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Answers to Your Forecasting Questions

[Q] What is the difference between demand planning and demand forecasting?

[A] The process of demand forecasting is just preparing demand forecast, whereas, demand planning is managing demand, which includes balancing supply and demand. For that, we need to know about demand forecasts as well as supply. An action plan is needed if demand is more than or less than supply.

[Q] To whom should the demand forecasting function report within an organization?

[A] It depends on where the forecasting function resides. In a large percentage of cases (about 62%, according to the latest survey of Institute of Business Forecasting and Planning), the forecasting function is within the supply chain and, thus, it should report to the head of that group.

[Q] How can input from social media help in demand planning?

[A] It can help greatly in new product launches—in understanding what consumers think about the product; for example, paying attention to comments on your product will show if consumers see a problem with it, what the problem is, and whether or not it is fixable. If a problem is fixable, fix it right away. If not, we might decide to take it off the market. It may also provide a clue to what consumers are looking for, which can guide us in developing a product in the future.

[Q] What should be our forecast accuracy target if there is a high degree of volatility in customer orders and long lead times?

[A] The high volatility in customer order data reduces the forecast accuracy. Accuracy is also affected by how far ahead you forecast—the farther ahead you forecast, the less accurate the forecasts will be. A longer lead time requires forecasting far into the future. How much error you should be aiming for depends, among other things, on the value of a product. With a low-value product, you might be willing to accept high error, but you would not with high-value products. The best way to decide is to look for benchmarks in your industry.

[Q] At what level of aggregation would you suggest measuring accuracy, and/or what considerations should be made in deciding?

[A] The level of aggregation in your forecasting depends on where the forecasts will be used. For production planning, forecasts need to be at a SKU level; for market planning, at a category level; and for financial planning, at a company level. Further, some products cannot be forecasted well at a SKU level, so you may decide to forecast at the next level of aggregation, which may be at a category level. Forecast accuracy improves as we forecast at a higher and higher level of aggregation.

[Q] We have a new chief sales officer who is proposing that we should forecast in dollars, not in units/cases. I have never heard of anyone forecasting in dollars. It is true that dollarized forecasts can help Sales in knowing precisely what sales target they should be hitting. But, is it the best practice?

[A] I must say I also have never heard of any company preparing forecasts in dollars. They always prepare volume forecasts first. If dollarized forecasts are needed, the volume forecasts can be converted by using average prices. Further, if we prepare volume forecasts using volume data first, then volume-based forecasts are likely to be more accurate. If we prepare dollar-based forecasts first, using dollar data, then dollar-based forecasts are likely to be more accurate. The question is which forecasts are more important—volume-based or dollar-based? My understanding is that most forecasts are used in production planning. Then, the best thing is to prepare volume forecasts first, which is the industry practice.

Happy Forecasting!

Chaman L. Jain, Editor
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Four Steps to Achieving Enterprise S&OP That Businesses Will Love

By Neil James

EXECUTIVE SUMMARY | It is very important that the senior management team supports Sales & Operations Planning (S&OP) in its broadest sense. But what does that mean and what in particular does it require? What does it take to not only get S&OP over the line but also nurture it and improve its effectiveness over time? Many experts and practitioners know and have documented that executing and sustaining a high-quality S&OP process is a challenging task that requires thoughtful design of any deployment program. Based on years of experience in deploying S&OP globally, this article presents four key practical foundations for success: cross-functional C-Suite sponsorship, senior enterprise leadership, S&OP team leadership and setup, and hands-on coaching and mentoring. With these four critical elements, I hope I can provide some new insights and learnings both for the supply chain function and all those involved in making S&OP work.

NEIL JAMES | Since 2013, Neil has been the Vice President Core Commercial Cycle at GlaxoSmithKline (GSK). His responsibility has been to deploy Sales & Operations Planning (S&OP) across GlaxoSmithKline's £24bn ($30.25 billion) global business. Currently, he is Managing Director of Blueglass Consulting. He has 20 years of experience in senior commercial roles driving businesses and transformation programs at country, regional, and global level in the pharmaceuticals sector.

At the end of 2013, I took on the responsibility to deploy Sales & Operations Planning (S&OP) across GlaxoSmithKline's £24bn ($30.25 billion) global business. I should be clear upfront that I am a commercial leader, with 20 years of experience in senior commercial roles driving businesses and transformation programs at country, regional, and global level in the pharmaceuticals sector. This undoubtedly influences my perspective and experience of S&OP. I hope I can provide some new insights and learnings both for the supply chain function and all those involved in making S&OP work.

WHAT DOES IT TAKE FOR S&OP TO WORK?

Naturally, this was one of my first questions when I was appointed to deploy S&OP for GlaxoSmithKline (GSK). One of my first tasks was to talk to practitioners, consultants, and other subject matter experts to understand what the key success factors needed to deliver an effective S&OP process are. Two things became clear very quickly. First, there has to be an agreement in the S&OP community on the foundation for an effective process. And second, there tends to be more attention (and more solutions offered) for the tangible and rational success factors, such as process design, systems, and metrics, and far less on addressing some of the less tangible but still absolutely critical themes, such as building supportive mind-sets and behaviors. (See Figure 1)

It was also very clear that the language, narrative, and positioning of S&OP was very supply-chain oriented and meant very little to the commercial

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The Traits of an S&OP Leader

By Patrick Bower

EXECUTIVE SUMMARY | Every so often, a dialogue will start about the traits that make a good S&OP leader. Some folks will offer specific educational requirements, while others will discuss job experience. Still others will define softer skills such as persuasion and likability, or even effective communication skills. I am not sure there is a specific skill set required, although there are many traits that S&OP leaders have in common.

PATRICK BOWER | Mr. Bower is Senior Director, Global Supply Chain Planning & Customer Service at Combe Incorporated, producer of high-quality personal care products. A valued and frequent writer and speaker on supply chain subjects, he is a recognized demand planning and S&OP expert and a self-professed "S&OP geek." Prior to Combe, he served as the Practice Manager of Supply Chain Planning at a boutique supply chain consulting firm, where his client list included Diageo, Bayer, Unilever, Glaxo Smith Kline, Pfizer, Foster Farms, Farley's and Sather, Cabot Industries, and American Girl. His experience also includes roles at Cadbury, Kraft Foods, Unisys, and Snapple. In addition, he has worked for the supply chain software company, Numetrix, and was Vice President of R&D at Atrion International. He was recognized three times by *Supply and Demand Chain Executive* magazine as a "Pro to Know," and *Consumer Goods Technology* magazine considered him one of their 2014 Visionaries. He is the recipient of the inaugural IBF's Excellence in Business Forecasting and Planning Award.

I recently received a LinkedIn message from a relatively junior connection asking a simple question: what education, training, experience, and character traits are needed to be a good S&OP leader? I thought, "What a great question," and "this topic is not often discussed." It made me think a lot about my career and those of people in the profession whom I admire. There is so much conversation these days about talent shortages and the lack of career definition within the supply chain planning profession, yet there is rarely a meaningful discussion about the qualities and competencies required to be a great planner. Of course, it would be easy to say, "Get a degree in industrial engineering or supply chain management or statistics; find a way to cross-train a bit in supply and demand functions; and then work hard." But that statement lacks any meaningful

Should Forecasting Be Outsourced?

By Larry Lapide

EXECUTIVE SUMMARY | This column discusses outsourcing a business forecasting process to external consultants. It starts by covering the functions that might be reasonably outsourced. It recommends that all collaborative-related functions reside inside the walls of a company, while quantitative and computer system capabilities might be outsourced. However, there are risks involved in having demand forecasts reside outside the protection of a company's firewalls.

LARRY LAPIDE | Dr. Lapide is a lecturer at the University of Massachusetts, Boston, and an MIT Research Affiliate. He has extensive experience in industry, consulting, business research, and academia as well as a broad range of forecasting, planning, and supply chain experiences. He was an industry forecaster for many years, led supply chain consulting projects for clients across a variety of industries, and has researched supply chain and forecasting software as an analyst. He is the recipient of IBF's inaugural Lifetime Achievement in Business Forecasting and Planning Award. He welcomes comments on his columns at llapide@mit.edu.

(This ongoing column in the Journal *is intended to give a brief view on a topic of potential interest to practitioners of business forecasting and planning. Suggestions on topics that you would like to see covered should be sent via email to llapide@mit.edu)*

Recently I've had a couple of conversations about companies that are experimenting with partially outsourcing their business forecasting processes to external consultants. Apparently, these companies want to leverage Big Data to forecast customer demand and are having a difficult time finding, hiring, and keeping "data scientists"— especially those with Ph.D. credentials.

On the face of it, such experimentation is somewhat disturbing. Generally, I believe demand forecasting needs to be done internally for effective and efficient integration with the planning processes, e.g., the Sales and Operations Planning (S&OP) process. Also, more importantly, for competitive and financial disclosure reasons. However, I would be less concerned about outsourcing some of the mechanistic aspects of running complex computer systems that support the "purely" statistical forecasting aspects of a forecasting process. Such as generating the "baseline" forecast that provides

an initial statistical forecast based primarily on historical demand data. (The baseline forecast is adjusted for various factors, such as for planned sales and marketing activities, to collaboratively come up with final consensus-based demand forecasts).

THE BUSINESS FORECASTING PROCESS

As I wrote in my Spring 2014 JBF column, "Planning and Forecasting Work Hand in Hand," a company's S&OP team needs to work collaboratively with a professionally run and independent forecasting organization. Forecasters and planners must work hand-in-hand in helping a company navigate a course towards achieving corporate financial performance objectives. However, the forecasters need to generate unbiased demand forecasts that are devoid from the pressures (and hidden agendas) involved with having to directly affect demand achievement. Their main job is to develop quantitative forecasts—often weekly and monthly as needed by the S&OP team—that are based on planned marketing and sales activities, as well as other factors that might impact future demand. To do this requires continual collaboration among forecasters and marketing and sales management. This collaboration should not be outsourced to external consultants.

There is a wide variety of ways to organize a forecasting function. Some companies have a single centralized forecasting organization, while others have forecasters distributed throughout them, for example among business units. The latter sometimes has a "center of excellence" group that supports the distributed forecasters. For example, P&G has a "center of excellence" group that supports over 600 demand forecasters distributed among its business units, largely because marketing and sales promotional activities significantly impact the company's demand variations. Alcatel's business phone system group (formerly Lucent Technologies) used to embed forecasters in its sales organizations, yet they reported directly to its supply chain manager who was responsible for generating demand forecasts. The embedded forecasters worked closely with sales management because sales bids in response to customer requests-for-proposals (RFPs) significantly impacted future new demand. Based on the IBF's benchmarking information, centralized forecasting departments and "centers of excellence" might report into any of a company's functional departments, such as finance, operations, manufacturing, marketing, sales, logistics, and supply chain. See my Winter 2002 – 2003 JBF column, "Where Should the Forecast Function Reside?".

In my Summer 2003 JBF column, "Organizing the Forecasting Department," I discussed five (5) different skills sets that are required in a forecasting organization. A single forecaster might have only one of these skill sets or possess only a few. However, as a "collective" team, the forecasting organization needs to have them all. The skills are: 1) an understanding of the business, 2) oral communication skills, 3) process management skills, 4) quantitative skills; and 5) computer skills. The first three types of skills are necessary to efficiently and effectively collaborate with a company's marketing, sales, and other management in order to develop and get consensus of final demand forecasts. These skills should not be outsourced to external consultants.

Knowledge about the specifics of the company's business is paramount among these. Knowledge about business in general, a competitive company's business, and a company's industry will not suffice. Thus, outsourcing this skill is not even an option. This knowledge needs to come from forecasters who have worked for a company for a number of years. Each company has a unique way it goes-to-market in terms of products, sales/distribution channels, pricing, and promotional activities. Oral communication skills are necessary for collaboratively obtaining consensus among managers and executives—thus, should not be outsourced as well. Lastly, process management skills require the discipline needed to ensure that forecasts are developed and published on time. This requires that meetings conducted in support of this effort are scheduled, attended, productive, and achieve objectives. These meetings among executives and managers should be moderated and managed by a seasoned manager in the company.

The latter two types of the five skills might reasonably be outsourced. Historically, a forecasting organization expects its computerized forecasting system to have embedded in it the standard statistical forecasting techniques used to project historical data in order to generate a "baseline" forecast. The system might also be able to incorporate promotional and new-product business into a baseline forecast as well. If internal forecasters know how to use the system, there is little need for external forecasters to be involved—because incorporating internal "market intelligence" into the baseline forecast ultimately develops the final consensus-based demand

forecasts.

However, there are several reasons why external skills might be needed. Certainly one is that a company might not be able hire and retain forecasters with the requisite quantitative and computer skills needed to run a forecasting system. Another more important reason to outsource would be that the standard forecasting techniques embedded in the forecasting software are not sufficient—especially for incorporating Big Data information. Often off-the-shelf packaged forecasting software cannot easily incorporate downstream supply-chain demand signals such as POS data, e-commerce sales, and distributor sales and inventories. In addition, packaged software is typically short on incorporating social media data, such as online product ratings and qualitative demand signals, leveraged to enable a quick response to unexpected, short-term changes in demand.

At first blush, outsourcing to obtain external quantitative and computer skills to help generate a first-cut statistical baseline forecast makes sense, while activities that directly support collaborative forecasting need to be done by a company's employees. A caveat to this outsourcing, or any for that matter, is that there is significant risk in having customer demand forecasts reside outside the protection of a company's "firewalls." These are put in place to bar the outside world from accessing internal proprietary data.

RISKS OUTSIDE THE FIREWALLS

In my Fall 2011 JBF column, "S&OP: The Linchpin Planning Process," I discussed that S&OP is the "connective" tactical planning process between long-term strategic planning and short-term operational planning. Furthermore, if an S&OP plan is driven by strategic goals and objectives, then the S&OP plan is aligned with a company's strategic intent. Since the operational plan is driven by the S&OP plan, it—in turn—will also be aligned to the corporate strategy. Thus, S&OP becomes the connective or lynchpin process that helps enable strategy to be executed on plant floors and in distribution centers.

However, this type of strategy alignment means that all planning information (including plans and demand forecasts) should be kept away from individuals outside the company. Outsiders can use the information to the detriment of a company. Thus, the information ought to be kept internally and well-protected by a company's firewalls. This helps to keep a go-to-market strategy from being compromised, potentially winding up in the hands of competitors and Wall Street financial traders.

If a firm outsources its forecasting to an external consultant, there are risks. For instance, let's say that a consultant gives you assurances that your forecasts "are safe with us" because we have "Chinese Wall" barriers among our consulting teams. These walls preclude the consultants from discussing your business with their colleagues who are potentially consulting with your competitors or financial industry analysts. Given the ubiquitous hacking that goes on these days, one possibility is that the consultant's system that stores forecast information can get hacked by competitors and inside traders. Others risks include consultants who are compromised by competitors with money and other favors, as well as consultants taking jobs in these industries.

Competitors can use demand forecasts to reverse engineer a company's go-to-market strategy—exposing its competitive advantages. Forecasts provide a telling peek into the detail of a company's business model. They provide a window into the projected future of a company's product lines, strategic customers, pricing, geographic focus, new product introductions, and promotional activities as well as highlighting its important growth opportunities and sales/distribution channels. This type of information can be used against a company by its competitors. The competitors' sales and marketing groups can put together tactical demand plans to help them win competitive battles against the company in the marketplace.

Meanwhile, financial inside traders can use this type of information to invest in the future prospects of a company. If traders see the company is forecasting substantial revenue growth, they will invest heavily into it. But if the future picture is showing a decline in revenue, they will short the company's stock. Surely, if this type of "insider" trading using a company's demand forecasts is uncovered, then traders and consultants involved would have a lot of explaining to do concerning the legality of their trades. However, the company itself could be at risk of being viewed as "complicit" to insider trading because it was careless with its forecasting information.

So, in summary, while outsourcing forecasting quantitative and computer skills to a consultant might have benefits, these have to be carefully weighed and mitigated against the risks of the demand forecasts being comprised in nefarious ways!

—Send comments to: JBF@ibf.org

The Importance of Segmenting Your Products

By Charles W. Chase, CPF

EXECUTIVE SUMMARY | Why should a company consider forecastability when applying forecast methods? Doesn't a company's demand forecasting system conduct automatic diagnostics and apply the appropriate forecasting method? Treating every data the same way may decrease the accuracy of the forecasts, as you might apply only one method across the product portfolio, not realizing that each group of products has different data patterns, based on how they were sold and supported over the product's life cycle. It is also important to educate senior managers in the company on forecast accuracy expectations based on data availability, value set by the company, and method chosen.

CHARLES W. CHASE | Mr. Chase is the Executive Industry Consultant and Trusted Advisor for the Global Retail/CPG Industry Practice at SAS Institute, Inc. He is also the principal solutions architect and thought leader for delivering demand planning and forecasting solutions to improve SAS customers' supply chain efficiencies. Prior to that, he worked for various companies, including the Mennen Company, Johnson & Johnson, Consumer Products Inc., Reckitt Benckiser PLC, Polaroid Corporation, Coca Cola, Wyeth-Ayerst Pharmaceuticals, and Heineken USA. He has more than 20 years of experience in the consumer packaged goods industry, and is an expert in sales forecasting, market response modeling, econometrics, and supply chain management. He is the author of the several books, including *Next Generation Demand Management: People, Process, Analytics, and Technology* and *Demand-Driven Forecasting: A Structured Approach to Forecasting.* In addition, he is co-author of *Bricks Matter: The Role of Supply Chains in Building Market-Driven Differentiation*. He is also the second recipient of the IBF Lifetime Achievement Award.

Experience dictates that all data are not the same. In fact, treating every data the same way may decrease the accuracy of the forecasts, as you might apply only one method across the product portfolio, not realizing that each group of products has different data patterns, based on how they were sold and supported over the product's life cycle. Applying methods prior to evaluating data may make the forecast difficult to understand and explain to senior management.

Periodic evaluations should be conducted to ensure that the best method is being applied to the data. The best place to start is decomposing each data set by product group or brand to identify and determine the magnitude of trend, seasonality, cyclicality, and unexplained variances. It is important to

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Demand Planners, Supply Planners, and Inventory Management

By Mark J. Lawless

EXECUTIVE SUMMARY | An important undertaking for any company to serve its customers is to determine how much inventory is necessary to satisfy customer demand. This article reviews some of the key supply and demand elements influencing this decision. It explores these in the context of their expected levels and the importance of considering variation around their expected levels. It further evaluates how well a widely used metric affecting the inventory decision actually affects the customer and the company—days of inventory on hand and or inventory turns.

MARK J. LAWLESS | Mr. Lawless has held Senior Management and C-Level positions across a variety of industries and market settings. He has held professional and management positions within manufacturing operations, product development, sales, finance, and marketing. A Managing Principal of Marlaw Business Advisory Services, Mark is a long-time affiliate of the Institute of Business Planning & Forecasting, having served in advisory roles and providing training to many companies through the IBF In-House Seminar series. He is the recipient of IBF's 2016 Lifetime Achievement Award in Business Forecasting and Planning.

The success of a company is dependent upon its ability to attract customers and to satisfy their demand for the company's products. Of course, this has to be translated into profit and cash flow for the company's owners and shareholders at a level that is sufficient to be competitive in the financial markets. So, the company has numerous stakeholders that it is simultaneously attempting to satisfy: customers, owners and shareholders, lenders, employees, vendors, distributors, and others who are important to the company's success.

The charge to the company's management is to develop and satisfy customer demand for its products, while producing and selling the products at a profit margin sufficient to provide a competitive return on investment. This requires a perceived value by the customers that is sufficient to support a price that covers the product cost and provides a profit margin that is sufficient to generate an adequate cash flow. This cash flow must support the company operations, its working capital requirements, and its return on investment to owners

and shareholders.

EFFICIENT SUPPLY CHAIN STRUCTURE

An efficient supply chain structure is an essential element here. And an efficient inventory level is an important element of working capital. Not only inventory represents a use of capital that affects the overall cash flow of the company from a cash outflow perspective, but also affects the cash inflow through its effect on product availability to meet customer demand. So, there is a continuous struggle to balance the need to improve inventory levels while achieving high customer service levels. Both demand planners and supply planners become embroiled in this struggle to find optimal solutions for the company in its inventory management policies, planning, and operational implementation.

As demand planners and supply planners, we are working together in the balancing effort described above. We are also working together in an effort to support the activities of the marketing and sales organizations to develop customer relationships, expand demand for the company's products, and to satisfy the ongoing demand for the company's products. We must have sufficient product inventories so that customers can have the product when they need it, where they need it, and in the quantity that they need it. Thus, we are dealing with a complex problem that involves location, quantity, and time period of demand simultaneously. No easy job to do well!

So, what are some of the supply elements to be considered? Some of the most important are:

- Existing availability of raw materials' constraints,
- Lead time and its variation of raw materials,
- Shipping time and its variation of raw materials,
- Existing availability of finished products' constraints,
- Product production and assembly time and its variation,
- Finished product packaging time and its variation, and
- Finished product shipping time and its variation.

Notice that the above are all elements of the product lead time that must be taken into account during the Sales & Operations Planning (S&OP) process in order to reconcile the quantities and timing of demand with the quantities and timing of supply. Also note, the above represent not just the expected value of the lead time elements, but also the variation of each element based upon the experience of the company. (Most often this variation is measured by the standard deviation from the mean.) As the expected lead times expand, the finished goods inventory increases. As the time variation of the elements increase, the finished goods inventory must increase further to meet a given targeted customer service level. And as the sales volumes increase, the inventory has to increase further still. So, the configuration of the supply chain, its geographic locations (and distances) and associated lead times, and the variation of performance within the supply chain all contribute to the inventory levels required to meet customer demand at a given targeted service level.

EFFICIENT DEMAND PLANNING STRUCTURE

What about the other side of the coin—demand? What are some of the demand elements to be considered? Some of the most important are:

- Base level of demand and its variation,
- Demand trend (positive or negative) and its variation,
- Demand seasonality and its variation,
- Demand cyclicality and its variation,
- Company marketing and sales activity,
- Competitor marketing and sales activity, and
- Competing products in the market.

Notice that the above represent the considerations of the demand planner in forecasting and planning demand for the S&OP process, working with supply planners and others in an effort to reconcile supply with demand. Also notice that the above require consideration of the variation of each of the key demand elements to ensure adequate inventory planned to meet customer demand at the targeted service level. Increases in the base level of demand will increase the inventory required, and increases in its variation will increase inventory further. The effects of trend, seasonality, and cyclicality can affect the demand and associated inventory either positively or negatively, and increases in the variation will magnify that positive or negative effect. So, we now have a myriad of supply and demand considerations affecting the optimal inventory level, along with the magnification of these based upon their variation levels, which should be taken into account in order to satisfy customer demand at the targeted service level. Again, no easy job to do well! It is not enough to only meet expected demand; historical variation must be considered as well to achieve the targeted customer service level.

Quite often, the measured variation of the key elements of supply

and demand are not adequately incorporated into the inventory plans that are presented to management and used for business planning. This results in non-optimal levels of inventory from a customer service perspective and from a working capital management perspective. It gives rise to stock-outs, customer dissatisfaction and brand switching, inventory write-downs, excessive discounting, and unfavorable cash flow impacts from both a supply and demand frame of reference. So, it is extremely important that as demand planners and supply planners we consider all of the key elements affecting supply and demand, and very importantly that we consider their variation as well in our production and inventory planning. All of our performance metrics should reflect the consideration of variation in performance as well. Most of our systems and methods produce values based upon averages of various sorts. But every mean value has a standard deviation; i.e., there is always some level of variation. Measuring this variation and incorporating it into our demand, supply, and inventory planning is essential to the company's success and our professional success as planners! Our plans should reflect these elements and their variation by product and/or product category, not just based on some overall rule of thumb. Often, a measure such as an overall inventory turns target is used, and results in inefficient levels of inventory and problems in achieving customer service goals.

Since the lead times, the level of demand, and their variations are different by product, the optimal level of inventory for each product is unique. Planning inventory on a product-by-product basis recognizing these individual unique characteristics for each product can result in higher customer service levels and higher revenue. After constructing the inventory plan in this detailed manner, one could calculate overall days of inventory on hand or inventory turns where it may be desired for financial benchmarking purposes. The overall days of inventory or inventory turns metrics are widely used and helpful for financial planning and financial forecasting purposes.

Targeted days of inventory on hand or inventory turns are often applied across the product portfolio, resulting in too much inventory of some products and too little of other products given their demand characteristics. These are financial metrics calculated by using average inventory and cost of goods sold (COGS) for the period measured. If based upon an annual period, it does not give specific consideration to demand trend and demand seasonality. This is fine for overall financial discussion and overall financial forecasting and financial planning for the company, but is not necessarily well suited for operations management, given the contention between inventory as a working capital investment and the company's striving to meet customer service level at a high level of performance. If we use a single days of inventory on hand or inventory turns goal that comes from the financial planning of the company, it assumes an evenness of demand and lack of product lead time variation that is usually not realistic for purposes of demand planning and supply planning for the company. If we manage to the level of inventory that such rules of thumb would dictate, it often results in our having reduced levels of customer service level being achieved and associated lost revenue, too much of some product inventory and not enough for other products, resulting higher product costs and shipping costs as remediating actions are required, and lower levels of operational efficiency and profit. No winners in this outcome!

COURSE OF ACTION FOR OPTIMIZING PROFIT AND CASH FLOW

So, what should we do as demand planners and supply planners to improve this situation for our company and support better operational, profit, and cash flow results?

1. Measure the variation for the demand and supply elements for your product and product categories to determine their effects.
2. Review the demand plan and supply plan metrics in use to ensure they are adequately reflecting and incorporating the variation element into them.
3. Identify the variation in the supply and demand time elements, and work with the appropriate functions in the company to identify the sources of variation in an effort to reduce their level and impact operationally and financially. For example:
   a. Work with the supply chain function to identify what is responsible for the supply time elements variation and their sources, and look at alternative supply chain structures, policies, and practices that might improve the situation.
   b. Work with the marketing and sales functions to identify what contributing the variation in the demand elements, and determine what actions could be taken to reduce the variation (and associated inventory).

4. Establish optimal inventory positions by product, and use these for the inventory planning of the company by product, category, and company overall.
5. If days of inventory on hand or inventory turns is being used within the company, establish optimal days of inventory by product as the basis for measurement that can be translated into days of inventory on hand or inventory turns metrics
6. If asked to reduce inventory to a non-optimal level, determine and communicate the expected effect that it will have on stock-outs, service level, and lost revenue and profit so that an informed financial trade-off can be made.

As demand planners and supply planners, we are committed to produce the best outcomes for our customers, our company, and the company's stakeholders. Inventory is a critical element in customer service, and in cash flow results and financial return metrics for the company. Inventory is in our wheelhouse! And we can make significant contributions to the company and to our profession by using our skills to simultaneously serve the customer and the company, and to have the right products available, at the right place, at the right time, and in the right quantity!

— Send Comments to: JBF@ibf.org

Demand Planning Business Process Owners

By Carlos Madruga, CPF

EXECUTIVE SUMMARY | Establishing process governance is critical for extracting value from demand planning practices. An important step in the journey towards robust governance is the assignment of a Demand Planning Business Process Owner (BPO). Such a role can add value to an organization by driving process standardization, and by leading transformational efforts involving processes, tools, and organization. BPOs must possess a mix of competencies that balance soft skills with technical and analytical ones. Goodyear Tire & Rubber is one company that has been making use of Demand Planning BPOs.

CARLOS MADRUGA, CPF | Mr. Madruga is currently a Global Demand Planning Director at Goodyear Tire & Rubber Company. He has held several leadership positions within Supply Chain during his career at Goodyear, with prior work experience at IBM. He is an IBF Certified Professional Forecaster (CPF) and holds an MBA from Northwestern University's Kellogg School of Management.

When considering how to drive maximum value out of demand planning practices at your organization, do not overlook the importance of establishing adequate process governance. Without that, change efforts and investments in processes and technologies may fall short of expectations over time. Process governance, if properly implemented, has the potential to reinforce not just a common direction, but also the alignment of efforts with corporate strategies and priorities. From that perspective, investing in process governance—which should be interpreted more as a journey than as a "quick win"—just makes business sense.

A KEY ROLE—THE DEMAND PLANNING BUSINESS PROCESS OWNER

Central to the establishment of process governance over demand planning is the job of a Demand Planning Business Process Owner (BPO). As the term implies, the BPO is an individual who formally "owns" the core demand planning process. Such a role has the potential to add value to an organization from many dimensions, as described next.

OWNERSHIP OF PROCESS DESIGN AND STANDARDS

By definition, the BPO has ownership over the standard design and associated documentation of the demand planning process. Such documentation would typically include a description of demand planning steps, inputs, outputs, roles, responsibilities, technology dependencies, and metrics. At the most detailed level, it would describe detailed tasks, and stan-

INTERNATIONAL ECONOMIC OUTLOOK

Investment Predictive Analytics Continue to Point to Anemic Global Economic Growth

By Evangelos Otto Simos

Dr. Simos is Director of Forecasting and Predictive Analytics at e-forecasting.com, a division of Infometrica's Data Center, 65 Newmarket Road, Durham, NH 03824, U.S.A. and professor of economics at Paul College, University of New Hampshire, www.infometrica.com, eosimos@e-forecasting.com. This report does not purport to be a complete description of global economic conditions and financial markets. Neither the *Journal* nor Infometrica, Inc. guarantee the accuracy of the projections, nor do they warrant in any way that the use of information or data appearing herein will enhance operational or investment performance of individuals or companies who use it. The views presented here are those of the author, and in no way represent the views, analysis, or models of Infometrica, Inc. and any organization that the author may be associated with.

I. GLOBAL ASSESSMENT AND OUTLOOK

Despite financial markets' euphoria about the future, global economic growth remained lethargic in the first half of 2017, and remained in the familiar "normal" speed of the current recovery. Our forecast for growth in 2017 was revised downwards to 3.2% virtually the same as in 2016. A new feature in this phase of the global business cycle is the re-emergence of inflation, despite stable to falling energy prices. It is expected that global inflation this year will

U.S. Economy: Growing Signs of Decoupling from Washington

By Jamal Nahavandi

Dr. Nahavandi is Associate Professor of economics at Pfeiffer University School of Graduate Studies, specializing in Business Economics, International Business, and Healthcare Economics. The information in this forecast is gathered by the *Journal* from sources it considers reliable. Neither the *Journal* nor the individual institutions providing the data guarantee accuracy; nor do any of them warrant in any way that use of the data appearing herein will enhance the business or investment performance of companies or individuals who use them.

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The U.S. economy remains on a steady and gradual growth trajectory, and appears to be decoupling from Washington's politics. The combination of steady job growth and low inflation are contributing to the strength of the equity market. The Fed is conducting itself predictably with a data-based gradual and cautious interest rate normalization strategy. Both the business community and consumers have lost their taste for bubbles, preferring stability and predictability in their decision-making. The crash of 2007-2008 has contributed to the maturity of consumers and, with the exception of home prices, the business community is being responsive by avoiding erratic price changes despite the strong job market. For the time being, the looming uncertainty about the timing and scope of tax reform and infrastructure spending has been filtered out across the board. The question is whether the economy can handle further growth in aggregate demand while there is an upper cap on economic expansion placed by supply-side factors, such as sluggish productivity, stubbornly low labor force participation, and tightening migrant labor market. The numbing political and legal quagmire in Washington is nudging state and local governments to map

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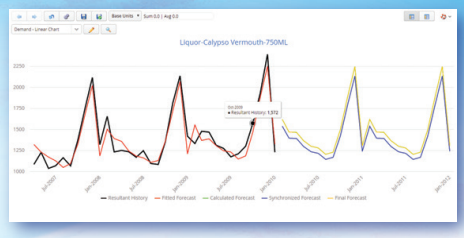

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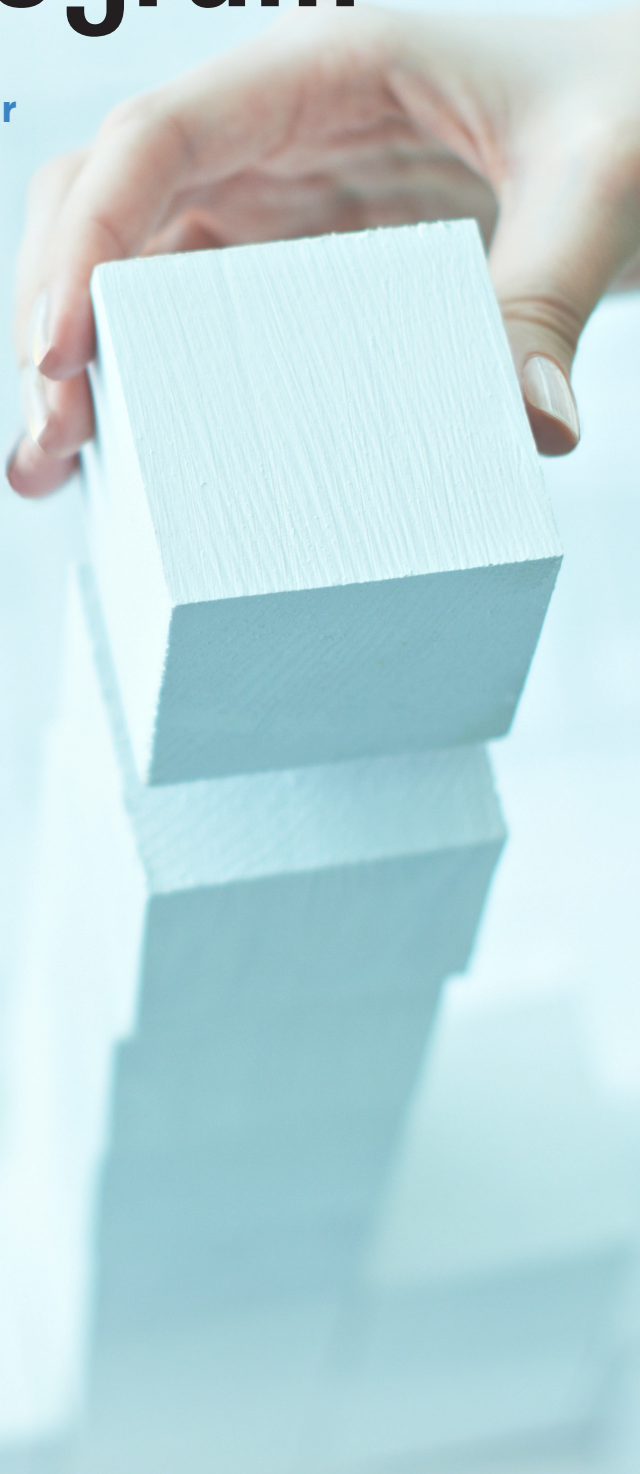

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