Evolving from Distribution Requirements Planning to Collaborative Supply Chain Planning

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PeopleSoft.

Introduction

Distribution and logistics managers are faced with managing increasingly complex supply chain networks, which include multiple suppliers, manufacturing sources, warehouses, and transportation providers, not to mention a multitude of product variations. Coordination among these disparate players is key to your success. It is no longer acceptable to create plans for only one enterprise.

Traditional distribution requirements planning (DRP) tools are not up to today's planning challenge. DRP creates distribution plans without considering the costs and constraints that exist within logistics networks. Furthermore, DRP isn't linked to the plans created by manufacturers, suppliers, or customers.

This white paper introduces the concept of collaborative supply chain planning as the logical evolution to replace traditional DRP and expand the planning process to include manufacturers, suppliers, and customers. The result is a plan that considers constraints such as supplier, production, storage, and transportation capacities. It is a plan that uses all resources and takes an end-to-end view of the supply chain.

Why Is Traditional DRP Not Enough?

Traditional DRP is no longer a viable option for distributors and manufacturers today. Some of the reasons include unconstrained planning, fixed safety stock, fixed deployment networks, poor response to changes, no message prioritization, limited visibility outside the enterprise, and zero collaboration.

Unconstrained Planning

DRP doesn't consider the real constraints that exist within distribution networks. These constraints include limited transportation capacity and schedules, limited storage space, and the ability of manufacturers and suppliers to satisfy requirements. DRP simply generates a plan based on forecasted customer demand and safety stock policies and assumes the actions required to execute the plan will be taken.

Fixed Safety Stock

DRP assumes safety stock levels are a fixed quantity. There is no ability to vary safety stock policies through time to maintain a constant service level. Sometimes there isn't enough inventory. Other times there is excess. It is a no-win situation.

Fixed Deployment Network

DRP instructs products to be deployed based on a predefined set of sourcing options. Products move across fixed lanes without considering alternative sourcing possibilities (such as product availability in another warehouse), lane capacities (such as truck unavailability), or the ability to optimize the movement of products across lanes (such as pulling in deployments to fill a truck).

Inability to React to Changes

DRP systems typically run in overnight or weekend batch jobs. However, customers can change orders minute-by-minute, and the availability of products can change at a moment's notice. DRP can't possibly react to these changes, which leaves planners having to guess what to do next. Even if the DRP program could be run in real time, the plans it generates wouldn't recommend optimal actions to take or prioritize those actions.

## Inability to Prioritize Messages

DRP systems may be able to notify planners to take a variety of actions, but they cannot prioritize those actions. Important tasks go unnoticed while irrelevant tasks are performed with no measurable effect on the business.

No Visibility Outside the Enterprise

DRP systems plan within the enterprise. The best installations can plan an entire distribution network, but they don't include suppliers, manufacturers, or customers in the process.

Zero Collaboration

DRP systems aren't enabled for collaboration. Planners can't easily share information between sites or with customers and suppliers.
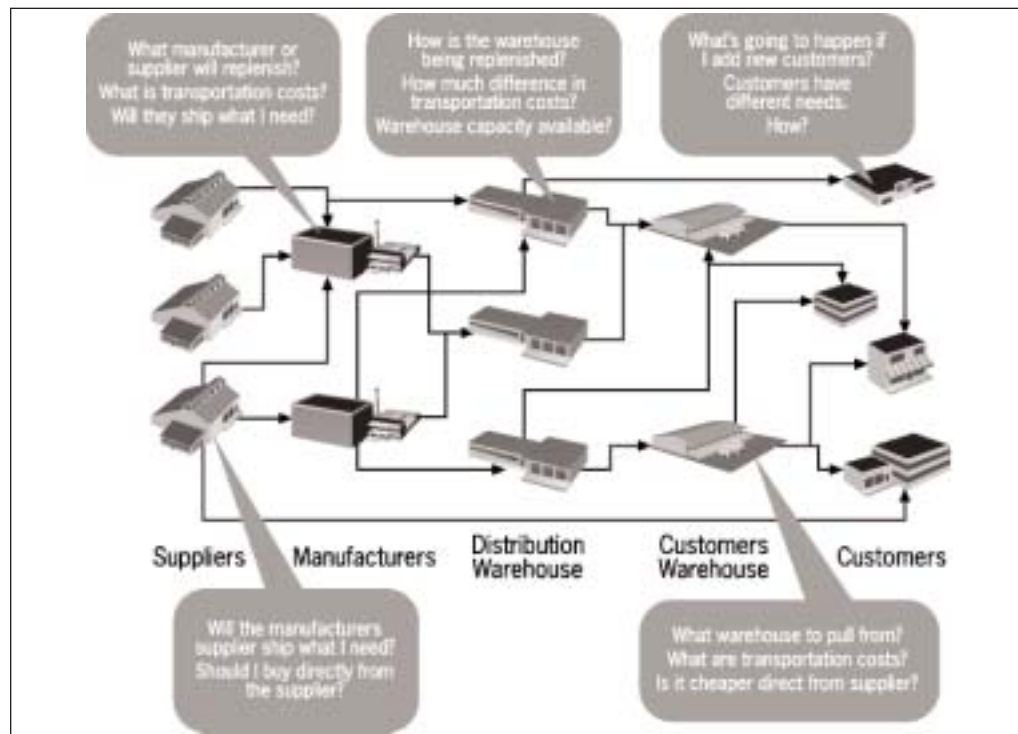
Traditional DRP Requires Many Manual Processes

Traditional DRP requires the performance of many manual processes to meet customer demand. This proliferation of manual processes creates an endless iteration of longer cycle times, higher distribution costs, and reduced profit margins. Customer service and customer satisfaction suffer, which can further erode profits.

What if there was better solution? What if there was a solution that could incorporate all areas of the supply chain, and in the process, lower your costs and improve the bottom line? Such a solution would provide:

- A plan that considers all the necessary costs and constraints.
- A system that dynamically creates variable safety stock allocations in the network.
- A process that optimizes the distribution network.
- A system that produces actions and alerts that are meaningful, prioritized, and related to all levels of the plan.
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Consider All Costs and Constraints

The reality is that every distribution network has constraints and each action taken within the network has a cost. Systems that consider constraints can generate feasible plans. Traditional DRP doesn't recognize constraints. Collaborative supply chain planning not only respects constraints, but also understands cost and profit objectives. Meeting objectives without violating constraints allows the creation of an optimal distribution plan that is much better than traditional DRP.

Storage, handling,and transportation are among the constraints considered by collaborative supply chain planning systems. The systems also consider such factors as transportation costs and opportunity costs.

Storage constraints. Is there room in the warehouse to store shipped product? Are there alternative locations where the product can be stored?

Handling constraints. Are the appropriate resources available to unload, move, put away, and pick the product at the source and destination locations?

Transportation constraints. Is there sufficient capacity to ship the product in the preferred mode of transportation? What about alternative modes?

Transportation costs. What is the cost of rail versus truck versus air shipment relative to profit objectives? Are full loads being taken advantage of? Can future shipments be pulled to maximize transportation utilization?

Opportunity cost of production versus trans-shipment or substitution. What is the cost trade-off to produce the product versus sourcing it from an alternative location or substituting it with an alternative product? Which scenario best meets company objectives?

Collaborative supply chain planning systems give your planners the flexibility to rapidly consider distribution alternatives. The systems respect relevant constraints and optimize final plans for cost and/or profit objectives. The results are improved service levels and lower costs.

Dynamic Safety Stock Networks

For years, DRP systems have considered safety stock levels a fixed quantity. However, collaborative supply chain planning considers safety stock a dynamic variable quantity that should be changed through time to deliver a constant service level to customers. If the goal is to maintain a 98 percent service level, safety stock requirements will fluctuate based on overall demand and the expected variation in demand.

Traditional DRP systems also treat safety stock as the property of a given location or warehouse. Collaborative supply chain planning provides for established safety stock policies across a network of warehouses to reduce overall inventory levels. You can compare the carrying costs of inventory to the additional trans-shipment costs associated with establishing a safety stock network.

Optimized Deployments

Collaborative supply chain planning optimizes deployment plans based on cost and profit objectives. If the goal is to minimize transportation costs, deployments will be pulled in to fully load the vehicles. If the goal is to minimize inventory investment, deployments will be delayed until the last possible period, and trucks can move partially loaded. The planner can review and adjust optimal plans with full knowledge of the cost and profit implications, making changes and updating plans in real time without waiting for a batch recalculation.

Collaborative supply chain planning also recognizes that the deployment network is dynamic. Sourcing relationships can vary based on customer priorities or unforeseen supply chain constraints. Planners need to see recommendations and understand the cost and profit implications of making "special" decisions. For example, the planner can accept a recommendation to substitute an upgraded product for a high-priority customer, or trans-ship inventory to circumvent a shortage caused by a damaged pallet of product at one warehouse.

Meaningful, Prioritized Alerts

Collaborative supply chain planning provides meaningful, prioritized alerts that let planners solve the most critical problems first. "Multilevel pegging" provides instant visibility to the impact of problems both upstream and downstream. Planners can drill down directly from alert messages to get to the cause of the problem. They have rapid access to whatever information is necessary to solve problems.

With complex supply chains, there is usually more than one way to solve a problem. Alert messages generated to multiple planners are retracted as soon as the problem is solved. This minimizes thrashing in the plan and frees up planners to do meaningful work.

Complete Visibility and Collaboration Across the Supply Chain

Collaborative supply chain planning brings your suppliers, manufacturers, and customers into the distribution planning process. You can model partners outside the enterprise with just the level of detail required to make them an active participant in the planning process. Profiles of trust control access to information based on the level of the partnership in place.

Key customers can view plans, change orders, and forecasts, while you can limit suppliers to visibility of inventory on hand at selected warehouses with no update capabilities. Real-time alerts deliver action messages to internal and external parties. Web clients provide access to information via an internet browser. Extended business processes linked directly to partners' systems are supported using XML or EDI standards.

Conclusion

DRP systems are outdated and ineffective when you use them to plan and schedule distribution of products. Traditional DRP systems cannot plan around constraints or optimize based on cost and profit objectives. They are not collaborative and cannot integrate the entire supply chain. As a result, they put your company at a competitive disadvantage because you cannot improve service and reduce costs.

PeopleSoft delivers collaborative supply chain planning with PeopleSoft Production and Distribution Planning, a module within the PeopleSoft Advanced Planning suite. Production and Distribution Planning can replace the DRP algorithms in PeopleSoft World, PeopleSoft EnterpriseOne, and PeopleSoft Enterprise with a constraint-based optimization tool enabled for collaboration. Production and Distribution Planning works in conjunction with other modules of the Advanced Planning suite, including Demand Planning, Demand Consensus, Order Promising, and Production Scheduling to deliver a comprehensive package for supply chain planning. These solutions can help your organization increase revenues, lower operating costs, improve asset utilization, and improve relationships with customers and suppliers.

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