When I was asked to review Dr. Mark Moon’s new book, I was naturally curious about the approach taken to the classic forecasting dilemma of demand/supply integration. The critical importance of matching supply to demand is nothing new to those who struggle with trying to keep customers happy without overburdening one’s own company with excessive amounts of inventory. During my almost 30 years in the consumer packaged-goods industry, I saw firsthand what happens when supply and demand are not well matched – from having seven warehouses full of components to having no inventory for a product relaunch – and I became acutely aware of what can happen when forecasts are inaccurate. The mental scars of my experiences in industry have carried over into my academic career, where I have been involved in researching ways we can better match supply and demand through improved sales forecasting and S&OP.

**DSI vs. S&OP**

And it has to be said that, initially, where Moon’s take on the subject is concerned, I was disappointed. The author presents the main idea behind demand and supply integration (DSI) as “a single process to engage all functions in creating aligned, forward-looking plans and make decisions that will optimize resources and achieve a balanced set of organizational goals.” This, after all, does not seem very different from S&OP.

The author then goes on to explain how DSI is different: DSI is presented as more strategic in nature due to a longer planning horizon; it is characterized by more involvement with functions outside a firm’s supply-chain operation, particularly sales, in implementing and executing the process of matching demand with supply. Furthermore, Moon maintains that S&OP has a “tactical aura” that prevents engagement from various company functions such as marketing, finance, and senior leadership while DSI does not. The author then goes on to admit that the goals of S&OP and DSI are similar, but given the number of failed S&OP implementations in the field, perhaps it is time for a “branding campaign” and an “alternate label” in the form of DSI.

**COLLABORATION IS THE KEY**

So while at first I questioned Dr. Moon’s proposal that DSI is significantly different from S&OP, and that a new brand name would lift the image of the process of matching supply to demand, the more thought I have given it, the more open I have become to embracing
the idea. If there is indeed a “tactical aura” around the term S&OP, if DSI can change the way people in organizations view the process towards a more positive attitude, and if DSI does encourage more collaboration within the process, then perhaps it is time for a new brand image.

One point in DSI’s favor is that it could serve as a framework or model for moving toward more integration, not only within a company but also between companies in a supply chain. The concept of DSI could be useful in moving processes such as sales forecasting beyond a single-firm focus toward a supply-chain focus. The three principles that Moon advances for DSI – it should be demand driven, collaborative, and disciplined – are exactly what companies need to apply to achieve proper balance between supply and demand. The key is collaboration.

I have come to believe that Dr. Moon is right: it may indeed be time to move beyond S&OP toward a more collaborative process that is strategic in nature, looks at a long-range-planning horizon, engages other functions beyond a firm’s supply-chain management organization, and seeks to include other members up and down the company’s supply chain.

**ACROSS THE SUPPLY CHAIN**

*Demand and Supply Integration* illustrates how DSI can be implemented across a supply chain through linking demand and supply plans across companies. Customers communicate their demand plans to a manufacturer, and these become the inputs to the manufacturer’s demand forecast. The manufacturer in turn uses the demand forecast to develop operational plans, which are communicated back to the customer to be used to develop a capacity forecast. The manufacturer also communicates its demand plan to its tier-one suppliers for developing their operational plans, which are communicated back to the manufacturer. As the book points out, companies already use collaborative processes such as CPFR to share forecasts and plans, but this is typically done between two firms. More comprehensive collaboration could be gained if DSI processes were implemented across multiple tiers in a supply chain.

**FRAMEWORK OF A WELL-RUN DSI PROCESS**

The author explains that the book is not “a primer on the detailed implementation of DSI.” What it does nicely is to provide a framework for understanding the important elements of a well-run DSI process, including foundational principles, necessary components, and elements that need to be in place to make the process work.

Along the way, the book also provides excellent advice pertaining to specific actions that demand forecasters should take to achieve accuracy, such as:

• techniques companies can use to smoke out and minimize some of the gaming-playing tactics and other forms of bias in forecasting;

• questions they should ask customers concerning the processes they use to generate forecasts;

• ways they can measure forecasting performance; and

• methods they can use to obtain and incorporate market intelligence into sales forecasts.

There are also excellent chapters on quantitative and qualitative forecasting techniques that would be very useful to readers who are unfamiliar with these topics, or who simply want to renew their knowledge of them.

**WHERE DOES OUR COMPANY STAND?**

Another excellent section of the book explains how companies can identify where they stand in terms of world-class forecasting, and it provides a framework with which companies can diagnose their forecasting problems to determine the areas that need to be focused on for improvement. They include functional integration, approach to forecasting, forecasting systems, and performance measurement. Companies can rank these aspects of their forecasting process within four stages, “one” being the lowest in quality and “four” being world-class, and use the methods described in the book to improve those areas that need development. I have seen this framework put into
practice as a member of several University of Tennessee sales forecasting audit teams, and can attest to its use as an excellent way to approach forecasting improvement.

TARGET AUDIENCE
So who should read this book? Moon sees his target audience as business professionals who manage demand-forecasting processes. It is written for practicing managers with the intent of giving “practical advice on how to do demand forecasting better.” While I would agree, I would expand upon that target audience to include VPs and C-level executives. Many of us who have tried to implement major process and systems changes have seen what happens when upper management gives lip service rather than real support. Without a good understanding of what DSI means and entails, executive-suite personnel will not likely buy into the necessary commitments in time, money, and people to implement an effective DSI process. Without a firm buy-in, DSI will probably not be set up and funded; even if it is, the results will likely be disappointing.

This book provides higher-level personnel with the knowledge they need to get behind a DSI implementation: an excellent review of the philosophy behind DSI, what is required to put the process in place, and what firms can expect from implementing it.

Other candidates for reading this book would include salespersons involved in forecasting, production planners, operations-planning managers, finance managers, marketing personnel, and manufacturing managers—anyone, really, who is involved in or affected by DSI. The more people understand its importance and how it can help companies achieve long-term goals, the better the chance that it will be adopted and implemented.

Essentially, I have come to believe that Dr. Moon is right: it may indeed be time to move beyond S&OP toward a more collaborative process that is strategic in nature, looks at a long-range-planning horizon, engages other functions beyond a firm’s supply-chain management organization, and seeks to include other members up and down the company’s supply chain.

Ed. Note: Is DSI simply a rebranding of S&OP, or is it a substantial change to the way things are done? The author would like to hear your thoughts on this matter. Please feel free to email John Mello at jmello@astate.edu.

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FOR WHOM

Quantitative analysis is a timely topic, with Big Data concepts reaching a crescendo of popularity these days. But not everyone who has an interest in the outcome of analytics has quantitative know-how. Some may be in non-quantitative roles that depend on others for the heavy analysis work. These are the intended readers of Keeping Up with the Quants.

Problem solving is not the core of analytical thinking. A solution in a vacuum solves nothing. Problems must be framed correctly to reflect a relevant context. Then the results need to be communicated in a manner which facilitates correct interpretation.

Now, if you consider yourself quantitative, say because you have been chewing on meaty algorithms for years, then reading this book will be like biting into a marshmallow. But don’t let that disappoint you. You may find value here nonetheless. A stroll through the book may help you empathize and communicate with the non-quants. Of course, you might also share the book with non-quant colleagues.

I recommend this book for organizations where communication needs to be improved between teams of mixed analytical ability. It may also be handy for business courses in project management where analytics is the focus.

COMMUNICATION OF QUANTITATIVE ANALYSIS

Communication is the book’s theme. Indeed, it is a tenet of problem solving that a conceptual and communication infrastructure should exist for analysis to be meaningful. To facilitate this, the authors recommend six steps of analytical thinking within three stages:

Framing the Problem
• Problem recognition and framing
• Review of previous findings

Solving the Problem
• Modeling and variable selection
• Data collection
• Data analysis

Communicating and Acting on Results
• Results presentation and action

Problem solving is not the core of analytical thinking. A solution in a vacuum solves nothing. Problems must be framed correctly to reflect a relevant context. Then the results need to be communicated in a manner which facilitates correct interpretation.

In any organization, analytics is not plainly mechanical, but a communications process. You can get started on this process with help from the Worksheet for Solving the Problem in chapter three. From there, you will want to maintain a communications framework to keep analytical work relevant to project goals. As such, there must be effective interaction between analysts and non-quantitative stakeholders, who might include managers, customers, suppliers, and support personnel.

Chapter four provides advice for communicating with stakeholders. Most notably, this includes these steps:
• Present results in interesting, comprehensible formats. In place of tables, use color graphics and interactive visual analytics when possible.

• Consider a Q&A meeting rather than a lecture; even a quantitative heavyweight will doze off during a tedious after-lunch barrage of minutiae.

• Engage the stakeholders in discussion using nontechnical language, analogies, and storytelling. Indeed, the authors’ case studies exemplify the storytelling aspect of conveying analytics.

To develop communication skills, the authors describe exercises — performed at Intel — that switch the responsibilities of quants and non-quantitative stakeholders. These facilitate inter-working relationships with personnel putting themselves in the shoes of others. After all, ongoing communication has a lot to do with mutual respect, particularly in firms where specialized engineers spend a great deal of time interfacing with machines rather than people.

Chapter seven presents communications tips for managers, which boil down to honing the quantitative analyst’s assumptions with challenges to clarification and relevance to the project context.

Because mathematics tends to be learned in a context-free format, poor communication with stakeholders may lead to phantom solutions, a situation that can linger as long as technical complexity remains beyond the grasp of the stakeholders. Conversely, if analysis is on target, its misinterpretation by management can mean a lack of conviction to make use of it.

THE CASE STUDIES

The book’s many case studies drive home the importance of communication. While they should enhance one’s appreciation of analytics and problem solving, they are not extensive enough for the development of methodological understanding. If only the authors did not suggest otherwise.

For example, the book’s jacket makes this ambitious claim: “This book promises to become your ‘quantitative literacy’ guide – helping you develop the analytical skills you need right now in order to summarize data, find meaning in it, and extract value.” Then, midway into chapter one there is: “...[this book] shows how to implement analytics with many real-world cases, and ... should make you substantially better at understanding analytics yourself and should transform you into someone who can communicate effectively with others about analytical solutions to problems in organizations.”

While clever analytical investigations are addressed, more method details would be enlightening for quants and non-quants alike. We read that the subject of a case did impressive analysis, but we aren’t allowed to assess the results ourselves. To judge the validity of a study, it would be nice to see the system from which a conclusion was derived. Let us assume that the authors did not really intend for us to assess the quality of the cases themselves, but just wanted to demonstrate a kind of best-practices with their six step process. As such, I don’t think the cases will boost one’s quantitative power.

Consider the description of the Medallion hedge fund in chapter three. The authors infer that rigorous methods are used, but do not tell us what are they and to what extent they matter.

Human nature is subject to a fatal conceit from possessing things that are rare, elegant or impressively complex, like some quantitative methods.

Consider also the description of the famous Black-Scholes options-pricing model. While the model was derived with rigorous statistical tests, it rests on flawed assumptions such as risk-free rates, volatility based on arbitrary periods, and a normal movement of prices that is small and random, with rare events considered irrelevant.

As we know with investment systems, 99% accuracy is meaningless if annihilation occurs 1% of the time. The practitioners of Black-Scholes at Long Term Capital Management found this out the hard way, at best applying the formula and with excessive leverage, and at worst applying even more dubious methods behind the marketing veil of the famous formula.

Maybe the authors should have used Black-Scholes as an example of what not to do, say
next to their discussion of AIG’s mistaken analysis of credit default swaps. Such discussion would exemplify the danger of ignoring context and of applying erroneous assumptions. It could even be connected with the author’s statistical mirages and fallacies discussion in chapter six.

Human nature is subject to a fatal conceit from possessing things that are rare, elegant or impressively complex, like some quantitative methods. Such conceit can lull us to disaster. From Enron to LTCM, from Lehman to AIG, forecasting precision took precedence over forecast relevance, as some successes with impressive quantitative methods fueled hubris and recklessness.

**USING VS. COMMUNICATING ANALYTICS**

The book would benefit from its own advice—that results cannot speak for themselves but must be presented in a more compelling manner—if it put an emphasis on graphics. The book contains short descriptions for several types of visual analytics, like a bar chart, but without examples. Further, none of the case studies contain example visuals in their “Results Presentation and Actions” segment. Please, show me, don’t tell me. The same goes for the section on model selection, which begs for a flow chart.

There is a list of software packages in chapter three, but you have to go to chapter five to get a very general view of their areas of application. It is in no way a buyer’s guide. Perhaps the book’s subtitle should instead be: *Your Guide to Communicating Analytics*.

The authors describe Hadoop and MapReduce (chapter three) as tools for classifying and filtering data. This is, perhaps, too narrow a description. Hadoop is a technology for setting up and running distributed computing systems, on top of which you can accomplish intensive statistical routines via MapReduce or simple batch processing, like converting reports from doc to pdf.

**CONCLUSION**

My recommendation is that this book could benefit organizations where communication needs to be improved between teams of mixed analytical ability. The authors’ six steps of analytical thinking are practical rules of thumb and should enhance analytics where teamwork includes non-quantitative individuals.

While the book is intended for non-quants, I don’t think the authors should downplay the importance of their book for quants. Communication is a two-way street.

Perhaps putting a greater emphasis on communication and foregoing any attempt to teach analytics would broaden the book’s appeal without increasing its potential for disappointment.

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3: an act of looking forward; also: a view forward

- Merriam-Webster Dictionary

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