many of Stitch Fix’s Hybrid Designs have surpassed the 90th percentile in client approval. “It’s a fun example of leading with the data; instead of a human hypothesis on what to create, you ask what the data shows and what’s been successful in the past to make new things,” Klingenberg says.

As Stitch Fix discovers new customer segments through data, the company can create Hybrid Designs tailored to their specific needs. To date, **10%** of the more than 100 Hybrid Designs that Stitch Fix has created fall in the plus-size category. Klingenberg notes that this came about because customer feedback pointed to an unmet need. “We constantly look at the feedback our clients share and try to figure out how we can be carrying the right assortment. The plus line service came from people indicating they were at the boundary line of certain sizes.”

The more data of this kind Stitch Fix feeds into the core software algorithm, the more precisely it can curate collections and control inventory. That process is fueled by a constant stream of feedback on Fixes. But why not speed it up? That’s where Stitch Fix decided to make a game out of window shopping.

## STYLE SHUFFLE: GAME OVER

Housed within the Stitch Fix app, Style Shuffle invites customers to evaluate clothing items and accessories with a simple thumbs up or thumbs down, fine-tuning the company’s understanding of their taste. It’s a brilliant way to collect data in that it’s a high-tech take on the same game many of us play in our heads, or with friends, while skimming through fashion mags (or dating apps).

Style Shuffle is the creation of Chris Moody, Stitch Fix’s manager of data science, who brainstormed it in 2016. Since then, the feature has amassed more than one billion

unique outfit ratings, with more than 75% of the company’s clients playing to date.

This type of rating system also puts a data-driven twist on clothing production and inventory, in that “you can get client feedback on things we haven’t even carried yet, so we get the data before we have the physical items,” says Klingenberg. In the future, Stitch Fix plans to use these insights to inform inventory buying — instead of pouring costs into clothing that sits in storage, or wasting resources that go into manufacturing it, the company could collaborate with its users to figure out which designs and labels to stock in the first place.

“I think Style Shuffle is really exciting — and as you explore, you will find some lemons,” he says of the not-quite-Fix-worthy looks. While the decision to vote thumbs down, or return an item, is easy for consumers, it raises a thoughtful question for Stitch Fix: How do you learn from the fashion fails? There are two ways to view this from a data perspective.

“If someone comes to us and says a certain blouse is too small,

WE KNOW TO  
APPLY THAT DATA  
TO THEIR  
PERSONAL FILE,

and if you send something out and **9,000** people say it’s too small, you learn something about the blouse. A lot of the personalization we apply is just not available in other areas of retail.”

**BRAD KLINGENBERG,**  
VICE PRESIDENT OF  
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## FASHION'S FUTURE, NOW

Stitch Fix is already thinking about where else to collect data — and how to use it in innovative ways. “We have a steady drumbeat of improvements going on, as we do the hard work of getting better at algorithms,” Klingenberg says. “If you are a Stitch Fix client today, can you use a 3D scan of yourself to get something in the future? That’s a real possibility — we’re at a time where computer vision is becoming much more available, and the scanning hardware is becoming less expensive.”

The answers to these questions will no doubt impact retail as an industry, not just Stitch Fix’s bottom line. “I think we have enormous opportunities to continue innovating how we manage inventory and get the right balance of art and science,” says Klingenberg. In that sense, he predicts that at least one core principle of Stitch Fix is about to take fashion by storm: “The algorithms and stylists working together.” ■

