



DEMAND FOR AI IN DEMAND PLANNING

WHAT ARE THE HURDLES TO ACHIEVING A SMARTER SUPPLY CHAIN?

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As Industry 4.0 and Supply Chain Digitalization continue to draw attention from companies and suppliers, it comes as no surprise that the field of demand planning is evolving as the next potential field for innovation.

Tech giants like Amazon and Microsoft have announced Artificial Intelligence (AI) tools for improving demand planning, and several consulting companies are promoting their skills to bring AI to companies' demand planning processes. In fact, a recent survey by the [Institute of Business Forecasting \(IBF\)](#) identified AI as the technology that will have the largest impact on demand planning in the next seven years.

It's not hard to see the fit between AI and demand planning. Demand planning involves lots of number crunching, data analytics and is repeated cycle after cycle. It is tempting to imagine that a self-learning AI application could do at least as good a job as a planner.

Taking a closer look reveals that there are serious challenges to AI successfully penetrating the demand planning market. These challenges are not so much technical as they are managerial. However, even if AI does not become a significant contributor to demand planning accuracy, addressing these challenges can only improve a company's demand planning performance.

AI needs data

The most striking challenge to applying AI to demand planning is in the availability and accuracy of data. Internally, companies already struggle to maintain accurate data, starting with the most basic element of all, the product code. Ever-accelerating launch programs and shrinking product lifecycles mean more product churn than ever. One corporate head of planning that we spoke to said: "Let's show we can correctly link product codes in substitutions before thinking about AI."

In order to build a correct demand plan, one-off events have to be identified and accounted for, such as service issues and one-time promotions. For an AI application to learn from these events, they would need to be fully understood and coded, which is no small effort. There is also external data in the form of market intelligence that would need to be acquired and leveraged, such as competitor actions, customer behaviors, and trade disruptions like price changes and sell-out data.

Yet many companies today struggle with their digital culture and level of savviness. In speaking to large multinationals that have made serious investments in demand planning tools, almost all of them face the same struggle: their planners prefer to build demand plans in Excel and upload them into the expensive, integrated tools they must use to propagate their demand plans. The usual explanation for this resistance is that the tools don't have enough of the internal and external contextual data to build pertinent statistical plans.

A recent survey from [Supply Chain Quarterly](#) revealed that Excel is by far the most common analytical tool used by supply chain planners, with advanced tools like supply chain control towers used by about 60% of companies. This matches our anecdotal observation that about half of companies use an advanced planning system (APS).

The absence of data, resistance to using the existing suite of statistical tools, and level of digital savvy represent non-negligible challenges to the deployment of AI-enabled demand planning.

AI in Sales and Operations Planning (S&OP)

Demand Planning is a critical activity in the Sales and Operations Planning (S&OP) process. The objective of S&OP is to obtain alignment from all actors in the company, ideally ensuring that

Operations mobilizes its resources to supply what the business needs to meet its financial goals, while also ensuring that the financial goals account for the current operational constraints.

A fundamental pillar to the S&P process is the notion of 'one set of numbers', which means that operations and finance are working off a shared understanding of the forward planned activity for the business. The primary drivers for this goal are that no market opportunities are missed, and operations is focused on the true business needs.

By tying the financial plan to the operational plan, general managers are driven to implicate themselves, along with their commercial and marketing teams, in the demand planning process in order to have the most viable demand plan possible. This implication is critical, as it helps provide the demand planners with the valuable external market intelligence mentioned earlier. Just as importantly, from a managerial perspective, having one set of numbers means that any effort by general managers to manipulate the demand plan would also change the financial plan, which they loathe to do as it constitutes their commitment to executive leadership.

Consider the connection of S&OP to the deployment of AI for demand planning. A successful AI-generated demand plan would also have to be linked to the 'one set of numbers' principle. Should it be otherwise the necessary external data and market intelligence would be difficult to obtain, as general managers would return to old reflexes of considering the demand plan outside their sphere of interest, and perhaps again adjust the numbers to their subjective tastes.

But maintaining the tie between the AI-generated demand plan and the financial plan would forcibly imply asking general managers to *allow their financial projections to be generated by the AI application*. This is a consequential management hurdle for supply chains to overcome.

The introduction of AI-generated demand plans would bring with it what is termed the 'explainability' problem of AI. This term describes the reluctance managers have to using AI applications that seem like a black box where the reasoning and logic used to obtain the results are difficult to explain, even if they are of high quality. The explainability problem is currently a tangible hurdle for successful AI deployments.

Our research suggests very few companies today have truly achieved the 'one set of numbers' practice. The benefits of a more accurate AI-enabled demand plan that places a serious obstacle to implementing S&OP through the explainability problem does not seem like a necessarily winning trade off. In other words, are companies better off having (perhaps) a highly accurate AI-generated demand plan that does not reflect the true business activity, or a slightly less accurate non-AI generated one that matches the business ambitions?

This doesn't preclude the use of AI for demand planning, but it does suggest that it be considered only for companies that achieved very high S&OP maturity and integration between the operational and financial planning activities.

AI as performance lever

The challenges to applying AI to demand planning shouldn't be seen as insurmountable hurdles. Rather, AI could be an accelerator for companies to confront these data and managerial issues head-on, creating a foundation for using AI not only in demand planning, but in deploying stock to different markets, production planning and scheduling.

A sound, participatory S&OP process that assembles and leverages robust and accurate internal and external data to reach a consensus number for both operations and finance should be the target for all companies. If the IBF survey prediction is correct that the coming years will see deep contributions from AI in demand planning, these fundamentals of data management of managerial process will have made it possible.

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