How a Mid-Market Grocery Operator Achieved 85% Anomaly Detection Improvement and 22% Return Rate Reduction with Automated Data Quality Monitoring

Reporting → Anomaly Detection

At a Glance

The Problem

- Order errors and supplier discrepancies only visible at monthly audit
- Returns costing $1.2–1.8M annually from undetected ordering inaccuracies
- Food safety compliance violations invisible until regulatory inspection
- No automated monitoring across 58 stores' receiving and ordering data

The Solution

- Automated anomaly detection across order, receiving, and compliance data
- Real-time supplier invoice discrepancy flagging within 24 hours
- Compliance monitoring dashboard with store-level exception alerts
- Root-cause tagging for systematic vs. one-off anomaly patterns

The Result

- 85% anomaly detection improvement in 8 weeks
- 22% return rate improvement
- 40% supplier discrepancy resolution time improvement
- $320K in short-shipment credits recovered in Q1

Business Context

A mid-market grocery operator running 58 stores and two DCs was managing data quality through monthly reconciliation processes and reactive exception handling. With 15,000+ active SKUs and hundreds of daily supplier deliveries, the volume of transactional data moving through the business was creating an invisible quality problem; errors and discrepancies too small to flag individually but collectively generating significant cost.

The true scale of the problem emerged during a routine audit: order inaccuracies, supplier short-shipments recorded as full deliveries, and receiving errors were costing an estimated $1.2–1.8M annually, most of it invisible in day-to-day operations.

Client Profile

Industry:
Food & Beverages

Geography:
North America — Single Region

Scale:
58 stores, 2 Distribution Centres

Revenue:
$220–360M annual revenue range

SKUs:
15,000+ active SKUs

Food safety compliance records across store receiving had a 12% error rate, creating regulatory exposure the business was unaware of until a spot inspection flagged three stores in a single quarter.

The Challenge In Depth

The business had no automated mechanism to detect data quality problems in real time. Every anomaly — whether an order quantity discrepancy, a supplier's invoice mismatch, or a receiving record error — sat undetected until a planner stumbled across it; a supplier raised a dispute, or an auditor found it.

- **Undetected Order Errors:** Approximately 8% of daily orders contained quantity, pricing, or product discrepancies that went undetected — generating $1.2–1.8M annually in unnecessary returns, re-orders, and supplier disputes.
- **Supplier Discrepancies:** Invoice-to-delivery mismatches were reconciled manually on a monthly cycle — meaning the business was regularly paying for stock it hadn't received and absorbing short-shipments without recourse.
- **Compliance Exposure:** Food safety receiving records had a 12% error rate across the store network — invisible until an inspection, at which point the liability and remediation cost was significant.
- **No Pattern Detection:** Without automated monitoring, systematic errors — a single supplier consistently short-shipping a specific line, or a store making the same ordering error repeatedly — were indistinguishable from one-off incidents.

Our Approach

1. Automated Anomaly Detection Across Every Data Stream

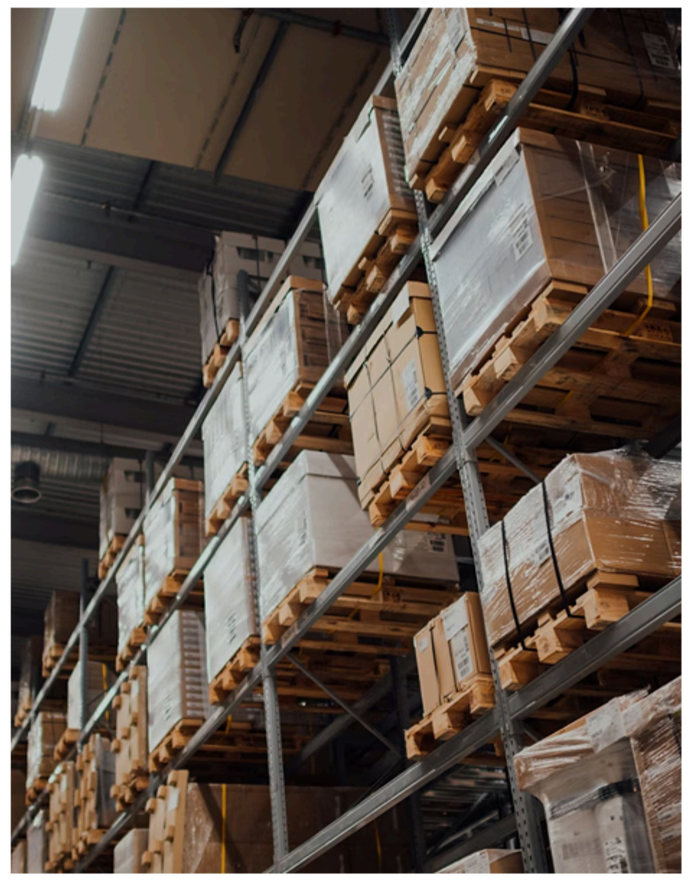
Techverx deployed automated monitoring across all orders, receiving, invoice, and compliance data streams. Statistical models established expected ranges for every data point and automatically flagged deviations for planner review. The detection rate for inaccurate orders improved by 85% in the first eight weeks.

2. Real-Time Supplier Discrepancy Resolution

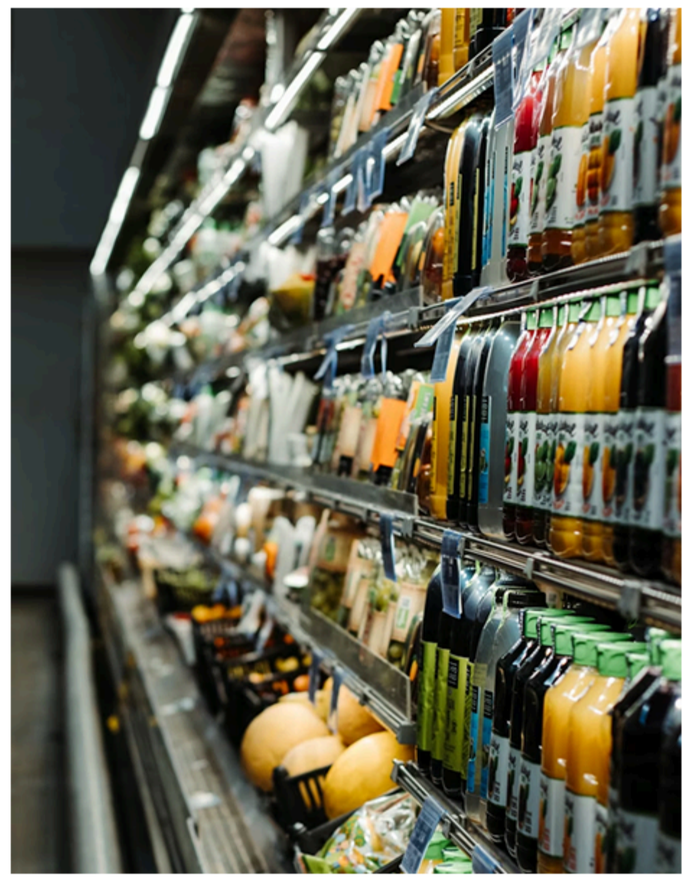
Supplier invoice-to-delivery mismatches were flagged within 24 hours of delivery rather than at month-end reconciliation. Automated discrepancy notifications were sent directly to the relevant supplier in contact, enabling resolution before invoice processing. The business recovered $320K in short-shipment credits in Q1 alone.

3. Compliance Monitoring That Prevents Violations Before They Occur

Food safety receiving records were automatically validated against compliance templates at point of entry — flagging incomplete or incorrect records for immediate correction rather than audit discovery.



Replenishment on demand, delivered timely using our platform



Compliance violation rate improved significantly in the first six months, eliminating the regulatory exposure that had been building undetected.

Results and Impact

Within eight weeks, anomaly detection improved 85% — identifying inaccurate orders, supplier discrepancies, and compliance errors that had previously gone undetected for weeks or months. Return rates improved by 22% as order accuracy increased. Supplier discrepancy resolution time improved by 40%. The business recovered $320K in short-shipment credits in Q1 alone — a return that covered the implementation cost within the first six months.

What Happened Next

- **Weeks 1–8:** Automated anomaly detection live across all order, receiving, and invoice data; detection rate improved 85%.
- **Month 3:** Supplier discrepancy notifications active for all 45 suppliers; $320K credits recovered in Q1.
- **Month 5:** Food safety compliance monitoring deployed across all 58 stores; violation rate significantly reduced.
- **Currently:** Extending anomaly detection to demand signal data to identify forecast-distorting outliers before they enter the planning cycle.

85%

Anomaly Detection Improvement (8 Wks)

22%

Return Rate Improvement

40%

Discrepancy Resolution Time Improvement

$320K

Credits Recovered (Q1)

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