THE DEMAND PLANNER'S SPECIAL ROLE – DEVELOPMENT PROGRAM

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Abstract: The role and significance of demand planning are increasing in the operation of supply chain, in harmony of the digitalization of production and distribution. Within the corporate operation, this function collects widespread information on both the external and internal processes, interprets them and makes consensus-related decisions about the structure and scale of sales (demand) to be expected in the short term. In this regard, its performance is crucial, primarily, in relation to stocks, the use of capacities, cash flow as well as profitability. Consequently, it is of paramount importance to harmonize the organization surrounding the demand planner and the processes, which is the major goal of the described development program.
Keywords: *supply chain, forecast, demand planner, forecasting development*

1. INTRODUCTION

Among the supply chain actors, one of the most mysterious functions is the one played by the demand planner. Despite the fact that demand expectations specified by the demand planner are key in terms of stocks and capacity reservations (thus, also in terms of efficiency of corporate operation), the importance and prestige of this role are disproportionate to the responsibility and to the probable consequences. According to skeptical persons (whose way of thinking is moderate), the prestige-related issue generally affects the positions of supply chain.

What is the reason why the evaluation of the role of demand planning (or supply chain management) has become so important and crucial? Key changes made in the industry (Industry 4.0) as well as the spread of the new trade structures (omni-channel) have entailed challenges of faster and more precise performances in supply chain management.

In many cases, it is not clear-cut how the demand and sales planning (forecast) functions are interpreted. Their role(s) played in corporate processes can help to interpret these functions better and more accurately.

2. DEMAND PLANNING

The beginning point of a corporate planning process is the strategic sales planning, in the framework of which primarily the owner's intentions determine the characteristics of the market activity.

The harmonized activity of marketing and sales-related activities are based on this to create a sales strategic forecast.

Demand planning is tightly connected to the strategic sales planning (long-term demand estimates) and to the middle-term sales planning. The goal of demand planning is to meet the pre-targeted service level, due to which the decisions influencing the accuracy of the demand

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estimates along with the specification of safety stocks must be improved on a continuous basis.

In supply chain, two primary sources of uncertainties are known: [1]

- uncertainty of process (realization of production, uncertainty of lead time),
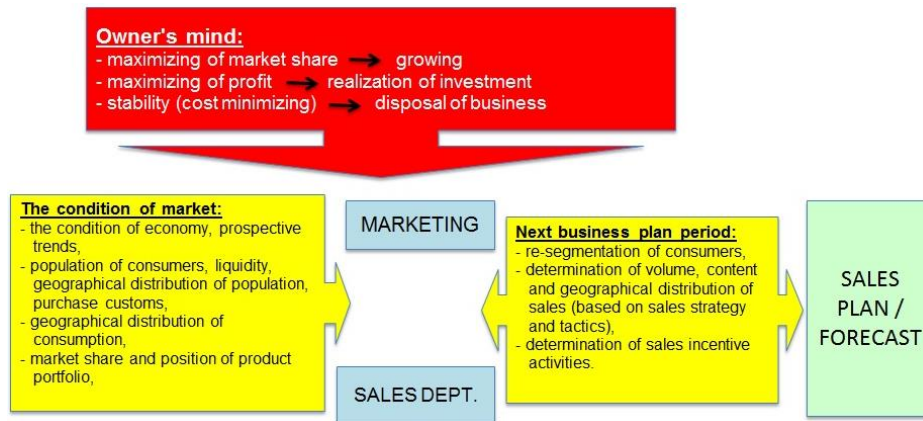- demand uncertainty.

Figure 1. Major aspects of business planning

We are able to mitigate the uncertainty of demand forecast in practice, on one hand, by safety stocks, on the other hand, by increasing and improving the volume of forecast-related information. Decisions in the entire supply chain are based on the already-approved customer orders, on the planned sales and on estimated demands. Consequently, supply chain performance depends on the quality of demand planning, which requires strong cooperation and joint efforts.

The connection between demand planning and its key means can be understood on *Figure 2* below [2].
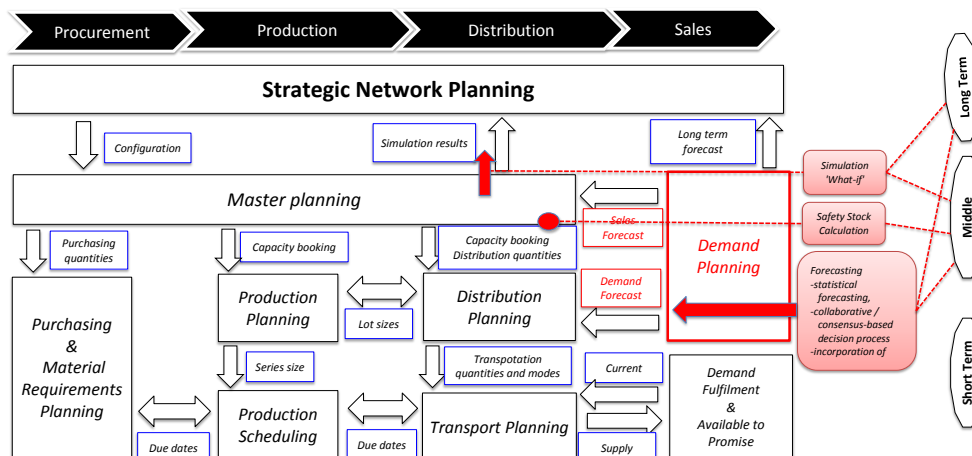

Figure 2. Connection between production planning tasks in supply chain and demand planning

What are the results realized in demand planning and who require these results? The middle-term production major program requires demand forecast per production groups, per geographical sales areas and channels on a weekly basis and, depending on the chain, recommends safety stocks per factory plants and per distribution centers. Demand forecast on a daily basis is required for the short-term stock replacement (for covering demands) per products. The structure of results depends, to a great extent, on the circumstances of applications as well as on the operation-related requirements.

In the course of demand planning, we usually follow the below-described three classic steps:
- The first step of creating forecast is based on statistical analysis, characterized by fine-tuned automatic methods based on extended details and, as a result, we receive the characteristic details of forecast-related time series.
- In the next step, we supplement the time series-related forecast data with the information that we did not take into account in the previous step, such as trade promotions, marketing actions, changes in trade channels etc.; we can adjust the supplementations to the corresponding matrix of the detailed forecast matrix manually or by the proper software.
- The forecast process is supported by a widespread circle of functional fields in supply chain, such as sales, production, procurement, finance and marketing, with which efficient cooperation – and consensus – based processes must be established, resulting in a consensus-based forecast, which must be applied in every single planning step in the entire supply chain.

3. ROLE OF THE DEMAND PLANNER

The demand planner's role is special for two reasons, as follows:
1. The demand planner's primary role is demand planning and, as we are aware of it, forecast is always wrong (each forecast is burdened with a statistic error)…
2. This function requires widespread cooperation.

Companies declare that they very much need supply and demand planners who are experts in these fields, however requirements regarding this position are quite various and diverse, as a consequence of which in many cases there are different, highly experienced experts (not junior professionals) with different competencies who are good fit to deliver each task. Among the requirements, the demand for strong math and statistics skills is highly prioritized, but also good communication conducted among and within the organizations is key, just like thorough knowledge gained in the fields of production, logistics, marketing, sales and finance. Who are these savvy professionals and where can they be found?

The core characteristics collected about this function can be viewed on *Figure 3* [3], [4].

Strictly speaking, the forecast is not a "real" planning and decision-making process; it is intended only to serve the purpose that we could project expected events as precisely as possible. Consequently, the thoroughly established systems do not handle the elemental forecast data as determined; they render probability ranges to the elemental forecast data (probability range, instead of a determined number).
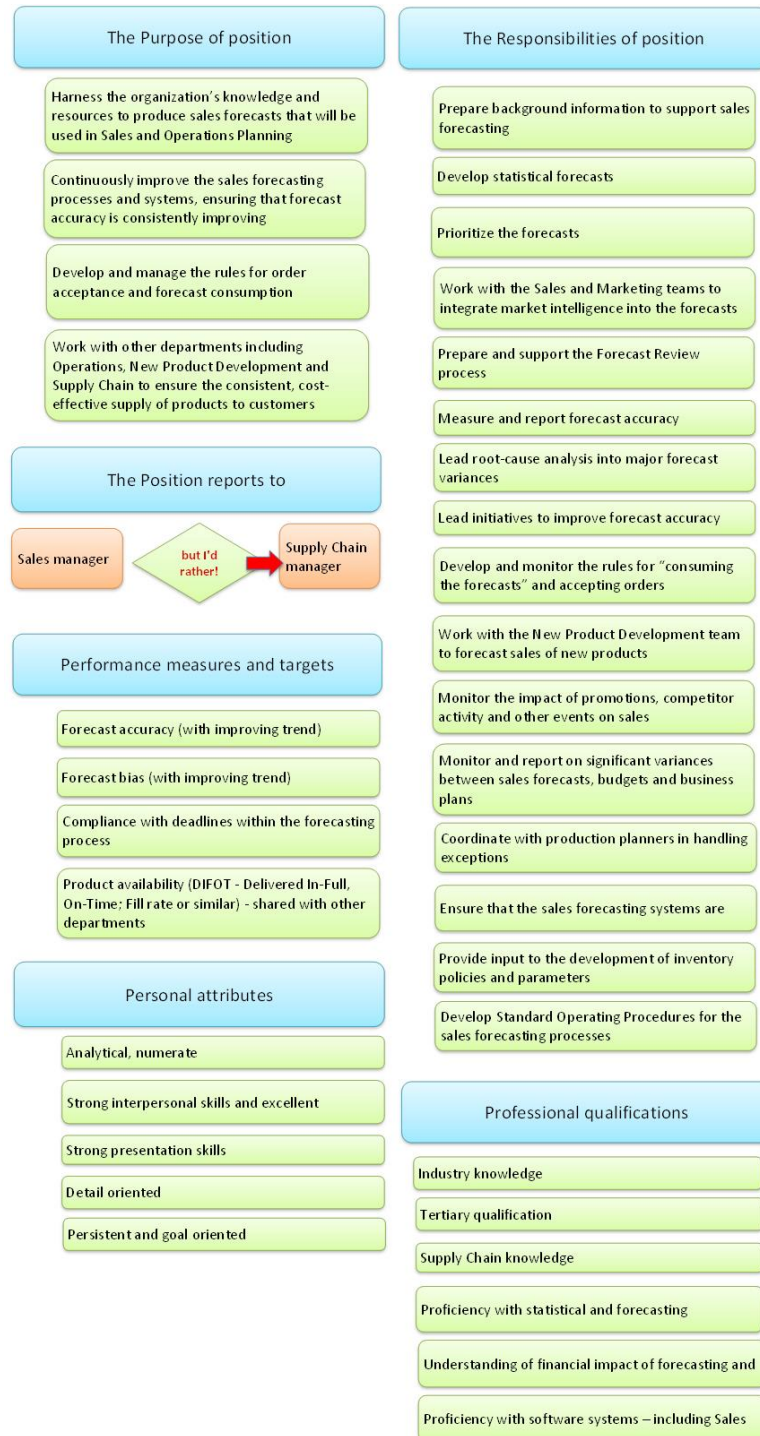
The Purpose of position

Harness the organization's knowledge and resources to produce sales forecasts that will be used in Sales and Operations Planning

Continuously improve the sales forecasting processes and systems, ensuring that forecast accuracy is consistently improving

Develop and manage the rules for order acceptance and forecast consumption

Work with other departments including Operations, New Product Development and Supply Chain to ensure the consistent, cost-effective supply of products to customers

The Position reports to

Sales manager　　　but I'd rather!　　　→　Supply Chain manager

Performance measures and targets

Forecast accuracy (with improving trend)

Forecast bias (with improving trend)

Compliance with deadlines within the forecasting process

Product availability (DIFOT - Delivered In-Full, On-Time; Fill rate or similar) - shared with other departments

Personal attributes

Analytical, numerate

Strong interpersonal skills and excellent

Strong presentation skills

Detail oriented

Persistent and goal oriented

The Responsibilities of position

Prepare background information to support sales forecasting

Develop statistical forecasts

Prioritize the forecasts

Work with the Sales and Marketing teams to integrate market intelligence into the forecasts

Prepare and support the Forecast Review process

Measure and report forecast accuracy

Lead root-cause analysis into major forecast variances

Lead initiatives to improve forecast accuracy

Develop and monitor the rules for "consuming the forecasts" and accepting orders

Work with the New Product Development team to forecast sales of new products

Monitor the impact of promotions, competitor activity and other events on sales

Monitor and report on significant variances between sales forecasts, budgets and business plans

Coordinate with production planners in handling exceptions

Ensure that the sales forecasting systems are

Provide input to the development of inventory policies and parameters

Develop Standard Operating Procedures for the sales forecasting processes

Professional qualifications

Industry knowledge

Tertiary qualification

Supply Chain knowledge

Proficiency with statistical and forecasting

Understanding of financial impact of forecasting and

Proficiency with software systems – including Sales

Figure 3. Mapping the demand planner's competencies

Therefore, logic along changing demands and probability ranges requires the application of further modules, such as the simulation module and the "what-if" analysis devices in the process. These requirements further demonstrate that the demand planners' IT competences are required.

By drawing the conclusions from the above-written information, in corporate activities, forecast is wrong, in accordance with the tightly managed fields (production, finance), as every single planning step based on demand planning implies, logically, uncertainty. The difference between the forecast-based production and delivery program (their realization) and the actual sales (customer orders) influences the customer service level of the entire supply chain. The customer service level usually does not reach 100%; the safety stock is the proper instrument to improve customer service (depending on the supply chain construction).

As it can be seen, the actual capabilities of an expert suitable for demand planning and its correspondence with the given expert's career path may be quite diverse. There are experts who prefer in-house training, which can be an efficient but, at the same time, challenging solution or, in lack of other solutions, they prefer to hire experts via manpower leasing processes.

A previous survey [5] could provide additional information on the *Tables I–III* below.

Table I.
The demand planner's career path at responding companies

	USA/CAN	**Europe**	**Others**
Stepping stone position on path to other more senior roles in supply chain or finance	52%	53%	68%
Position on which a career path can be built within demand planning/S&OP	31%	33%	24%
Other	17%	15%	8%

Table II.
*DFU (demand forecasting unit) number increasing per demand planners*

	USA/CAN	**Europe**
Stayed about the same	45%	38%
Risen modestly	35%	43%
Risen sharply	8%	12%
Dropped slightly	12%	7%
Dropped sharply	0%	0%

	USA/CAN	Europe	Others
Below average	20%	17%	14%
Average	45%	44%	64%
Above average	30%	29%	14%
Excellent	5%	10%	9%

4. THE DEVELOPMENT PROGRAM

The demand planner's operation-related efficiency and the organization's interests are tightly interlinked, however details are influenced by the distorted effects of the balance of power ("who have stronger position and power at a company"), by the deficiencies of collaboration within an organization and, as a consequence, also among organizations. To develop the efficiency of the forecast process (to reinforce the demand planning function), we have developed a complex and modular program consisting of three optional modules *(Figure 4)*.
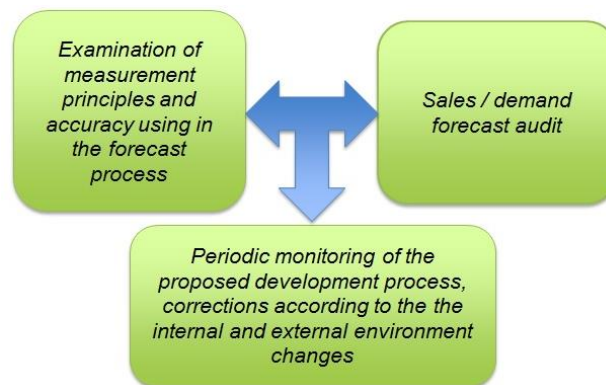
Figure 4. Modularity of the development program

In the first module, the measure principle and accuracy are in the focus. In terms of the measure principles, the forecast process is emphasized, to be more precise, intentions, arisen in the forecast process, as well as the relationship between the planned, the expected demands and the actual performance. Further functions: interpretation of the actual performance; evaluation of calculation variables of forecast error on a specific system; benchmark (accuracy of evaluation forecast, filtering regular error, ABC-XYZ-FMR analysis).

The second module examines the imbedded activity and efficient operation of forecast in corporate processes and makes proposals to more efficient operation. The second module is a multiple structured module. The first viewpoint represents progress see on *Figure 5*.

Figure 5. Time horizon of the development program

The second viewpoint is the so-called Development Program of Forecast Efficiency complying with the standard set in accordance with the criteria of *Mentzer, Bienstock, and Kahn (1999)* [6] framework, which has been supplemented in several elements, in accordance with the following sections on *Figure 6*.
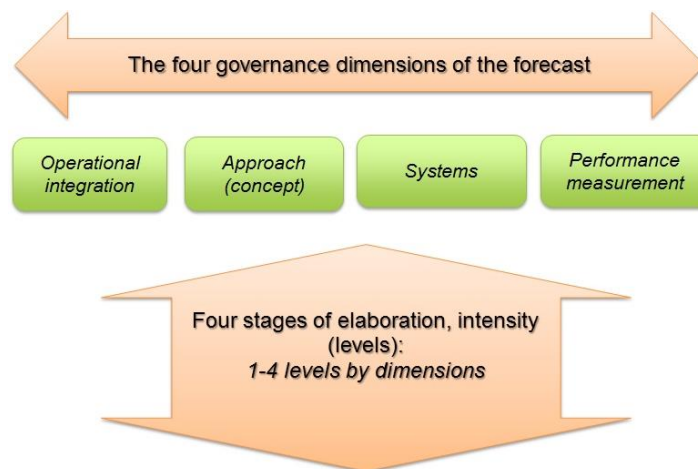

Figure 6. Dimension of the development program

The third module is, briefly, the follow-up; the monitoring of the execution of the jointly defined repair program ("the way forward") and, if required, its correction. This is the phase when the previous module is fine-tuned as well as when flexible reaction to the changes made in the circumstances can be improved.

The development program "draws a map" about the obstacles, which block the corporate's efficient forecast practice and also about the characteristics, and, at the same time, also summarizes the solution's program.

5. CONCLUSION

The development of the industrial digitalization imposes requirements, naturally, on the informational process of the supply chain management (logistics). On one hand, it requires the collection, perception, process and interpretation of information on a wider scale, on the other hand, it requires the more precise determination of demand-related data regarding industrial processes and the continuous search of the operational environment's optimum. In this dual requirement system, demand planning plays a crucial role, as its performance primarily determines the effectiveness of the whole system therefore its role is unambiguously crucial.

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