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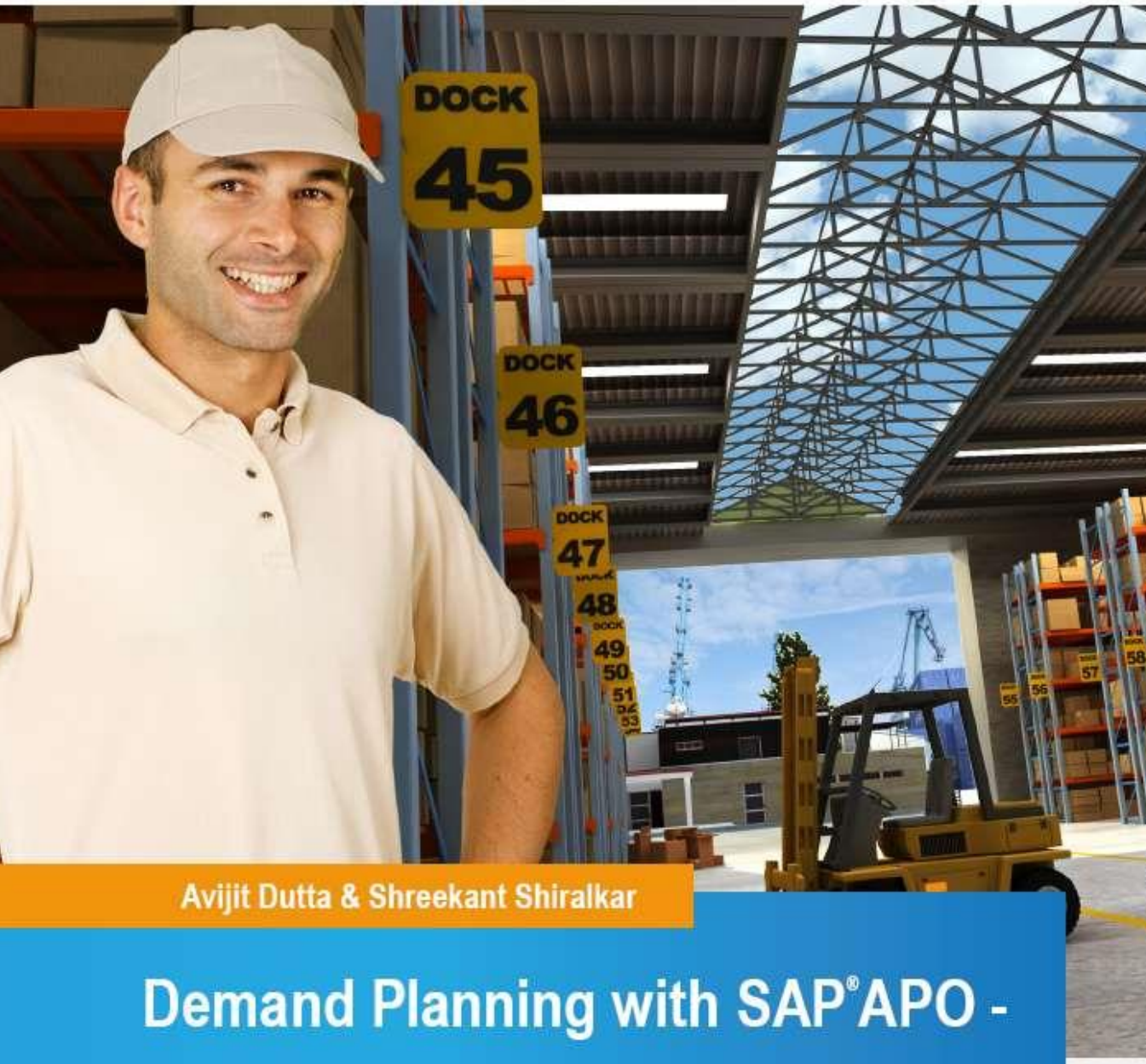

Avijit Dutta & Shreekant Shiralkar

Demand Planning with SAP® APO - Execution

- Step-by-Step Explanations with Easy to Follow Instructions
- Combination of Theory, Business Relevance and ‚How to' Approach
- APO DP Execution Explained using a Business Scenario
- Centralized Process Flow Diagram to Illustrate Integration

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2 Our business scenario

Demand planning execution is best understood through a business example. We will describe a business scenario, a demand planning scenario, and its challenges. Then, we will explain the demand planning solution with APO DP.

We will reference the business scenario mentioned in Chapter 3 through Chapter 7. This chapter will provide a central reference point as we demonstrate APO DP execution across the following chapters.

We explained the business scenario in detail in Chapter 3 of the book *Demand Planning with SAP APO — Concepts and Design*.

Nevertheless, we will once again touch upon the key aspects of the business scenario and explain the demand planning scenario from an APO DP execution standpoint for our company, *DM Consumer Appliances, Inc.*

The following chapters of this book explain demand planning execution for the business scenario.

2.1 DM Consumer Appliances, Inc. business scenario

DM Consumer Appliances, Inc. is a consumer products company and has sold medium size high definition television [HDTV] sets for the last eight years, with its head office at Atlanta, GA in the United States of America. DM Consumer Appliances, Inc. has a supply chain network with following entities:

- *Atlanta Manufacturing Plant*
- *Frankfort Distribution Center*
- *Columbus Retail Store*
- *Philadelphia Retail Store*

DM Consumer Appliances, Inc. sells its products through two distribution channels as follows:

Direct Sales:

- Direct sales to consumers through its *Columbus Retail Store,* or through its *Philadelphia Retail Store*
- Direct sales to consumers over web

Indirect Sales:

- Sales through the *Frankfort Distribution Center* to its commercial customers like wholesalers or retailers
- Sales through the *Atlanta Manufacturing Plant* to its commercial customers located in the vicinity of the manufacturing plant

The flow of demand from end customers, commercial customers, and their corresponding dependent demand is illustrated in the Figure 2.1.

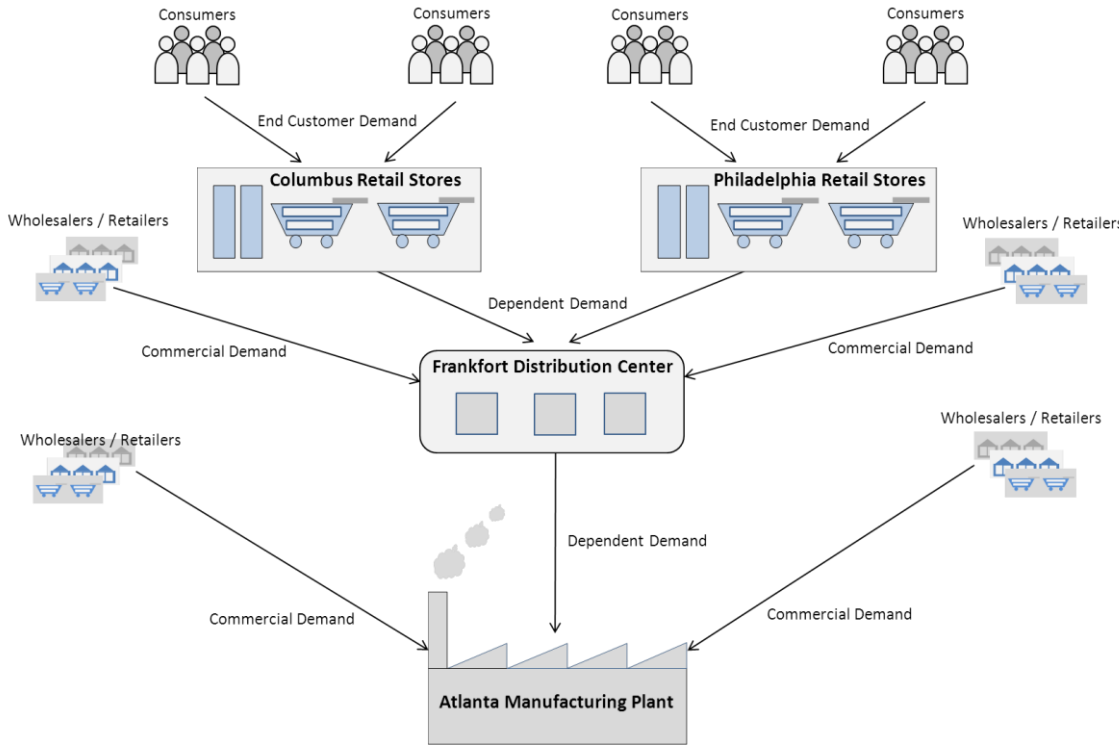

Figure 2.1: Demand flow in supply chain network of DM Consumer Appliances, Inc.

DM Consumer Appliances, Inc. manufactures, distributes, and sells LCD (Liquid Crystal Display) high definition television [HDTV] ranging in size from 32-40 inches in two different resolutions, e.g. 720 pixels (abbreviated as 720p) and 1080 pixels (abbreviated as 1080p). The target market segment of DM Consumer Appliances, Inc. is household customers and sells its products using the brand name DM. DM Consumer Appliances, Inc. sells the following products that belong to the product group *LCD TVs*:

- *32" DM LCD 720p HDTV*
- *32" DM LCD 1080p HDTV*
- *39" DM LCD 1080p HDTV*

DM Consumer Appliances, Inc. launches a 40 inch LED (Light Emitting Diode) technology-based HDTV with a resolution of 1080 pixels under the same brand name DM for a new product group *LED TVs* as follows: *40" DM LED 1080p HDTV*

The product *40" DM LED 1080p HDTV* has a lifecycle of two years. DM Consumer Appliances, Inc. promotes the new product by offering discounts to its customer for the initial six months of the product launch. During the promotional period, the new product *40" DM LED 1080p HDTV* affects the sales of the product *39" DM LCD 1080p HDTV.*

DM Consumer Appliances, Inc. uses SAP ERP (Enterprise Resource Planning) for supply chain execution and forms the main logistics system. The demand plan for all of the *LCD TVs* and *LED TVs* individual products at the *Atlanta Manufacturing Plant* get transferred to ERP for production planning. The network demand plan for all of the individual products for *LCD TVs* and *LED TVs* at non-manufacturing plants gets released to the supply planning system.

We describe the demand planning scenario at DM Consumer Appliances, Inc. in the next section.

2.2 Demand planning scenario

DM Consumer Appliances, Inc. foresees the demand planning scenarios as explained below.

DM Consumer Appliances, Inc. maintains sales history data in flat files for a combination of different planning entities for a period of two years and primarily at product group level. DM Consumer Appliances, Inc. likes to keep the option of changing/ cleansing/ overwriting the data at the intermediate stages of data loading. DM Consumer Appliances, Inc. decides on the best practice available for dataflow that provides the option of modifying data at multiple stages and provides the option of advanced reporting at aggregate level.

DM Consumer Appliances, Inc. carries out demand planning of *LCD TVs* based on its available sales history at product group level. Sales history reflects some element of randomness without any strong traces of trend or seasonal behavior. DM Consumer Appliances, Inc. studies the sales history at the product group level diligently and chooses the appropriate forecasting methods such that it does not give forecast inaccuracies. Accurate forecasts help DM Consumer Appliances, Inc. maintain a balance between inventory carrying costs and loss of sales cost. Hence, forecast accuracy in demand planning for DM Consumer Appliances, Inc. is of paramount importance.

In order to maintain accuracy, forecasting is planned at the product group level. Forecast accuracies are measured based on both minimal *bias* and minimal *standard deviation* yardsticks. Measurement of these two aspects reflects an understanding of forecast behavior from two different perspective, i.e., *bias* and *deviation*. DM Consumer Appliances, Inc. likes to be proactively alerted of any forecast inaccuracies beyond the tolerance limit so that it can be acted on immediately.

DM Consumer Appliances, Inc. carries out forecasting monthly, because it is easy to take stock of the aggregate forecast at a relatively larger period level, as this helps in arriving at an accurate forecast. Furthermore, it is easy to identify and control seasonal behavior of forecasts on a monthly basis. Monthly forecasts are transferred to the production execution system for operational planning.

DM Consumer Appliances, Inc. wants to forecast for the medium term and also wants to reflect the latest history in its forecasts. Therefore, it selects a two years history only, as anything more than that period may not reflect reality in a fast changing technology product like a TV. Similarly, DM Consumer Appliances, Inc. does not want to forecast for more than two years as a longer period forecast may be impractical, given the pace at which the electronics world of TV changes. Also, it helps to maintain a predictable inventory level as DM Consumer Appliances, Inc. does not want to compromise on delivery schedules and inventory carrying costs. Nevertheless, forecast is run every week so that the demand remains updated every week.

DM Consumer Appliances, Inc. likes to make use of all possible methods to come up with a demand plan that can reflect near reality. Therefore, DM Consumer Appliances, Inc. wants to start with quantitative forecasting approaches and then makes use of qualitative approaches to the finally disaggregated individual products during consensus planning. The reason for quantitative approach is: DM Consumer Appliances, Inc. is in the business of a commodity product *LCD TVs* for more than eight years in the field of manufacturing, distribution, and retail and has a very good understanding of the product behavior, evolution, and maintains a strong and reliable repository of sales history. DM Consumer Appliances, Inc. wants to make good use of this experience and leverage that towards predictable forecasting using proven statistical methods.

Once forecasting is done for product group *LCD TVs*, the forecast is disaggregated to the individual *LCD TVs* products.

Next, DM Consumer Appliances, Inc. introduces a new product *40" DM LED 1080p HDTV* which does not have any history. However, DM Consumer Appliances, Inc. does not want to copy the history from its equivalent products, instead it carries out lifecycle planning for the newly launched product. DM Consumer Appliances, Inc. refers to the history of *39" DM LCD 1080p HDTV*, i.e., one of the similar products in the *LCD TVs* product group to carry out forecasting for the new LED TV for its maturity phase. Next, lifecycle planning ensures that there is a gradual increase in demand during the initial two phases, i.e., launch and growth for the new LED TV and demand decreases during the decline phase. All the phenomenon of different product lifecycle phases are reflected in the forecasting of the newly launched product *40" DM LED 1080p HDTV*.

DM Consumer Appliances, Inc. carries out promotions for its newly launched LED TV *40" DM LED 1080p HDTV* for the initial six months by offering a 25% store discount. The promotion in turn impacts the sales of the analogous LCD TV, i.e., *39" DM LCD 1080p HDTV*. While the promotion enhances the sales of the newly launched LED TV, it demotes the sale of the analogous LCD TV only for the initial six months. However, DM Consumer Appliances, Inc. carries out a cost benefit analysis to figure out that the benefit, of the promotion far exceeds the loss of the demotion.

Next, for all the individual products belonging to both the product groups, i.e., *LCD TVs* and *LED TVs*, DM Consumer Appliances, Inc. takes into account inputs and buy-in from various other departments and stakeholders and accordingly corrects the forecast and comes up with a consensus demand plan. The inputs and buy-in that DM Consumer Appliances, Inc. gets from various departments and stakeholders is based on the their sales experience, expertise, etc. and this group consensus reflects the qualitative approach of DM Consumer Appliances, Inc. towards consensus demand planning. The consensus demand plan is therefore the summation of the statistical forecast, promotions, and manual corrections for all of the individual products that are part of the *LCD TVs,* as well as *LED TVs*. DM Consumer Appliances, Inc. also introduces the alerts management approach that proactively alerts the user in the event of consensus demand plan deviating from the corrected statistical forecast beyond a tolerance level.

Once the consensus plan is ready for all of the individual products for *LCD TVs* and *LED TVs*, DM Consumer Appliances, Inc. decides to release the network demand plan for all individual products accumulated at non-manufacturing locations (*Frankfort Distribution Center*, *Columbus Retail Store* and *Philadelphia Retail Store*) to the supply planning system for supply planning. Once the network demand plan has been released to the supply planning system, DM Consumer Appliances, Inc. decides to transfer the demand plan for all individual products accumulated at the *Atlanta Manufacturing Plant* to the ERP system for production planning.

DM Consumer Appliances, Inc. plans to release the demand plan to supply planners prior to the transfer of the demand plan to the production planner. This is because supply planning at non-manufacturing locations generate an additional dependent demand plan for production which gets combined with the independent demand plan for production. To meet the total demand at the *Atlanta Manufacturing Plant*, consolidated production planning is carried out by production planners. Production planners at DM Consumer Appliances, Inc. do not proceed with production planning unless both the dependent demand plan, as well as the independent demand plan is available to them. For the dependent demand plan to become available for production planning at *Atlanta Manufacturing Plant*, supply planning at the non-manufacturing location needs to be carried out. That is the reason why independent demand planning at non-manufacturing locations is carried out prior to independent demand planning at *Atlanta Manufacturing Plant*.

DM Consumer Appliances, Inc. assumes fewer complexities in production processes and assumes fairly stable and uninterrupted capacity. Therefore, production planning is quite simple in the ERP system. DM Consumer Appliances, Inc. assumes that the supply chain network will get more and more complicated in the near future and therefore, would like to make use of a supply planning system that is tightly integrated with demand planning.

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