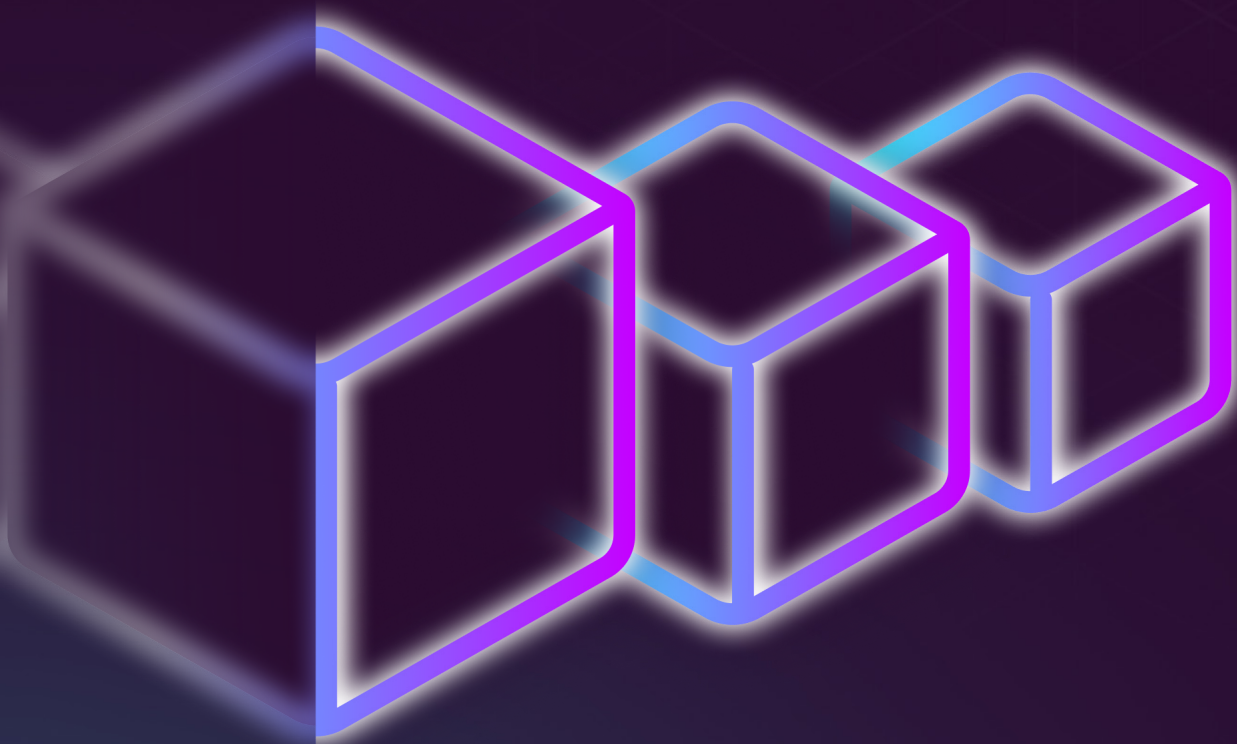




Solution Brief

# AI-Driven Stock-Out Prevention for Retailers



# Solving One of Retail's Most Expensive Problems

Retailers lose billions of dollars annually to stock-outs leading to missed sales, customer churn, fulfillment failures, and operational firefighting that consumes planning and supply chain teams. While many retailers have ERP, WMS, OMS, and planning tools such as Oracle, Manhattan, Blue Yonder, or SAP, most still struggle to connect signals across systems in time to prevent an outage before it impacts customers.

**Beamup was built to close this gap.**

Beamup brings together **inventory data, order commitments, forecasts, supplier performance, inbound logistics, and production readiness** into a single AI-driven engine that identifies the early warnings of stock-outs before they happen, and recommends actions to prevent them. Our platform does not replace existing systems; instead, it sits above them as a **monitoring, prediction, and decision-support layer**, helping supply chain professionals act faster and with greater accuracy.

Because Beamup understands the full lifecycle of inventory, from forecast to delivery, we uniquely detect stock-out risks that traditional planning engines miss.

This summary outlines the specific dimensions of stock-outs Beamup is uniquely positioned to solve and why our AI leadership is reshaping retail operations.

# Beamup's Deep Understanding of Stock-Out Root Causes

Stock-outs rarely come from a single point of failure. Beamup's data model covers every driver of inventory failure, enabling prediction at SKU, facility, supplier, and order levels.

## Sales Order & Customer Fulfillment Failures

Stock-outs often manifest as failed promises to the end customer. Beamup monitors the full sales order portfolio to detect when commitment dates are at risk.

### Fulfillment Challenges Beamup Identifies:

- ⚡ **Missed Delivery Dates:** Inability to proactively manage backorders.
- ⚡ **Demand Surges:** Real-time demand exceeding planned availability or forecasts.
- ⚡ **SLA Breaches:** Aged backorders that exceed established customer service thresholds.
- ⚡ **Logistics Friction:** Transportation-related delays and missed delivery windows.
- ⚡ **Supply Mismatch:** Lead-time discrepancies between expected and actual arrivals.

### Beamup Solutions & Impact:

- ⚡ **Preemptive Risk Detection:** Identifying deviations in the DC work-in-process before the customer is impacted.
- ⚡ **Automated Fulfillment Recovery:** Faster resolution and prioritization of backorders based on margin and customer tier.
- ⚡ **Customer Transparency:** Providing real-time updates to customer service teams to improve communication.
- ⚡ **Delivery Precision:** Measurable reduction in missed-delivery percentages and higher service-level satisfaction.

## Network & Multi-Node Inventory Planning

Imbalances across distribution centers and 3PLs create artificial stock-outs while capital is tied up elsewhere.

### Multi-Node Challenges Beamup Identifies:

- ⚡ **Inventory Imbalance:** Stock sitting in the wrong node while demand peaks elsewhere.
- ⚡ **High Carrying Costs:** Excess safety stock held due to lack of cross-network visibility.
- ⚡ **Operational Waste:** High volume of unnecessary or emergency transfers between facilities.
- ⚡ **Lost Sales:** Inability to fulfill orders locally despite network-wide availability.

### Beamup Solutions & Impact:

- ⚡ **AI-Driven Reallocation:** Identifying redistribution opportunities by analyzing APS replenishment logic and WMS levels.
- ⚡ **Node Optimization:** Modeling inventory across all warehouses and 3PLs to prevent localized outages.
- ⚡ **Transfer Efficiency:** Reducing emergency shipment costs by recommending moves before the stock-out occurs.
- ⚡ **Capital Recovery:** Improving the Inventory Reallocation Rate to lower overall safety stock requirements.

## Supplier Performance & Inbound Risks

A major cause of stock-outs is unreliable or inconsistent inbound supply.

### Supplier Challenges Beamup Identifies:

- ⚡ **Lead Time Volatility:** High variance between promised and actual supplier lead times.
- ⚡ **Quality & Compliance:** High defect rates or labeling inconsistencies at the SKU level.
- ⚡ **Silent Outages:** Active SKUs missing assigned suppliers or secondary sources.
- ⚡ **ASN Discrepancies:** Mismatches between Advanced Shipping Notices and actual inbound arrivals.
- ⚡ **Supplier Bottlenecks:** Repeated late shipments from core vendors.

### Beamup Solutions & Impact:

- ⚡ **Predictive Supplier Scorecards:** Modeling supplier reliability patterns to adjust planning parameters dynamically.
- ⚡ **Source Validation:** Automatically identifying SKUs without active supplier assignments or backup sources.
- ⚡ **Proactive Inbound Auditing:** Monitoring ASN feeds and inbound logistics to flag bottlenecks weeks in advance.
- ⚡ **Early Escalation:** Providing buyers with the data needed to rebalance inventory or find alternative vendors before impact.

## Production & Packaging Readiness

For vertically integrated retailers, stock-outs are often caused by component shortages or production sequencing.

### Production Challenges Beamup Identifies:

- ⚡ **Component Shortages:** Missing raw materials or parts needed to complete a build.
- ⚡ **Packaging Misalignment:** Production ready, but packaging orders are unaligned or delayed.
- ⚡ **Production Bottlenecks:** Inefficient sequencing in Manufacturing Orders (MO).
- ⚡ **Clear-to-Build Delays:** Lack of readiness tracking across BOM (Bill of Materials) structures.

### Beamup Solutions & Impact:

- ⚡ **BOM Integrity Analysis:** Analyzing MRP and S/4 data to identify missing components for upcoming runs.
- ⚡ **Sequencing Optimization:** Validating manufacturing orders to ensure high-demand items are prioritized.
- ⚡ **Packaging Syncing:** Coordinating packaging order readiness with production work orders.
- ⚡ **Readiness Visibility:** Real-time monitoring of "Clear-to-Build" status for private-label products.

## Inventory Accuracy & Planning Parameter Validation

Inaccurate data leads to “ghost” stock and poor replenishment decisions.

### Data & Accuracy Challenges Beamup Identifies:

- ⚡ **Under-the-Roof Shrink:** Theft, damage, or misplacement within the four walls.
- ⚡ **Physical vs. System Variances:** Discrepancies between the WMS and actual on-hand stock.
- ⚡ **Overstated Availability:** System showing stock available for sale that is physically missing.
- ⚡ **Parameter Drift:** Misconfigured safety stocks, lot sizes, or order quantity rules.

### Beamup Solutions & Impact:

- ⚡ **AI Parameter Validation:** Overlaying existing systems to flag discrepancies in safety stock and lead time assumptions.
- ⚡ **Shrink Detection:** Identifying patterns of “invisible” loss to prevent operational surprises.
- ⚡ **Forecast Utilization:** Validating forecast variance against actual inventory depletion trajectories.
- ⚡ **Policy Correction:** Recommending adjustments to order policies to reduce excess while protecting availability.

## Why Beamup Is the AI Leader in Stock-Out Prevention

Beamup is not a traditional analytics or planning system. Our differentiation lies in AI-powered pattern detection, prediction, and early-warning capabilities that sit across the entire supply chain.

### Cross-functional AI trained specifically on supply chain data

Beamup models do not look at isolated datasets. They analyze:

Forecasts	SKU master data
Sales orders	Supplier scorecards
On-hand inventory	Production work orders
Inbound supplier shipments	WMS movements
Transportation status	ERP allocations

By connecting these, Beamup identifies “weak signals” that individually seem harmless but together indicate a future stock-out.

## Multi-source integration across ERP, IBP, WMS, OMS, TMS, CRM, BI Tools

Our integrations are designed for retail complexity. We pull and harmonize data across all operational systems, enabling retailers to see:

Real-time risk across the whole network  
Supplier and production dependencies

Customer commitments and promised dates  
Inventory integrity issues

This unified data foundation is what enables Beamup's accurate predictions.

## Predictive modeling that acts before the ERP can react

ERPs and planning engines are designed to execute, not predict. Beamup's models track:

Lead-time volatility

Aged backorder likelihood

Supplier reliability patterns

Inbound shipment delays

SKU-level forecast deviation

Inventory depletion trajectories

This allows Beamup to alert teams days or weeks before the ERP recognizes a problem.

## Actionable recommendations, not just alerts

Beamup does more than detect risk—it recommends the next best action, such as:

Expediting a specific PO

Adjusting a packaging order

Prioritizing a supplier escalation

Correcting a safety-stock parameter

Reallocating stock between facilities

Reassigning a SKU to a backup supplier

Over time, as users validate Beamup's recommendations, the platform can automate approvals inside your systems.

## Proven improvements for retailers

Beamup consistently delivers measurable impact:

Reduction in missed delivery dates

Improved inbound visibility

Faster recovery of backorders

Reduced safety-stock parameter inconsistencies

Higher supplier on-time delivery rates

Better forecast utilization

Lower aged-backorder counts

Improved inventory accuracy

These metrics compound into fewer stock-outs, higher customer satisfaction, and more stable supply chain operations.

# We protect customer loyalty **at scale.**

Beamup uses purpose-built AI agents to diagnose the supply chain failures that erode customer loyalty, then with your approval, run the fix automatically the next time the same failure mode appears. So delivery promises hold, NPS climbs, and repeat customers stay.



## Deep Root Cause Intelligence

Understand every underlying driver of stock-outs, not just the symptoms – giving teams the clarity to fix issues at the source.



## Enterprise-Grade Integrations

Connects seamlessly with your existing supply chain systems, from ERPs to execution platforms, with no heavy customization required.



## Predictive Disruption Detection

AI models surface risks and disruptions before they impact availability, giving planners time to act rather than react.



## Service and Cost in Balance

Every recommendation is optimized for both customer service levels and cost efficiency – so you never have to trade one for the other.

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Schedule a Custom Demo: [sales@beamup.ai](mailto:sales@beamup.ai)