

APPAREL SIZING INTELLIGENCE

How To Fix Apparel Sizing Data Fragmentation

A practical guide to unifying sizing data across every channel — and turning fit into a competitive advantage.

Table of Contents

01	Introduction	03	06	Unified Fit Data Infrastructure	08
02	What Is Sizing Data Fragmentation?	04	07	Case Study: Mizzen+Main	09
03	Expert Perspective	05	08	Results You Can Expect	11
04	What Does Fragmentation Cost?	06	09	Implementation Roadmap & FAQ	12
05	Auditing Your Infrastructure	07	10	Sources & Next Steps	13

\$743B

Total annual cost of U.S. apparel returns in 2025

70%

of apparel returns cite fit as the primary reason

18%

avg. return reduction with unified fit data

WHAT YOU'LL WALK AWAY WITH

A working definition of fragmentation

Where sizing data breaks down across PIM, PLM, ERP, POS, and marketplace listings, why body vs. garment measurement confusion sits underneath all of it, and how fragmentation quietly accumulates as a catalog and channel mix grow.

The economics, quantified

What a \$29.50 return actually costs you line by line, how return rates differ across dresses, shoes, and apparel overall, and how return rate, conversion, and average order value move once fit data is unified across channels.

A stack that survives agentic commerce

What structured, machine-readable sizing data requires, why AI shopping agents can't recommend products they can't size, and what an API-first fit layer needs to deliver to stay useful in channels that don't exist yet.

A four-step audit you can run

Map your sources, segment returns by fit reason, test cross-channel consistency, and define a canonical fit profile per product — with a worksheet of the specific red flags that signal each failure, and the output each step should produce.

A brand that already did it

Mizzen+Main's four-stage rollout — Smart Size Chart™, Shirt Finder, Pant Finder, and Bracket Buster — with the conversion, AOV, and revenue results at each step, plus a benchmark table of what other brands have recorded.

Answers for your team

A phased implementation roadmap plus the FAQ your ecommerce, IT, and legal stakeholders will raise — timelines, platform compatibility, measurement approach, internal ownership, and exactly what data shoppers are asked to share.

Written for ecommerce, merchandising, and operations leaders at apparel brands selling across more than one channel.

13 PAGES · ~12 MIN READ

The Hesitation at Checkout Is a Data Problem

When a shopper browses your website, adds an item to cart, and then abandons it because they aren't sure which size to order, that hesitation rarely comes from indecision. It comes from experience. They've been burned before by inconsistent sizing across brands, across channels, and across your own product lines.

The root cause isn't a technology gap. It's **data fragmentation** — sizing information scattered across ecommerce platforms, ERP systems, PLM solutions, and POS channels with no unified structure connecting them. This guide walks you through the mechanics, what it costs, and how to fix it.

KEY TAKEAWAYS

- ✓ **Sizing data fragmentation drives up to 70% of apparel returns**, costing brands roughly \$29.50 per returned item once reverse shipping, receiving, inspection, restocking, markdowns, and customer service are counted.
- ✓ **U.S. retailers processed \$743B in returned merchandise in 2025**; apparel carries the highest return rate of any ecommerce category at roughly 24–26%, with dresses running as high as 38%.
- ✓ **AI agents and conversational commerce require structured, consistently labeled sizing data** to make accurate recommendations. Gartner projects 15% of day-to-day work decisions will be made autonomously by agentic AI by 2028 — brands without machine-readable fit data are invisible to it.
- ✓ **Digital twin technology creates a unified body data layer** that standardizes sizing intelligence across every touchpoint. Bold Metrics generates 50+ body measurements from 4–6 simple shopper inputs — no photos, no scans.
- ✓ **Most brands publish a size chart without saying whether it describes the body or the finished garment** — a silent source of confusion that exists on a single product page, before channels or marketplaces enter the picture.
- ✓ **Cross-platform data silos stop fit recommendations from working consistently** across your own site, marketplaces, and conversational AI channels — the same shopper gets different answers depending on where they shop.
- ✓ **Brands that unify their sizing data see measurable movement** in return rate, conversion, and average order value — an average 18% reduction in fit-related returns, a 22% lift in order value, and a 4x improvement in conversion rate.

What Is Sizing Data Fragmentation?

Sizing data fragmentation occurs when your fit and measurement information exists in disconnected systems that don't communicate with each other. Your PIM stores one set of garment specs. Your ecommerce platform displays a different size chart. Your marketplace listings use yet another format. The result is inconsistency at every customer touchpoint.

THE ROOT CONFUSION: BODY VS. GARMENT MEASUREMENTS

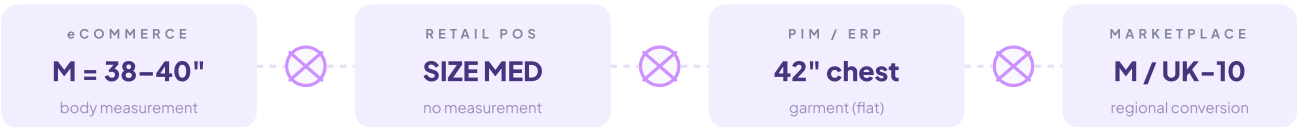
Body Measurement Charts

Tell shoppers what physical dimensions correspond to each size. A Medium might read: chest 38–40in, waist 32–34in. Shoppers measure themselves and match to the chart.

Garment Measurement Charts

Show the actual dimensions of the finished garment laid flat. The same Medium reads: chest width 21in (42in doubled). These are construction specs — most shoppers don't know how to interpret them.

Most brands don't label which type they use. That ambiguity alone is enough to kill a conversion.



Same garment. Four systems. Four conflicting definitions. No shared source of truth.

WHY FRAGMENTATION ACCUMULATES

Legacy Systems

Early ecommerce was built before body data existed at scale. Static size charts became entrenched. Each new channel creates new divergence.

Siloed Teams

Technical designers, merchandising, ecommerce, and marketplace teams each maintain their own data. Each handoff introduces error and drift.

Agentic Commerce

AI agents need structured, consistently labeled data to recommend products. Gartner projects 15% of work decisions made autonomously by AI by 2028.

HOW APPAREL BRANDS HANDLE IT TODAY

APPROACH	WHAT THE SHOPPER SEES	CONSEQUENCE
Unlabeled body chart	A size chart with no indication of what the numbers describe	Probably body measurements, but a shopper has no way to be sure — the ambiguity alone can end the session
Unlabeled garment chart	Flat-measurement construction specs, presented as a size guide	Numbers look larger than expected, so shoppers size down incorrectly or abandon the purchase
Both, clearly labeled	Body and garment columns side by side, each named	A better baseline — shoppers can decide confidently however they prefer to shop for fit
A resolved recommendation	Four simple inputs and a single recommended size for that garment	The measurement question never reaches the shopper — the body model resolves it behind the scenes

“

If you don't nail fit, or at least tell them exactly what it's going to be and they can buy accordingly, then you're not going to retain customers. You're going to pay to acquire them, they're going to return the products, and they're never going to come back.



Drew Cook

CFO & Head of Operations
Pact

What Does Fragmentation Cost?

The fully loaded cost of processing a single return is **~\$29.50 per item** — reverse shipping, receiving, inspection, restocking, markdowns, and customer service. A brand doing \$50M in revenue with a 25% return rate and 60% fit-related incurs roughly **\$2.2M per year** in avoidable costs.

Returns are only part of the damage. The Baymard Institute found **70.19% average cart abandonment** across ecommerce, with sizing uncertainty as a top reason. And 36% of shoppers bracket — deliberately ordering multiple sizes to return the rest.

\$2.2M

avg. annual cost of fit-related returns for a mid-market brand

70%

of shoppers abandon carts due to sizing uncertainty

36%

of online shoppers deliberately bracket — ordering multiple sizes to return

TRUST EROSION

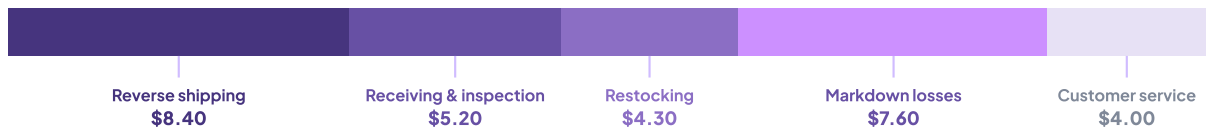
96%

of consumers say a poor-fit experience makes them less likely to recommend the brand. — Narvar

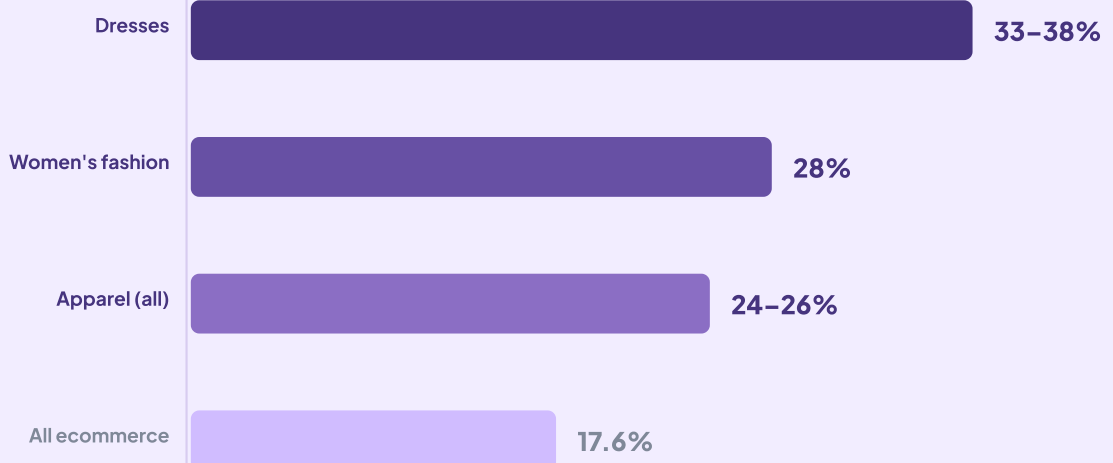
81%

of consumers lose trust in a brand after receiving an item that doesn't match fit expectations. — Oracle Retail

THE ANATOMY OF A \$29.50 RETURN



ONLINE RETURN RATE BY CATEGORY



Apparel returns at nearly twice the ecommerce average — and dresses at more than double.

Auditing Your Infrastructure

Before you can fix fragmentation, you need to understand where it lives. A thorough sizing data audit reveals the gaps, inconsistencies, and highest-impact opportunities in your current stack.

STEP 01

Map Your Data Sources

Audit every system that touches sizing: your ecommerce platform, POS, 3PL, wholesale portals, PLM, PIM, and any customer-facing fit experiences. Document what sizing data each contains, whether it represents body or garment measurements, and where it originates. Most brands find 3–6 disconnected sources.

STEP 03

Test Cross-Channel Consistency

Shop your own brand across channels as a customer would. Compare sizing information on your website, mobile experience, marketplace listings, and any AI shopping agents that feature your products. A Medium on your site should mean the same as a Medium on Amazon. Document every inconsistency — it's your baseline.

STEP 02

Analyze Your Returns Data

Break returns down by fit reason, style, size range, and channel. Which categories generate the most fit-related returns? Generic "didn't fit" codes don't tell you whether an item ran large or whether shoppers misread a garment chart as a body chart. Detailed reason codes let you diagnose and measure improvement over time.

STEP 04

Establish a Source of Truth

Define a canonical fit profile for each product — including whether measurements are body- or garment-based — that any channel can query in real time. This becomes the foundation of your unified infrastructure and the layer every downstream experience, AI model, and recommendation engine reads from.

COMMON SYSTEMS TO INCLUDE IN YOUR AUDIT

- eCommerce Platform
 - PIM / Product Info Mgmt
 - PLM / Product Lifecycle
 - ERP & 3PL Systems
- Retail POS
 - Marketplace Listings
 - Wholesale Portals
 - Customer-Facing Fit Experiences

AUDIT STEP	WHAT TO RECORD	RED FLAG
01 · Map sources	Every system holding sizing data, its origin, update cadence, and format	More than two systems editing size data independently
02 · Label types	Whether each published chart is body- or garment-based, and if it says so	Unlabeled charts, or types that switch between product lines
03 · Segment returns	Fit-related returns by SKU, size, category, and channel	A single generic "didn't fit" reason code
04 · Shop your brand	The size guidance shown on site, mobile, marketplaces, and AI agents	A Medium that means something different on Amazon
05 · Define the source	One canonical fit profile per product that any channel can query	No named owner for sizing data governance

Building a Unified Fit Data Infrastructure

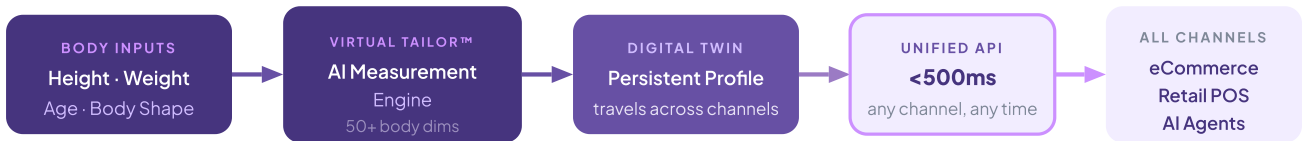
The Digital Twin Foundation

At the core of a modern fit data infrastructure is the digital twin: a structured, AI-readable body profile that travels with the customer across every touchpoint. Bold Metrics' Virtual Tailor™ generates 50+ body measurements from just 4–6 simple inputs — height, weight, age, body shape — with tailor-grade accuracy. No photos, no intrusive collection.

Structured Data for AI Interoperability

A body profile stored as a static size label ("M") is invisible to AI agents. A structured digital twin feeds every downstream experience accurately. McKinsey's State of Fashion 2025 identifies AI-powered fit personalization as a top investment priority. 83% of consumers are willing to share data for a more personalized experience.

HOW IT WORKS — THE DATA FLOW



THE BOLD METRICS SOLUTION SUITE



Smart Size Chart™

Our advanced algorithms unlock the power of your shoppers' body data to deliver highly personalized, accurate sizing determinations. No photos, scanning, or measuring tapes required.



Virtual Sizer™

Our powerful Virtual Sizer™ API empowers apparel businesses with a customized fit and sizing experience tailored to your brand — from the input questions to the look and feel.



Virtual Tailor™

Trusted for on-demand manufacturing, made-to-measure, and custom clothier applications, Virtual Tailor™ determines over 50 body measurements with tailor-level accuracy.



Apparel Insights®

Build your customer digital twin library to optimize technical design, analyze size charts and grading processes, and leverage customer body data insights for strategic decision-making.



Agentic Sizing Protocol™

Enable AI shopping agents to deliver fast, accurate size recommendations, powered by more than a decade of AI-driven fit modeling. Works with any AI agent or platform.

WHY A UNIFIED LAYER CHANGES EVERYTHING

1x

Body measurement captured once, used everywhere — no re-entry, no drift between channels

500ms

API response time — fast enough for real-time AI agents and conversational commerce

250M+

Digital twins generated — the largest body data foundation in apparel

50+

Body dimensions per digital twin — tailor-grade accuracy from 4–6 simple inputs

How Mizzen+Main Built a Smarter Fit Experience

Mizzen+Main built its reputation on dress shirts that perform like athletic wear. But as the catalog expanded, a familiar problem emerged: how do you help online shoppers confidently navigate multiple styles, fits, and sizes without a fitting room? Good fabric wasn't enough — the brand needed **fit intelligence**. What followed was a four-stage system built on Bold Metrics' body data platform.

STEP 01 · THE FOUNDATION

Replacing the static grid with the Smart Size Chart™

Traditional size charts assume a given size means consistent proportions across all body types — and that shoppers already know their measurements. Instead, shoppers enter four to six simple inputs and Bold Metrics' AI instantly generates 50+ body measurements, creating a digital twin.

That twin is mapped against Mizzen+Main's actual garment construction data to evaluate how a specific shirt or pant will fit at the chest, waist, hip, and sleeve — not against industry averages.

20%

conversion rate among Smart Size Chart™ users

19%

higher average order value for users vs. non-users

78%

completion rate among shoppers who clicked "Find My Size"

"Bold Metrics has been a key driver in improving our ecommerce performance. By helping customers make more confident sizing decisions, we've **significantly reduced return rates** and seen a clear lift in both AOV and conversion rate."

Natalie Shaddick · VP of eCommerce, Mizzen+Main

"When a customer has to navigate too many options regarding fit, print, and pattern without personalized guidance, that hesitation often leads to cart abandonment. Our core demographic typically prefers a highly streamlined shopping experience."

On why the Shirt Finder came next

WHAT'S UNDERNEATH

Real garment specs

Twins are mapped to Mizzen+Main's own construction data — not industry averages.

A preference layer

Two shoppers with identical measurements can want a trim or a relaxed silhouette; the model accounts for both.

Aggregate insight

Body data reveals which segments current size offerings underserve — input to future fit blocks.

Milliseconds, not minutes

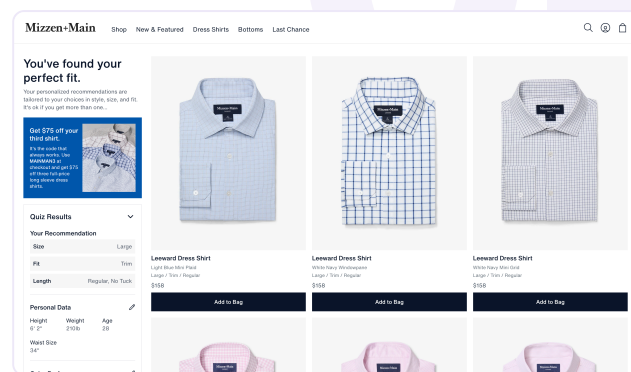
A few inputs become a full digital twin in under half a second, so the recommendation lands while the shopper is still deciding.

From Sizing Guidance to Full Personalization

STEP 02 • SHIRT FINDER

Solving decision fatigue

A short quiz on body, lifestyle, and style narrows the full assortment to a curated set of recommendations — each already in the right size. More than 5,200 shoppers used it between the July launch and early October.



STEP 03 • PANT FINDER

Category by category

Pants must reconcile waist, inseam, hip, rise, and thigh at once. Four inputs generate a digital twin, mapped to Mizzen+Main's own garment data — a two-minute quiz doing what a static chart can't.

Find your perfect pants

This will take two minutes (one if you type fast)

Height (feet)

Enter height in feet

Height (inches)

Enter height in inches

Age

Enter age

Typical waist size (inches)

Enter waist

Weight (lbs)

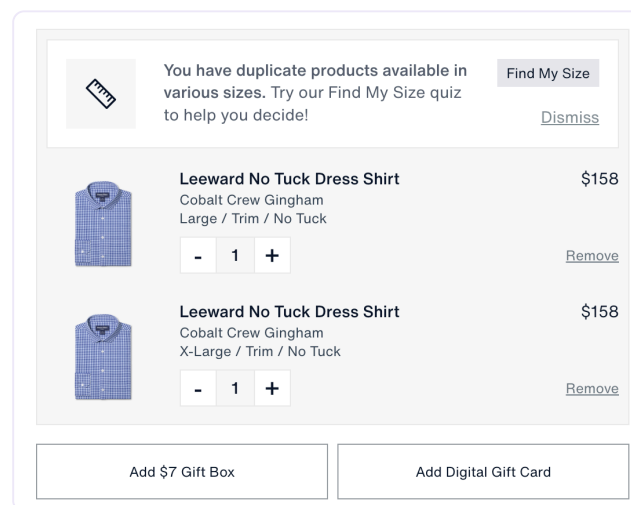
Enter weight

Next

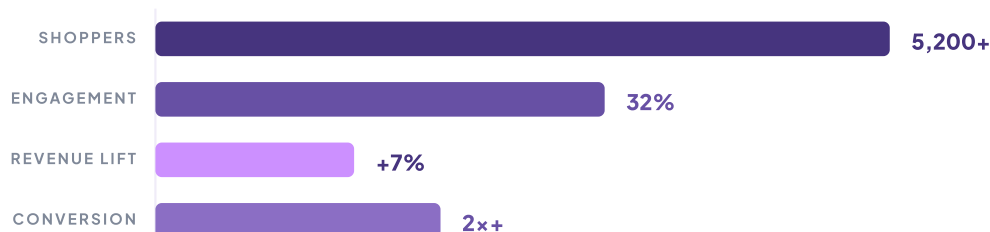
STEP 04 · BRACKET BUSTER

Intercepting duplicate sizes

When two sizes of one item hit the cart, the site flags the duplicate and routes the shopper to a Virtual Sizer™-powered quiz — turning a bracketed order into a single confident purchase.



SHIRT FINDER PERFORMANCE – JULY THROUGH EARLY OCTOBER



Conversion rates for shoppers who took the quiz more than doubled versus those who didn't.

Results You Can Expect

Brands that deploy a unified fit data infrastructure through Bold Metrics see measurable improvements across returns, conversion, and ROI — typically within the first two quarters.

18%

avg. reduction in fit-related returns across deployments.

4x

avg. improvement in conversion rate for Smart Size Chart™ users vs. non-users

22%

avg. increase in order value — confident shoppers add more rather than hedging

BEFORE VS. AFTER — UNIFIED FIT DATA

Before After

RETURN RATE



▼ 18%

CONVERSION RATE



▲ 4x

The ROI Math

For a brand with \$10M in annual revenue: an 18% return reduction recovers ~\$540K in gross margin. A 22% lift in order value adds ~\$2.2M in incremental revenue. A 10% improvement for a \$30M brand with a 25% return rate saves over \$2.2M in processing costs alone. The infrastructure pays for itself within the first quarter.

Future-Proofing Your Stack

Bold Metrics exposes its fit data platform via a unified API — meaning your sizing intelligence integrates into any future channel, commerce platform, or AI layer without a rebuild. The Virtual Sizer™ API returns recommendations in under 500ms, fast enough for real-time conversational commerce. 250M+ digital twins and growing.

CUSTOMER BENCHMARKS

BRAND	METRIC	RESULT
Retrofête	Conversion lift on size confidence among Smart Size Chart™ users, with 20% of all purchases made using the SSC	▲ 15x
Canada Goose	Reduction in fit-related returns within six months of full Smart Size Chart™ deployment	▼ 21%
Helly Hansen	AOV boost in Europe, where 19.3% of all purchases were made using Smart Size Chart™ — a \$50.47 increase in North America.	▲ \$65.36

Published customer results. Individual outcomes vary by category, price point, and rollout scope; figures reflect Smart Size Chart™ users versus non-users.

Implementation Roadmap

PHASE 01 · INGEST

Garment Data Ingestion

We ingest the best available data that you have, including size chart info, body measurements and/or tech pack (garment measurements) in conjunction with fit model data.

PHASE 03 · QA

Hands-on QA to Ensure Accuracy

A rigorous QA process validates the data and runs millions of possibilities through our AI algorithms to account for any possible body shape and size — while creating fit preference scenarios.

PHASE 02 · MAP

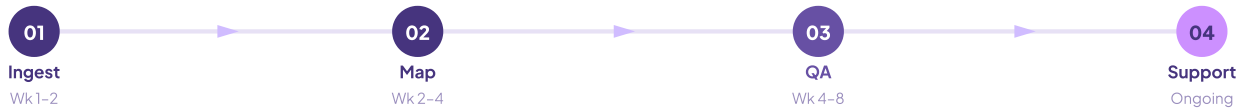
Body Measurement Optimization

Our advanced AI algorithms map your brands' sizing and category specifications to your shopper's body data with 50+ points of measurement for accurate fit and size recommendations.

PHASE 04 · SUPPORT

Ongoing Support & Optimization

We don't leave you on your own after implementation — our customer support team is always available to help further optimize your customer experience, while our AI engine continuously improves and updates as data flows in.



FAQ

How long does implementation take?

Most brands are live within 30–60 days. The API-first architecture connects to your existing commerce stack without a platform replacement.

Does this work with our existing ecommerce platform?

Bold Metrics integrates via API with all major platforms — Shopify, Salesforce Commerce Cloud, Magento, SAP, and custom stacks. No platform replacement required; implementation is additive, not disruptive.

How do we measure whether it worked?

Baseline your fit-related return rate and conversion by category before launch, then compare cohorts of shoppers who used the fit experience against those who didn't. Most brands see signal within a single quarter.

What if we use vanity or non-standard sizing?

Bold Metrics supports custom size curves, vanity sizing offsets, and international conversion tables. The platform adapts to your catalog — not the other way around.

What data do customers actually share?

Shoppers share height, weight, age, and body shape — 4 to 6 simple inputs. No photos, no scans, no intrusive collection. Bold Metrics is fully GDPR and CCPA compliant, and all data is anonymized in aggregate analytics.

Who needs to be involved internally?

Typically ecommerce owns the rollout, with technical design supplying garment specs and analytics supplying return reason data. Engineering effort is limited to the API integration.

Ready to run your sizing data audit?

Bold Metrics can help you map your current stack and identify fragmentation gaps in a single working session.

boldmetrics.com/demo

WHAT HAPPENS IN THE SESSION

01 · Stack walkthrough

We map every system holding sizing data today and where the definitions diverge.

02 · Return baseline

We size the fit-related portion of your returns and what it costs at your volume.

03 · Priority plan

You leave with a ranked fix list and the categories to deploy against first.

04 · Timeline

A phased 30–60 day plan scoped to your platform and internal capacity.

SOURCES

[1] National Retail Federation & Apriss Retail. 2024 Consumer Returns in the Retail Industry. NRF, 2024.

[3] Gartner. Gartner Predicts 15% of Day-to-Day Work Decisions Autonomously by Agentic AI by 2028. Gartner, 2024.

[5] Baymard Institute. 48 Cart Abandonment Rate Statistics. Baymard Institute Research, 2024.

[7] Oracle Retail. Retail Consumer Study: The Loyalty Divide. Oracle, 2023.

[9] Accenture. Personalization Pulse Check: What Consumers Really Want. Accenture, 2023.

[2] Narvar. The State of Returns: What Today's Shoppers Expect. Narvar Consumer Report, 2023.

[4] Apriss Retail / Happy Returns. The True Cost of Returns: A Retail Analysis. 2024.

[6] Narvar. Consumer Report: The State of Online Returns. Narvar, 2023.

[8] McKinsey & Company / BoF. The State of Fashion 2025. McKinsey Global Institute, 2024.

[10] Coresight Research. AI in Retail: Sizing Intelligence for the Agentic Commerce Era. 2024.

GET STARTED

Ready to turn sizing fragmentation into your competitive advantage?

See how Bold Metrics unifies your fit data infrastructure and delivers measurable ROI — with a live demo tailored to your catalog.

boldmetrics.com/demo