TRIDANT

Inventory Optimisation Application

Multi-echelon inventory planning, based on the theory of constraints

Growing complexity in the supply chain has made inventory planning even more challenging. Does your supply chain ensure the right amount of stock at the right place at the right time, all the way from manufacturer and supplier to distribution centres to stores? How do you address demand forecasting, variability in actual demand and emerging supply constraints, in real-time?



G Avoiding costly excess inventory is an operational imperative. Meeting demand changes is a business priority. **JJ** 1

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Inventory Optimisation Application - Multi-echelon inventory planning, based on the theory of constraints

Providing for complex interdependencies among stocking locations, Tridant Inventory Optimisation Application (IO App) enables businesses to efficiently synchronise inventory replenishment.

IO App applies the drum-buffer-rope concept throughout the supply chain, to streamline operations and keep inventory levels at the right level across various echelons in the network.

Built on the theory of constraints (TOC) methodology, IO App's multi-echelon inventory optimisation (MEIO) capability enables dynamic inventory buffers, combined with insights, to eliminate bottlenecks.

This capability empowers businesses to eliminate the bullwhip effect, effectively manage supply volatility, avoid stockouts, and minimise excess inventory at every location in the supply chain. See Figure 1.



Figure 1: Synchronised supply orders and dynamic inventory buffers address interdependencies between stocking locations across the supply chain, for inventory optimisation

Multi-echelon inventory optimisation is a supply

chain planning approach to optimise inventory across the entire supply chain ecosystem, providing for interdependencies among stocking locations. Modelling multiple stages allows other types of inventory, including cycle stock and prebuild along with safety stock due to timephased demands, to match demand.

Single-echelon inventory optimisation only addresses the inventory stocked at a single location or distribution echelon, and does not streamline operations or rightsize inventory levels across the network.

MEIO helps manufacturers and multi-step distributors to ensure correct levels of all inventory types across various echelons in the extended supply chain.

Tridant Inventory Optimisation Application features:

Data Management:



Replenishment Planning: DC to Stores

Update Reliable Replenishment Time

Categorisation of SKUs

Dynamic Priority-based Replenishment Calculation Plan

Store Performance

Supply Planning: DC Inventory Planning & Supplier Order Management



Buffer

In the Theory of Constraints,

every system at least one constraint that limits the system from getting more of whatever it strives for and consequently determines the output of the system (Noreen et al., 1995). A constraint is anything in an organization that hampers the organization's progress or increased throughput.

In supply chain for example, the weak link or constraint will limit the efficiency of the entire supply chain network.

The drum-buffer-rope logic, of the Theory of Constraints, is a planning and scheduling solution that targets protection against variability at the constraint, driving continuous improvement of supply chain processes.

First applied at Ford Motor Co., the fundamental assumption of drum-bufferrope logic is that within any plant and production process, there is one or a limited number of scarce resources which control the overall output of that plant. Once identified, this is the 'drum' which synchronises the speed for all other resources including supply nodes such as stores and distributors.

Our Inventory Optimisation Application offers:

- Easy-to-use interface empower supply chain practitioners and business users to quickly adopt, update data fast, engage in real-time analysis, model scenarios and make confident decisions
- Functionality to view and monitor performance across multiple segments, products, stores and distribution centres real-time ability to communicate results and make proactive decisions
- Planning by exception modelling avoid detailed SKU level entry
- ABC, FSN and XYZ analysis functionality enhance on-time delivery with flexible service levels and product categorisations
- Streamlined daily replenishment of inventory based on priority ratios, lead time, and service levels
- Effective promotion planning tie into integrated business plans and drive inventory buffers
- Automated conversion of order pack size for example, convert pieces to boxes, from store to distribution centre to supplier
- Vendor minimum order quantity thresholds built-in workflow enables easy application
- Built-in workflows maintain integrity of supply chain processes with workflows
- Fleet utilisation indicators support freight optimisation from supplier all the way to stores
- Conditional formatting on thresholds drives easy analysis
- Seamless connectivity with other planning applications integrate planning across finance, marketing, human resources, and other functional areas
- Automated integration to source systems enable your business to serve customers better, drive more revenue through new avenues, and gain a competitive edge.



Figure 2: Avoid the amplification of demand variation upstream in the supply chain, by synchronizing the supply chain via the drum-buffer-rope process.

The **bullwhip effect** occurs when changes in consumer demand causes companies in a supply chain to order more goods to meet the new demand, causing increasing swings in inventory in response to shifts in customer demand progressively up the supply chain, causing inefficiencies. A distribution channel phenomenon, the bullwhip effect usually flows upstream in the supply chain, starting with the retailer, wholesaler, distributor, manufacturer and then the raw materials supplier.

Our Inventory Optimisation Application enables:

₽, .i. ,₽ ;⊕ ₽`!`₽	Efficiency – automate mundane tasks to produce an integrated inventory management plan, empowering supply chain professionals to invest their time in high-value activities
	Efficacy – minimise instances of over- or under-supply impacting working capital, lost revenue opportunity and compliance requirements
	Collaboration – leverage a continuous and collaborative approach for connected planning across multiple business functions
	Increased Revenue – maintain optimal in-store stock levels to avoid stock-outs, and capitalise on emerging market opportunities
	Decreased Costs – reduce working capital, warehouse costs, distribution costs, and commercial arrangements with suppliers
	Reduced Risk – maintain external and internal compliance levels or avoid penalties.

Get your supply allocations right

At Tridant, we understand that inventory optimisation is no small task. Supporting manufacturing organisations across engineering, consumer packaged goods, fast-moving consumer goods, automobiles and accessories, pharmaceuticals, logistics and transportation, Tridant supply chain solutions improve planning accuracy, enhance productivity, enable faster response times and reduce cost of operations across the supply chain.

Across supply, demand, sales, operations and logistics planning, Tridant analyticsenabled solutions drive efficiencies with automated and streamlined processes for accurate forecasting and planning, and critically, link supply chain drivers to other functional areas such as finance, marketing and workforce planning.

#ProblemSolved



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