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*People, Process, Analytics, and
Technology*

Charles W. Chase

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*To my wife, Cheryl, who has always been an inspiration and
supporter of my career and written work.*

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Foreword

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Demand management is one of those essential business functions that every business professional has to know at least a little about regardless of whether they work in marketing, production, finance, or human resources. Sales forecasting and demand management form the foundation for all planning processes. Demand management is also one of those areas that companies continue to struggle with. No matter how good a company is in demand management, there still appears to be more room for improvement. When it comes to demand management, the journey to excellence seems to be an endless one.

In this book, Charlie Chase takes the reader on a journey to excellence in demand management. As a thought leader in this area, he provides a comprehensive and expertly written treatment of demand management for guiding business professionals. He first explains why demand management can be such a challenge for many companies. He then provides a sound framework on which companies can structure or redesign their demand management practices. He addresses many critical issues that are ignored in other books on this topic. He writes about and addresses, among others things, what kind of skills people in demand management should have, what kind of organization is needed for demand management, how to make sense of predictive and descriptive analytics, and how to take advantage of big data and new technologies.

Unlike many other books on the same topic, Charlie provides a big-picture approach to demand management. Based on many years of experience, he integrates strategic, tactical, as well as operational aspects of demand management. Consequently, this book contains

useful insights for everyone from an analyst to a manager to a senior executive. Yet as Charlie writes about the different aspects of demand management, he also provides a unifying vision: The goal of demand management is not to increase forecast accuracy; it is to foster sales growth. This is a truly unique and insightful observation.

As my undergraduate students would say, Charlie “keeps it real.” He carefully chooses the most applicable parts of the theory that have direct applications in the real world of demand management. Readers can directly apply what they learn from this book. The concepts are illustrated by relevant real-life examples, which make them so much easier to understand and apply. Charlie is also careful in avoiding unnecessary theoretical details that are not applicable or that readers can learn on their own. The practical approach taken in this book makes it an excellent choice for practicing managers.

Before I finish, I must say something about SAS. I admit that I am biased in favor of SAS as I have been using it over two decades. As a company, SAS has been on the forefront of demand management not only because of its technological capabilities but also because it chose to integrate business insights of thought leaders like Charlie in their software. This makes SAS the ideal platform for the readers to implement the framework that Charlie has built based on his extensive experience in demand management over many years. In summary, this book is a gem for all who are interested in demand management, including the students in my future forecasting classes.

Preface

In today's volatile market, businesses are urgently seeking new ways to protect themselves and keep profit margins strong. External market factors are creating challenges, and manufacturers, perhaps more than most, are suffering from the consequences of that ripple effect. According to analysts' research, one of the highest-ranking challenges faced by CFOs is generating revenue growth and growing profit margin, yet CFOs believe it's not the right time to increase risk. As a result, companies are challenged with striking a fine balance between delivering growth while minimizing risk.

Meanwhile, as companies continue to strive to maintain market share and grow revenue it ultimately lies in the hands of the C-level and senior management teams to generate profitable growth across all levels of the business. Importantly, that includes organizations that manage the supply chain. There is a shift in focus influencing how companies are managing the supply chain, which is not simply about how supply drives demand, but how demand drives supply. It has been proven time after time that better predicting of the impact of demand on the supply chain increases revenues by at least 3 to 7 percent, and a third of companies could increase it by 6 percent or more.

For the entire business to become more demand-driven, it must secure better control over data and the ability to turn it into actionable insights. To gain a competitive edge requires a change in operational processes because companies are so used to forecasting supply rather than demand. Sales and operations planning processes are a focus, but becoming demand-driven requires a broader shift in the business model. It also requires a radical change in the corporate culture, people skills, horizontal processes, predictive analytics, and scalable technology. The entire company needs to become demand centric, and better equipped to influence and anticipate what consumers are going to purchase before they know what they're going to purchase.

CHANGING INFLUENCES

There are a number of internal and external factors that are shifting companies toward demand-driven business models. It's essential that business leaders recognize the impact of these factors on their business, and act on them.

Today, the traditional top-down approach to supply chain is no longer applicable. Companies have gone through a process where margins have been compromised by changing retailer and consumer purchasing patterns. When retailers started to reduce stock levels and consumers had a tendency to stockpile products, manufacturers responded by creating more product categories in a bid to increase profit margins. The result, product proliferation on shelf, expanded buffer inventories and wasted working capital. Yet forecasts are still based on an inventory or replenishment response.

There is a more fluid distribution of goods today because customer purchase behavior has changed the way products are created and sold. The rise of the Omni-channel and new purchasing processes such as Amazon.com make inventory management more unpredictable. The Omni-channel also increases the influence of external factors like social media, tweeter, and mobile devices which make it more challenging for distributors and retailers to plan deliveries and stock orders. Regardless, same day or next day delivery is an expectation that manufacturers and the supply chain process are tasked to support. These factors are making demand more volatile, and as a result manufacturers can no longer operate using inventory buffer stock to protect against demand volatility as it can too easily result in lost profit.

AUTOMATED CONSUMER ENGAGEMENT

The definition of *fast* for consumers today is dramatically different from the *fast* of 5 to 10 years ago. Consumers are demanding more, and expect it quicker than ever before. This is being driven by the Millennials, as they want instant response and same-day delivery. Consumer demand is no longer driven by supply availability, but instead, companies must shift their operational models by listening to demand and

responding to consumer pull in order to remain successful. A supply push strategy is no longer viable in today's digit world.

Using sales and marketing tactics and a consumer-centric approach, companies are now pulling demand through the channels of distribution. To do so, sales and marketing tactics have to be more focused on the automated consumer engagement (experience). The influence of unstructured data and social media are having a more prevalent impact than ever before on the entire purchase process, which must be factored into the demand management process. This is the result of the openness and availability of consumer feedback that social media influences and delivers. Feedback via social media is both a gift and a detriment for retailers, distributors, and manufacturers. Although it provides insight into sentiment and provides opportunity for brand exposure, it adds additional complexity to how consumer pull can be influenced. It also means demand can be influenced across multiple channels and, more often than not, with very immediate consequences.

Demand is also changing because customers want to consume products in new ways. Subscription lifestyles and shared economies due to the on-demand world have impacted how companies need to plan, design, and create products for an indecisive generation of consumers. The consumer experience must remain at the forefront of retailer and manufacturer priorities. Flexibility, efficiency, and a consumer-centric approach will be the key to their success.

An increasing percentage of revenue will come from new product lines increasing product life cycles, which are getting shorter. Also, levels of stock-keeping units (SKUs) are escalating. This challenges companies to create faster delivery systems for more products, making the supply chain even more complex. In addition, the rise of online shopping and same-day delivery has resulted in consumers expecting quicker turnaround from retailers and the manufacturers that support them. 3D printing at home is representative of this ever-increasing phenomenon. In the near future, consumers who want a product now may well create it themselves. Companies, particularly manufacturers, will be competing with a very short-lived product life cycle. Business leaders will need to adapt their business models in order to cope with more frequent peaks or troughs in consumer demand. This has to

be achieved in a sustainable way and without negative impact on revenue and profit.

NEW WORLD ORDER

Business leaders need to adapt their business models for today's demand-driven supply chain. Big data analytics allows a more accurate demand forecasting and planning process to improve production and shipments. To be successful, companies must redefine their supply chain definition to include the commercial side of the business.

The shift to the next generation demand management will only be achieved through better use of data, the implementation of horizontal processes, and more emphasis on predictive analytics. Subsequently, there needs to more importance on *consumption-based modeling* using a process called *multi-tiered causal analysis* (MTCA), which combines downstream data with upstream data and applies in-depth predictive analytics to:

- Measure the impact of marketing programs on consumer demand at retail
- Link retail demand to shipments from manufacturers to retailers
- Enable manufacturers to perform what-if analyses to shape future demand and help them choose the optimal sales and marketing strategy for producing the highest volume and return on investment (ROI)

Consumption-based modeling is an approach that links a series of quantitative methods to measure the impact of marketing programming and business strategies that influence downstream consumer demand (demand sensing). Then, creating what-if scenarios to shape and predict future demand (demand shaping) using point of sale (POS) and/or syndicated scanner data. Finally, using consumer demand history and the future-shaped consumer demand forecast as a leading indicator in a supply model to enhance supply volumes (shipments and sales orders) using predictive analytics rather than judgment.

Once MTCA measures the KPIs (key performance indicators) that influence consumer demand, the demand analyst can model and

perform what-if simulations to predict and shape future demand, developing short- and long-term forecasts. These simulations capture real-world scenarios and show what happens in different situations. The demand analyst can simulate the impact of changes on key variables that can be controlled (e.g., price, advertising, in-store merchandising, and sales promotions), predict demand, and choose the optimal strategy for producing the highest volume and ROI.

Through this process, leaders can predict how market influences or changes will impact their supply chain, which allows them to formalize ways in which the business can accurately learn through the increasing automated consumer engagement process. It will require more anticipatory predictive analytics to ensure that the right amount of products in the right product mix make it to the shelves and into consumers' hands. The sheer size makes demand forecasting and planning on a global scale highly complex. Product categories, sales regions, and an abundance of participating internal organizations combine to weave a tangled corporate web. "To have the right quantity of the right products at the right place and time," companies will rely heavily on the combination of transactional data and digital information to anticipate and influence what consumers will purchase. The overarching goal is to be able to "take proactive measures instead of simply reacting" through strong horizontal alignment processes, stronger collaboration with key accounts (customers), and the use of predictive analytics supported by scalable technology.

GAME CHANGER

To make the shift to the next generation demand management, leaders need to bring together different aspects of the organization to make informed decisions based on a holistic view of available data. Previously, the technology available to companies did not facilitate the integration of data, nor facilitate predictive analytics. This is especially true for the sales, marketing & operations planning organizations. They will all be required to source and share data on a continual basis and learn from not only the shared knowledge collected from across the company, but from information collected digitally by sensors, as a result of Internet of Things (IoT). This is why the corporate culture

is crucial to the success of this new demand management model. The culture requires an atmosphere of horizontal collaboration, trust of predictive analytics, and scalable technology in order to ensure all the ingredients are in place. Similarly, organizations need to be ready to work quickly with minimal latency to act on the trends and insights produced. Failure to do so risks a reactive culture prevailing.

There needs to be people with the appropriate skills to provide advice to drive the process with the right domain expertise to make more informed fact-based decisions to support business strategies. There is also a broader requirement for those involved to better understand how supply chains are managed under the new demand management model. For example, making sure demand and supply data are not confusing, but, rather, integrated—working in lock-step to deliver value to consumers and customers. Finally, sales and marketing organizations will need a new way to source and organize information in order to feed into the new generation demand management model. The frequency and the way in which the company collects data will require changes, as well.

Like all change management, transitioning to the next generation demand management model while working in a volatile marketplace is a journey that requires time and does not happen overnight. Data and predictive analytics provide the insights and quantify the challenges a company is facing, but it is business leaders who see the bigger picture, realize the urgency and are not afraid to tackle changes, and the frequency of recurring common problems. So to make informed decisions on how to reorganize and resource the business will require leaders, not followers.

The myriad forces impacting the relationship between demand and supply are set to expand their influence. Finding ways to be better prepared means implementing a corporate culture and structure that brings together organizations, and most of all, data from different sources. The analytics and technology capability is now available, so organizational changes and skills must be the focus to transition to the next generation demand management. However, it will also require ongoing change management to not only gain adoption but sustainability that will eventually become the new corporate culture.

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A number of friends and colleagues over the course of my career have been influential in my success as a thought leader and trusted adviser. Their continued support and encouragement made it possible to write this book.

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Most of all, I want to thank my wife, Cheryl, for keeping the faith all these years and supporting my career. Without her support and encouragement, I would not have been in a position to write this book.

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About the Author

As Advisory Industry Consultant and Consumer Packaged Goods (CPG) Team Lead for the Global Retail/CPG Industry Practice at SAS Institute, Charles Chase is a thought leader and trusted adviser for delivering demand-driven solutions to improve SAS customers' supply chain efficiencies. Chase has more than 20 years of experience in the CPG industry and is an expert in demand forecasting and planning, market response modeling, econometrics, and supply chain management.

Prior to working as Advisory Industry Consultant, Chase led the strategic marketing activities in support of the launch of SAS Forecast Server, which won the Trend-Setting Product of the Year Award for 2005 by *KM World* magazine. Chase launched the SAS Demand-Driven Planning and Optimization Solution in 2008, which is being used by more than 100 large corporations globally. He has also been involved in the reengineering, design, and implementation of three forecasting/marketing intelligence process/systems. He has previously worked for the Mennen Company, Johnson & Johnson, Consumer Products, Reckitt & Benckiser, the Polaroid Corporation, Coca Cola, Wyeth-Ayerst Pharmaceuticals, and Heineken USA.

Chase's authority in the area of forecasting/modeling and advanced marketing analytics is further exemplified by his prior posts as president of the International Association of Business Forecasting, associate editor of the *Journal of Business Forecasting*, and chairperson of the Institute of Business Forecasting (IBF) Best Practices Conferences. Chase currently writes a quarterly column in the *Journal of Business Forecasting* titled "Innovations in Business Forecasting." He also served as a member of the Practitioner Advisory Board for *Foresight: The International Journal of Applied Forecasting*.

In 2013, Chase won the Institute of Business Forecasting Lifetime Achievement Award, and the following year he was certified in professional forecasting by the Institute of Business Forecasting. In 2004, he was named Pro to Know by *Supply and Demand Chain Executive*

magazine. He is the author of *Demand-Driven Forecasting: A Structured Approach to Forecasting*, which is now in its second edition (Hoboken, NJ: John Wiley & Sons, 2013), and, with Lora Cecere, *Bricks Matter: The Role of Supply Chains in Building Market-Driven Differentiation* (Hoboken, NJ: John Wiley & Sons, 2013). He served as an adjunct instructor in the Masters of Science in Analytics program at North Carolina State University in 2012–2013.

CHAPTER 1

The Current State

Today's business challenges are numerous due to globalization pressures, supply chain complexity, rising customer demands, and the need to increase revenues across global markets while continuing to cut costs. Adding to these challenges is the current economy in which the last several years supply has outstripped demand. Intense *market volatility and fragmentation* are compelling companies to develop and deploy more integrated, focused, demand-driven processes and technologies to achieve best-in-class performance. As a result, there have been major shifts in demand management.

Unfortunately, there has been more discussion than actual adoption, and where adoption has occurred, there has been little if any sustainability. Demand-driven processes are challenging and more difficult to get right than supply, and they tend to be *politically charged*. Furthermore, implementing a demand-driven process in support of a new-generation demand management process requires investment in people, process, analytics, and technology. Adoption requires an executive *champion* who has the influence to change corporate behavior, encourage new analytics skills (descriptive and predictive), and integrate processes horizontally utilizing new scalable technology. Strategic intent and interdependencies play a key role in maintaining long-term sustainability. Without sustainability, the adoption of new conceptual designs like *demand-driven* tends to fail over the long-term. In most cases manufacturers lack the necessary analytical skills, horizontal processes, and scalable technologies needed to capitalize on *big data* and digitally collected information. After all, it's not just about process anymore.

As shown in Figure 1.1 investment in *people, process, analytics, and technology* requires a champion not only to facilitate adoption but also for sustainability purposes. Sustainability can only occur if the strategic intent and business interdependencies are horizontally aligned and supported by scalable technology.

Companies are realizing that moving to the next generation demand management will require a laser focus on four key areas:

1. Investing in their people's skills, which requires change in behavior
2. Reorganization around horizontal processes

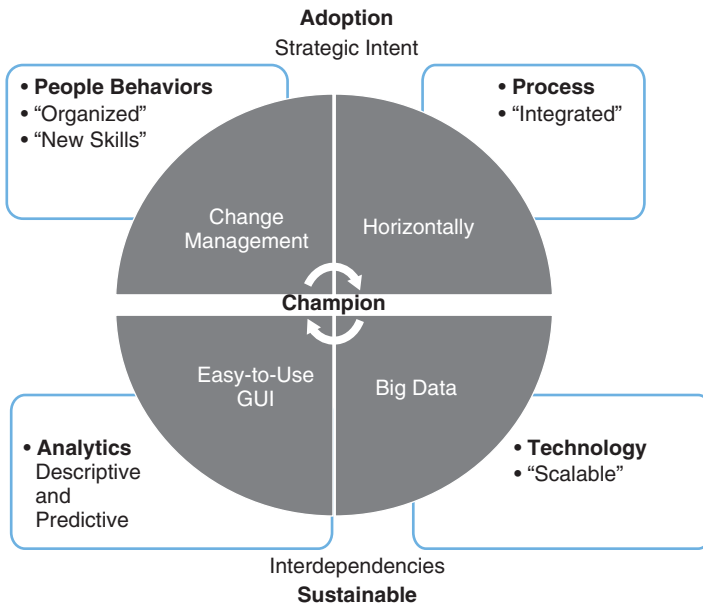


Figure 1.1 People, process, analytics, and technology required for adoption and sustainability.

3. Integrating predictive as well as descriptive analytics into the process
4. Investing in large-scale automatic forecasting technology

These four areas are the key catalysts to move from the current state to the future state, along with good metrics to measure progress. Although adoption requires changes in people behaviors that include new skills and horizontal processes, it will also require more focus on predictive analytics supported by large-scale technology that can adapt and scale to big data. It requires changes in corporate culture led by a champion who has the authority and leadership to not only drive adoption, but also create a new corporate culture that stresses accountability with a focus on customer excellence. Finally, sustainability can only occur if the strategic “intent and business interdependencies” are horizontally aligned and supported by scalable technology.

In many cases, companies get adoption, but once the champion moves on to a new project, the process participants tend to go back to the old process, stop investing in new skills, bypass the analytics,