
Separating Demand and Supply Planning

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helping you simplify supply chain planning



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Separating Demand and Supply Planning

For retailers embarking on an implementation of time-phased planning at the DC level, the decision on where and how to forecast is critical. The conventional wisdom born out of MRP tells us to create a separate forecast for each item at each stocking location. In retail, the numbers of item/locations number in the tens (or even hundreds) of thousands at DC level alone. The impracticality of the conventional wisdom requires us to redefine how we think about demand.

Key Concept: Separating Demand from Supply

This paper outlines an important concept that will help you to design and implement demand and supply planning processes for the retail supply chain:

Demand Planning and Supply Planning are discrete processes with different purposes.

The purpose of demand planning is to predict the behaviour of your customers, which is never directly within your control. The purpose of supply planning is to take the demand plan as given and schedule product to arrive in advance of when the demand is likely to hit – this is something that you can control.

In a nutshell, you do your best to predict what customers want and plan supply to make sure they get it. When you're thinking about demand, you should never consider supply.

Why not?

Q: If you opened a new distribution centre, how would that impact what your customers want and when they want it?

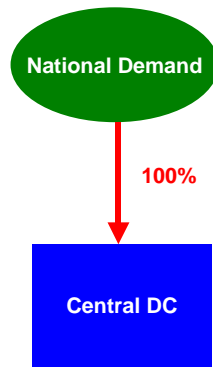
A: It won't!

Demand is demand – it is not directly within your scope of control, so it is not subject to constraints and must be accepted as given.

Simple. Yet the implications of this concept are often not fully understood when decisions on process are made.

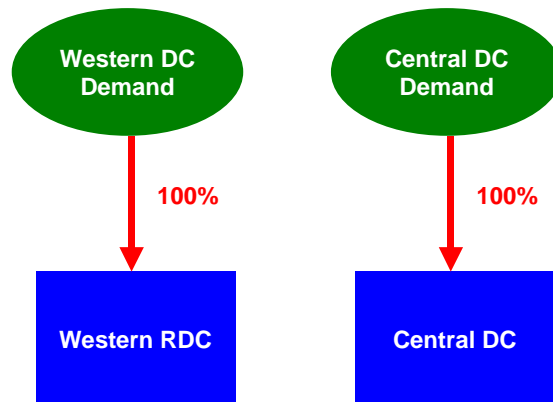
Consider the simple example of a retailer with marketing programs that are, by and large, national in scope – many large retailers have national promotions and a national assortment strategy to ensure consistency. As you would expect, the marketing department produces a national forecast as a result. This retailer also happens to have a central distribution centre run by their procurement department. Life is sweet and easy. For every product, the central DC satisfies all demand:

Separating Demand and Supply Planning



Over time, the business steadily grows. The Central DC is bursting at the seams and won't be able to handle all of the demand for much longer. The decision is made by the procurement department to open a regional distribution centre in the west to reduce the pressure on the Central DC. Life is no longer sweet and easy. Marketing is providing a national demand forecast, but now replenishment needs to be planned for two DCs for certain SKUs. What to do?

Conventional wisdom says that, for the SKUs that are to be carried in two distribution centres, the marketing department should create separate forecasts for each DC, as depicted below:



On the surface, it seems to make sense. The needs of the procurement folks have been met and they have the information they need to replenish two facilities. But there are some problems:

Increased workload for the marketing department

For SKUs that are stocked in more than one place, multiple forecasts need to be created and managed. Even though promotions are national, two (or more) numbers need to be provided. This problem becomes increasingly worse as the business continues to grow and more distribution locations are required to handle the volume.

Separating Demand and Supply Planning

Instability in the forecasting process

A good forecasting process is one that helps you to learn about demand. It only changes as customer sentiment changes. By directly linking demand to supply (i.e. having to create forecasts for each building) instead of keeping the decisions discrete, factors that have no impact on demand can throw the forecasting process into serious disarray. Every time a stocking decision changes, demand history and forecasts need to be restated and the learning process needs to start all over again.

Inflexible supply options

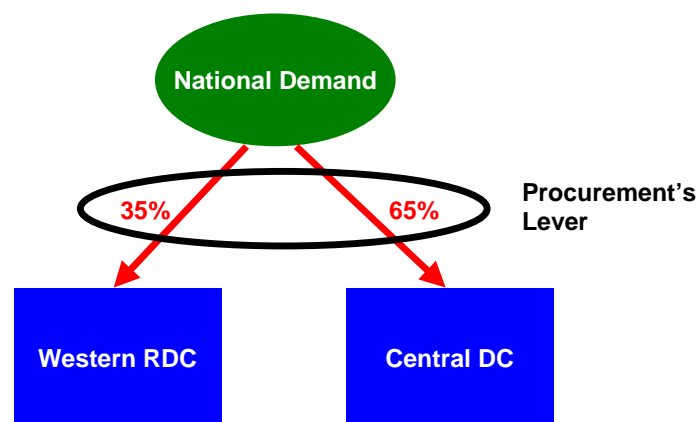
Because demand and supply are not separate, the folks in procurement can no longer efficiently make decisions. Deciding to stock a particular SKU in a different DC is something that marketing shouldn't care much about. But because this decision impacts the forecast, marketing involvement is required in a decision that should be left in the hands of procurement. Even worse, deciding to supply a cluster of stores from a different DC could impact the forecasting process for every SKU in the assortment!

It's amazing how events that have no impact on demand (what your customers will want and when) can throw the demand planning process for such a loop.

So what's the alternative? Marketing still plans demand creation activities (in this case promotions and assortment changes) on a national scale. And procurement still replenishes individual buildings.

Flexibly Connecting Demand and Supply Planning

What the procurement area needs is a "lever" that allows them to take the national forecast generated by marketing and to map it where they choose. This lever is a simple allocation percentage for each SKU/DC, as illustrated below:



Marketing continues to forecast nationally, avoiding the pitfalls mentioned earlier. The integrity of the demand planning process is not sacrificed to manage supply.

Separating Demand and Supply Planning

Everything downstream from there is controlled by procurement through allocation of the forecast.

Q: How are these allocation percentages derived?

A: It can be as complex or as simple as required for your business, but the following 3-step process provides the most flexibility for the least effort.

Step 1: Determine demand history for each SKU by store

If the direct customers of the DCs described in the previous example were retail stores, then this step would involve determining the total historical demand for each store/SKU over the same time horizon. For example, on a regular basis, rolling demand history for the last 12 months would be calculated and stored for each store/SKU.

Step 2: Assign demand history to the DCs based on current store/DC relationships by SKU

From Step 1, you have an up-to-date total demand for each store/SKU. If procurement decides to supply a store from another DC (either in total or only for that specific SKU), then the demand associated with that store/SKU would be associated with the new DC.

Step 3: Sum by DC and calculate allocation percentages by SKU

After demand has been allocated in Step 2, you simply sum by DC and calculate what percentage that represents of the national total. These percentages by DC would then be applied to the national demand forecast going forward.

Let's use a concrete example to illustrate the process. Suppose that the marketing department produces the following forecast for SKU #123-4567:

12-34567	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Etc.
National	60	44	50	58	48	52	36	59	38	...

Further suppose you have 3 stores. Their aggregate historical demand and sourcing relationships for SKU #123-4567 appear in the table below:

Store Location	Rolling 12 Months Demand	Supplier
East Coast	550 units	Central DC
Central	1,150 units	Central DC
West Coast	800 units	Central DC

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Obviously, this is the “sweet and easy” example. In this case the Central DC would get 100% of the national demand forecast provided by marketing.

12-34567	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Etc.
National	60	44	50	58	48	52	36	59	38	...

100%

12-34567	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Etc.
Central DC	60	44	50	58	48	52	36	59	38	...

Now suppose that procurement has opened a western regional DC, which will serve the West Coast store for this particular SKU:

Store Location	Rolling 12 Months Demand	Supplier
East Coast	550 units	Central DC
Central	1150 units	Central DC
West Coast	800 units	Western RDC

As you can see, the historical demand for each store remains the same. The only thing different is that the West Coast store’s supplier has changed.

The next step is to sum up the demand by DC with the new sourcing relationships. Of the total national demand history of 2500 units, 1700 units are now associated with the Central DC (from the East Coast and Central stores) and the remaining 800 units with the Western RDC.

When you calculate the allocation percentages from history, you can see that the Central DC now gets 68% ($1700 \div 2500$) of the total demand and the Western RDC gets the remaining 32% ($800 \div 2500$).

These percentages can now be applied to the marketing forecast to allocate demand to each DC:

12-34567	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Etc.
National	60	44	50	58	48	52	36	59	38	...

68%

12-34567	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Etc.
Central DC	41	30	34	39	33	35	24	40	26	...
Western RDC	19	14	16	19	15	17	12	19	12	...

32%

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Notice that the forecast requirement from marketing hasn't changed. Procurement can independently make supply decisions without affecting marketing processes.

What it Means for You

For starters, your decisions when developing your demand planning process should be customer focused. Where you choose to stock product has nothing to do with true demand.

Our example illustrated a national demand planning process because the main factors that influenced demand were national. And that's really the only relevant question to ask yourself when trying to figure out your demand planning process. How many controllable factors are there that influence customer behaviour in my market? This may indicate how you should forecast:

- Do we offer different product assortments to different demographics?
- Do we offer different store formats that stock different products and attract different customers?
- Do we have different promotional strategies for different regions?

The answers to these questions should stand the test of time. This is how you build a stable demand planning process from which you can continually learn.

A Brief Caveat – Store Level Planning

The focus of this paper was to demonstrate proper process for a distribution level demand and supply planning process, where the retail store is the ultimate customer for planning purposes. We all know that the ultimate customer is really the consumer. In a consumer integrated supply chain that includes store level time-phased planning, the marketing department would interact with the stores on promotions and programs and the stores would provide actionable output (in the form of replenishment schedules) to procurement that they would use directly to schedule supply. This is the new direction for retail and it represents the ultimate in demand and supply separation.

Summary

Demand planning sets the stage for all supply chain activities. The demand planning process should be well thought out and should provide the best possible insight into customer sentiment.

Separating Demand and Supply Planning

Supply decisions are always independent and secondary, taking the demand plan as given. Ideally, supply decisions should be “behind the scenes” and totally invisible to those who live on the demand side of the equation.

By keeping demand and supply separate, you will ensure that your supply chain planning processes are flexible, efficient and can stand the test of time. This leads directly to worker satisfaction, customer satisfaction and your overall competitiveness – by any definition of the word.[†]

[†] About Demand Clarity: Demand Clarity Inc. is a focused consulting firm whose mandate is to simplify supply chain planning. For more information on this topic or others, please phone us toll free at 1-877-877-9769, send an email to info@demandclarity.com, or visit us on the web at www.demandclarity.com.