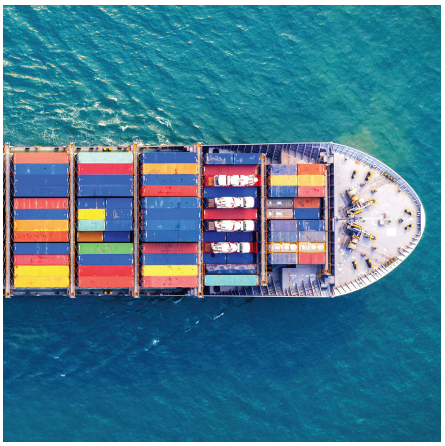
CUSTOMER SUCCESS STORY

C3.ai

Retailer Improves Lead Time Accuracy by 55% with AI Control Tower



Value-Driven Benefits

55%

Improvement in lead time accuracy at the time when purchase order is created to improve downstream planning

25%

Improvement in lead time accuracy once order is in transit to allow for real-time risk management

$30M

Estimated annual economic benefit when scaled to all import orders

Introduction

A global retailer offers a wide assortment of products across 2,000 retail locations and is a major importer in North America with over 100,000 SKUs and 65 distribution centers. The company's mission is to deliver the best customer experience at the lowest prices in its retail category.

Challenges

The company operates a highly complex supply chain, with a vast volume of purchase orders, suppliers, and extensive network of distribution and retail sites. Keeping orders on time and avoiding stockouts is especially critical for business success in a market where the retailer's high-quality customer experience is a key differentiator.

Prior to engaging with C3 AI, the company faced challenges in accurately predicting lead time for inbound purchase orders and evaluating supplier performance. The existing approach relied on static and one-size-fits-all lead time estimates, which failed to account for supplier-specific uncertainties and the dynamic nature of the broader supply chain.

Solution

To address these challenges, the company decided to partner with C3 AI to deploy C3 AI Supply Network Risk (SNR), an end-to-end visibility and control tower AI application, to enable holistic visibility across its supply network, starting with orders coming from international suppliers. To deliver high inventory service level and avoid stockouts, the company required uncompromised visibility into inbound purchase orders and sourcing delays for downstream transportation, capacity, and labor planning.

Results

By deploying C3 AI SNR to improve lead time visibility and prediction accuracy for its import orders, the company increased lead time prediction accuracy by 55% and daily in-transit lead time prediction accuracy by 25%. When deployed to all import orders, the company expects to realize up to $30 million in annual economic benefit through reductions in inventory, transportation, and labor costs.

Challenges

With over 2,000 stores and one of the largest import volumes in the U.S., the retailer operates a globally distributed and highly complex supply chain. Coordinating supplier orders from international origins to distribution centers – and ultimately to stores - requires accurate lead times to manage replenishment, inventory, and capacity. However, given the scale of the network and variability in supplier performance and transportation logistics, even small inaccuracies can lead to stockouts, delays, and higher operational costs. Real-time visibility into inbound orders became essential to ensure fulfillment and maintain the company's customer experience promise.

Before partnering with C3 AI, the company relied on a 13-week rolling average-based approach to estimate lead times, aggregated by lane at the factory-distribution center level. The static approach failed to account for PO-specific factors such as SKU, supplier, and carrier. To compensate, the company used lead time buffers and relied on analysts to manually adjust inputs to maintain consistent inventory levels – a time-consuming and error-prone process. Additionally, the company struggled with poor data quality, lacked access to automatic identification systems data, and had limited tools and capabilities to accurately model lead predictions flexibly.

Approach

To tackle these challenges and gain holistic visibility across its supply network, the company partnered with C3 AI to deploy C3 AI SNR to monitor its import orders. The company began by unifying over four and a half years of internal and external data - with over 13 billion rows from 3 external sources and including purchase orders, transportation milestones, item and carrier details, facility data, and global shipping insights - into a common data model.

With this foundation, the team configured C3 AI SNR to provide real-time end-to-end visibility from purchase order creation to point of sale. In particular, the application delivered predictive insights at two key stages of the inbound journey for three major U.S. port clusters, which represented 60% of the company's import volume. At the time the purchase order is created, the application generated an initial prediction of estimated arrival time at the distribution center. Once in transit, predictions were updated daily, allowing for real-time risk management. With C3 AI SNR, the company improved lead time prediction accuracy by 55% and in-transit lead time prediction accuracy by 25%.

With C3 AI, the company built a more agile and resilient supply chain, capable of navigating volatility while consistently delivering high-quality customer experience. Through the application's control tower interface, the company can visualize delayed orders, investigate root causes, and act on real-time AI-driven recommendations to enhance responsiveness across the network. The success of the initial production deployment laid the foundation for additional AI use cases, including assortment optimization, demand forecasting, warehouse optimization, and inventory management.

About the Company

- $150+ billion annual revenue
- 2,000 stores worldwide
- 65+ distribution centers worldwide
- 500,000+ employees

Project Highlights

- 4.5 years of historical data integrated - including 13 billion rows from 3 external data sources
- 200+ timeseries analytics developed for machine learning models and application interface
- 480+ machine learning models developed, trained, and evaluated
- C3 AI Supply Network Risk application interface configured

Solution Architecture

C3 AI Supply Network Risk

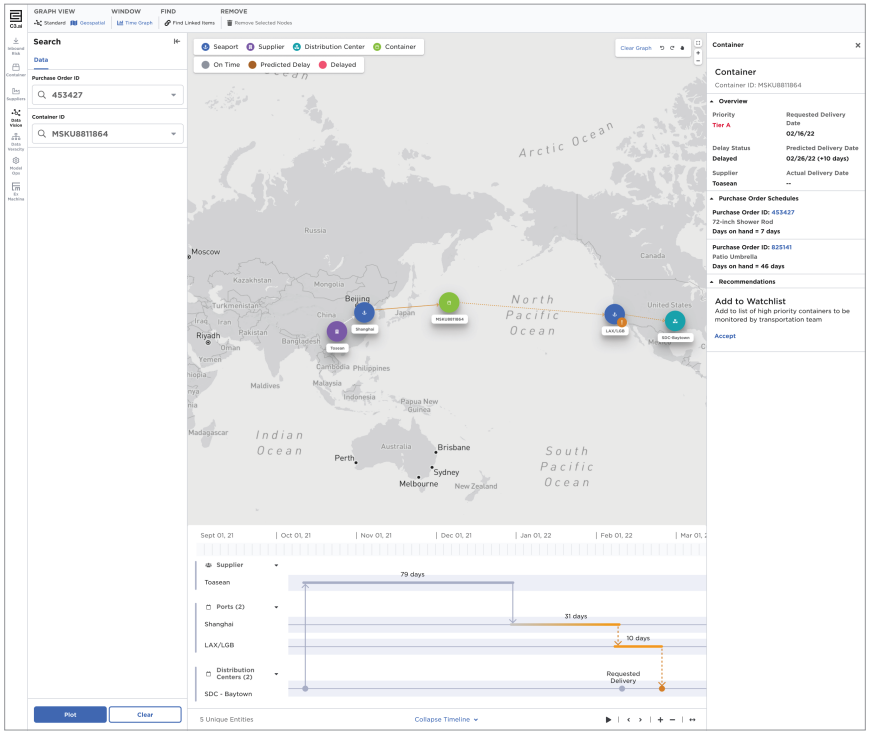
Enterprise Data

Internal Data

- Purchase Part Pricing
- Order Tracking
- Supplier Data
- Warehouse Locations
- Transportation
- Carrier Milestones

External Data

- AIS Data
- Weather
- Port Congestion



Proven Results in Initial Production Deployment

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