

Brought to you by:



Rockwell
Automation

PLEX

Supply Chain Planning

for
dummies[®]
A Wiley Brand



Unleash your
business potential

Continuously improve
the planning cycle

Adopt a digital
planning solution

**Plex DemandCaster Supply
Chain Planning 2nd Special Edition**

**Ara Surenian
Daniel Stanton**

About Plex DemandCaster Supply Chain Planning

Plex DemandCaster Supply Chain Planning makes deciphering data simple and planning controllable. Businesses can accurately forecast and solve inventory problems proactively. A united business with higher visibility helps manufacturers accelerate growth with confident data-driven decisions. The Plex DemandCaster Supply Chain Planning solution is part of the Plex Smart Manufacturing Platform, which also includes MES, ERP, Industrial IoT, quality, and analytics. With Plex, a Rockwell Automation Company, manufacturers can drive true business transformation by connecting, automating, tracking, and analyzing every aspect of their business. Learn more at **www.plex.com/demandcaster**.



Supply Chain Planning

Plex DemandCaster Supply
Chain Planning 2nd Special Edition

**by Ara Surenian and Daniel
Stanton**

**for
dummies[®]**
A Wiley Brand

Supply Chain Planning For Dummies®, Plex DemandCaster Supply Chain Planning 2nd Special Edition

Published by

John Wiley & Sons, Inc.

111 River St.

Hoboken, NJ 07030-5774

www.wiley.com

Copyright © 2022 by John Wiley & Sons, Inc., Hoboken, New Jersey

No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning or otherwise, except as permitted under Sections 107 or 108 of the 1976 United States Copyright Act, without the prior written permission of the Publisher. Requests to the Publisher for permission should be addressed to the Permissions Department, John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030, (201) 748-6011, fax (201) 748-6008, or online at <http://www.wiley.com/go/permissions>.

Trademarks: Wiley, For Dummies, the Dummies Man logo, Dummies.com, and related trade dress are trademarks or registered trademarks of John Wiley & Sons, Inc. and/or its affiliates in the United States and other countries, and may not be used without written permission. Plex and the Plex logo are trademarks or registered trademarks of Plex Systems, a Rockwell Automation Company. All other trademarks are the property of their respective owners. John Wiley & Sons, Inc., is not associated with any product or vendor mentioned in this book.

LIMIT OF LIABILITY/DISCLAIMER OF WARRANTY: THE PUBLISHER AND THE AUTHOR MAKE NO REPRESENTATIONS OR WARRANTIES WITH RESPECT TO THE ACCURACY OR COMPLETENESS OF THE CONTENTS OF THIS WORK AND SPECIFICALLY DISCLAIM ALL WARRANTIES, INCLUDING WITHOUT LIMITATION WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE. NO WARRANTY MAY BE CREATED OR EXTENDED BY SALES OR PROMOTIONAL MATERIALS. THE ADVICE AND STRATEGIES CONTAINED HEREIN MAY NOT BE SUITABLE FOR EVERY SITUATION. THIS WORK IS SOLD WITH THE UNDERSTANDING THAT THE PUBLISHER IS NOT ENGAGED IN RENDERING LEGAL, ACCOUNTING, OR OTHER PROFESSIONAL SERVICES. IF PROFESSIONAL ASSISTANCE IS REQUIRED, THE SERVICES OF A COMPETENT PROFESSIONAL PERSON SHOULD BE SOUGHT. NEITHER THE PUBLISHER NOR THE AUTHOR SHALL BE LIABLE FOR DAMAGES ARISING HEREFROM. THE FACT THAT AN ORGANIZATION OR WEBSITE IS REFERRED TO IN THIS WORK AS A CITATION AND/OR A POTENTIAL SOURCE OF FURTHER INFORMATION DOES NOT MEAN THAT THE AUTHOR OR THE PUBLISHER ENDORSES THE INFORMATION THE ORGANIZATION OR WEBSITE MAY PROVIDE OR RECOMMENDATIONS IT MAY MAKE. FURTHER, READERS SHOULD BE AWARE THAT INTERNET WEBSITES LISTED IN THIS WORK MAY HAVE CHANGED OR DISAPPEARED BETWEEN WHEN THIS WORK WAS WRITTEN AND WHEN IT IS READ.

For general information on our other products and services, or how to create a custom *For Dummies* book for your business or organization, please contact our Business Development Department in the U.S. at 877-409-4177, contact info@dummies.biz, or visit www.wiley.com/go/custompub. For information about licensing the *For Dummies* brand for products or services, contact BrandedRights&Licenses@Wiley.com.

ISBN 978-1-119-90633-9 (pbk); ISBN 978-1-119-90634-6 (ebk)

Publisher's Acknowledgments

We're proud of this book and of the people who worked on it. For details on how to create a custom *For Dummies* book for your business or organization, contact info@dummies.biz or visit www.wiley.com/go/custompub. For details on licensing the *For Dummies* brand for products or services, contact BrandedRights&Licenses@Wiley.com.

Some of the people who helped bring this book to market include the following:

Project Manager: Martin V. Minner

Senior Managing Editor: Rev Mengle

Managing Editor: Camille Graves

Acquisitions Editor: Ashley Coffey

Business Development Representative:
Matt Cox

Production Editor:
Mohammed Zafar Ali

Table of Contents

INTRODUCTION	1
About This Book	1
Foolish Assumptions	2
Icons Used in This Book	2
Where to Go from Here	3
 CHAPTER 1: Unleashing Business Potential with Supply Chain Planning	5
Defining Supply Chain Management	5
Exploring Complex Business Challenges	7
Operating Under Supply Chain Planning Principles	8
Customer focus	8
Systems thinking	9
Collaboration	9
Flexibility	9
Global perspective	10
Risk management	10
Visibility	10
Balancing Demand and Supply	11
Aligning Resources with Requirements	11
 CHAPTER 2: Using Supply Chain Planning to Make Better Decisions	13
Anticipating Customer Needs	13
Trimming Excess Inventory	14
Responding to Uncertainty and Disruptions	16
 CHAPTER 3: Implementing a Repeatable Planning Process	19
Deciphering the Data	19
Developing the Demand Plan	20
Driving the Supply Plan	21
Delineating the Constraints	22
Delivering Consensus	22
Deliberately Executing	23
Doing It Again	23
 CHAPTER 4: Digitizing Your Planning Process	25
Understanding How Processes Evolve	26
Preparing Your Organization for Supply Chain Planning	27

	Improving collaboration.....	28
	Gathering historical records.....	28
	Analyzing available data.....	28
	Unlearning bad habits.....	28
	Broadening business insight.....	29
	Addressing the Unique Planning Challenges in Your Industry.....	29
	Discrete manufacturing	29
	Food and beverage	29
	Consumer packaged goods.....	30
CHAPTER 5:	Adopting a Planning Solution	31
	Uniting the People, Processes, and Technology.....	31
	Pursuing Positive Business Outcomes.....	32
	Aligning KPIs for Supply Chain Planning.....	33
	Reduction in inventory	33
	Increase in service levels.....	33
	Decrease in production lead times.....	34
	Improvement in manufacturing capacity	34
	Increase in sales revenues per employee.....	34
CHAPTER 6:	Maximizing the Business Benefits of Supply Chain Planning.....	35
	Gaining Alignment.....	35
	Driving Accountability.....	36
	Satisfying Customers	37
	Improving Profitability	37
	Minimizing Costly Mistakes.....	38
CHAPTER 7:	Ten Questions to Ask About Your Supply Chain Planning Process	39
	What Tools Do You Have for Planning and Managing Your Supply Chain?	39
	Can Your Supply Chain Adapt to Changes?.....	40
	Does Your Supply Chain Differentiate You from Your Competitors?.....	40
	What Changes Might Lower Your Inventory Costs?	40
	How Much Value Can SCP Unlock for Your Business?	41
	Which KPIs Should You Use for SCP?	41
	Who Should Be Involved in the SCP Process?.....	41
	How Can Your Supply Chain Planning Be Improved?	42
	How Consistent Is Your Planning Process?	42
	How Resilient Is Your Planning Process?	42
	GLOSSARY	43

Introduction

The manufacturing industry is volatile and competitive, so companies need to be fast and agile in order to survive and thrive. Supply chain planners and managers need to create an environment that allows them to precisely control production and maintain visibility into their critical processes. They also need the ability to easily adapt by identifying requirements and constraints, as well as collaborating with corporate planners and executives. By adopting the latest technology, companies can increase production rates, accelerate processes, reduce risks, lower costs, and improve quality.

A supply chain planning (SCP) system can provide all of these benefits, and more. From inventory requirements to production constraints, an SCP system helps to integrate many of the critical functions in your business so that you can make better decisions and launch valuable continuous improvement initiatives based on accurate data.

In this book, you'll learn what SCP is and how it can help you pursue operational excellence throughout your company.

About This Book

Supply Chain Planning For Dummies, Plex DemandCaster Supply Chain Planning Special Edition, consists of six chapters that explore

- » Why manufacturing companies need SCP (Chapter 1)
- » How SCP improves business decisions (Chapter 2)
- » How to get started with a SCP process (Chapter 3)
- » How to digitize planning (Chapter 4)
- » How to prepare for SCP adoption (Chapter 5)
- » How to drive value with your SCP solution (Chapter 6)

Foolish Assumptions

In writing this book, I assume that you want to learn more about SCP because

- » You work in a manufacturing company
- » You're managing lots of inventory, but don't have an easy way to decide what you need, how much you need, and when you need it
- » You want a better understanding of how to use technology to synchronize all of your business operations

Icons Used in This Book

Icons emphasize a point to remember, a danger to be aware of, or information that you may find helpful.



TIP

The Tip icon marks tips (duh!) and shortcuts that you can use to make supply chain planning (SCP) implementations easier.



REMEMBER

Remember icons mark information that's especially important to know. To siphon off the most important information in each chapter, skim the paragraphs that have these icons.



TECHNICAL
STUFF

The Technical Stuff icon marks information of a highly technical nature that you can normally skip.



WARNING

The Warning icon tells you to watch out! It marks important information that may save you headaches.

Where to Go from Here

You can read this book in different ways, depending on why you're reading it. You can certainly start at the beginning, and skip the things you already know, but we've written the book so that you can start reading anywhere that catches your eye and then hunt for additional bits that sound interesting.



TIP

No matter how you go through the book, you'll eventually want to read all the chapters. Each chapter is useful on its own, but the book as a whole helps you understand why SCP is important and how to implement your own SCP solution successfully.

IN THIS CHAPTER

- » Understanding supply chain planning relative to supply chain management
- » Aligning supply chain planning with the goals of your business
- » Optimizing supply chain performance to drive better results for you, your suppliers, and your customers

Chapter 1

Unleashing Business Potential with Supply Chain Planning

These days, it's hard to find a copy of *The Wall Street Journal* that doesn't have the phrase *supply chain* somewhere on the first page. You hear about supply chains everywhere: in company reports, on the news, and even in casual conversation. But it hasn't always been that way. Only in the past 35 years have supply chains gone from being a vague academic concept to a critical business capability. This chapter covers why understanding supply chains has become so important and explains the process for building a best-in-class supply chain for your company.

Defining Supply Chain Management

In spite of the current hype, supply chains aren't really that new. Entrepreneurs have been buying things from suppliers and selling products to customers for almost as long as people have inhabited the earth. However, supply chain *management* is new. In fact, the basic principles of supply chain management only began to take

shape in the 1980s, at about the same time that personal computers came onto the business scene. You can see the trend clearly by using Google's N-Gram Viewer, shown in Figure 1-1, which tracks how often the term "supply chain" has been used in book titles.

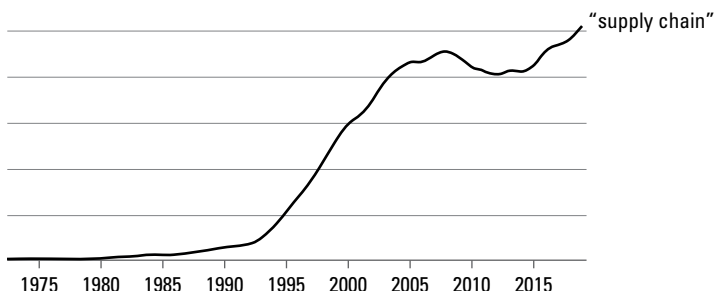


FIGURE 1-1: Frequency of "supply chain" appearing in book titles.

Supply chain management includes the planning and coordination of all of the people, processes, and technology involved in creating value for a company. It means becoming forward thinking and looking at your business as a single link in a long, end-to-end chain that supplies something of value to a customer.



TIP

The word "value" shows up a lot when people talk about supply chain. Basically, value means "money." If a customer is willing to pay for something, then it has value.

Negotiating prices, scheduling manufacturing, and managing logistics all affect the value equation for a company. But because they are so interdependent, it's a bad idea to manage them separately, in silos. As companies grow larger, supply chains get longer, and the pace of business gets faster, which means it becomes more important to keep the various functions in a supply chain aligned. Ironically, many of the strategies and metrics that businesses relied on in the past, and that managers have been taught to use, can drive the wrong behaviors. For example, a sales rep might hit her quota by landing a huge deal with a customer, but it may be unprofitable for the company because of high logistics and manufacturing costs incurred. So sales, logistics, manufacturing, procurement, and all your other functions must be aligned to ensure that the business is pursuing profitable deals.



TIP

The difference between the amount of money your company brings in (revenue) and the amount of money you spend (costs) is your profit. Your profit is the amount of value that you have captured from your supply chain.

Companies that do a good job of planning their supply chain are better able to take advantage of value-creation opportunities that their competitors might miss. For example, by implementing Lean manufacturing, companies can reduce inventories. By being responsive to customer needs, they can build stronger relationships with customers and grow sales. By collaborating closely with suppliers, they can get access to the materials they need, when they need them, at a reasonable cost. And by forecasting demand and planning for it, they are better prepared to deliver in a more profitable, timely way.



TIP

Chapter 6 of this book is all about ways you can use supply chain planning to create more value.

Exploring Complex Business Challenges

Managing a business involves many moving pieces, and so many things can change in an instant, that making long-term plans can seem virtually impossible. How can you plan for commodity price swings, natural disasters, and financial meltdowns? You can't. But you can't ignore those possibilities, either. Instead, you need to think about them, and design your business so that it can function well under a range of scenarios. To use scenario planning to prepare for the unknown and the unknowable, you need to know three important things:

- » Which scenarios are most important to you.
- » What you'll do — and how — in each scenario.
- » How you can tell when a scenario is becoming reality.

Here are a few practical examples to explain this concept:

- » You run a manufacturing company that makes products overseas, so you need to consider what you'd do if one of your inbound shipments is lost at sea, impounded by customs, captured by pirates, or caught in a port strike. You'll have to decide whether to carry extra inventory, change your transportation modes, or even whether you should consider working with different suppliers.

» You work for a consumer packaged goods company that has been selling a product at a steady rate for months, but one month, the company sells twice as much as normal. You don't have enough inventory to fill all your customer orders, and now you also have back orders to fill. You may even be at risk of losing some big sales and big customers. You might decide to place bigger orders in the future and keep more inventory on hand. That means you'll be investing more working capital into inventory. If sales drop off in the future, you'll have to figure out what to do with that extra inventory.

Thousands of companies have had to face these scenarios in the past few years. In every case, making the right decision about how to respond requires understanding supply chains and supply chain planning.



TIP

There's more information about using supply chain planning to make better business decisions in Chapter 3.

A good way for you to start learning about supply chain planning is to take a look at some of the general principles. These principles are a way of describing the essence of supply chain planning.

Operating Under Supply Chain Planning Principles

Many people try to describe supply chains by talking about what they do, which is a bit like describing a cake by giving someone a recipe. A different approach is to describe what supply chains create. To continue the cake example, that means describing how the finished cake tastes and what it looks like. The principles in this section describe some of the primary goals of supply chain planning.

Customer focus

Supply chain planning starts with understanding who your customers are and why they're buying your product or service. Any time customers buy your stuff, they're solving a problem or filling a need. Supply chain planners must understand the customer's problem or need and make sure that their companies can satisfy it better, faster, and cheaper than competitors can.

Systems thinking

Supply chain planning requires an understanding of the end-to-end system — the combination of people, processes, and technologies — that must work together so that you can provide your product or service. Systems thinking involves an appreciation for the series of cause-and-effect relationships that occur within a supply chain. Because they are complex systems, supply chains often behave in unpredictable ways, and small changes in one part of the system can have major effects somewhere else.

Collaboration

Supply chain planning can't be done in a vacuum. People need to work across silos inside an organization, and they need to work with suppliers and customers outside the organization. A “me, me, me” mentality leads to transactional relationships where people focus on short-term opportunities while ignoring the long-term results. This approach costs more money in the long run because it creates a lack of trust and an unwillingness to compromise among the players in the supply chain. An environment in which people trust one another and collaborate for shared success is much more profitable for everyone than an environment in which each person is concerned only with his or her own success.

Flexibility

Supply chain planning helps to prepare for a range of scenarios so that you have fewer surprises. When surprises occur, planning also helps supply chains to be more flexible. Flexibility is a measurement of how quickly your supply chain can respond to changes, such as an increase or decrease in sales or an interruption of supply. This flexibility often comes in the form of extra capacity, multiple sources of supply, and alternative forms of transportation. Usually, flexibility costs money, but it also has value. The key is understanding when the cost of flexibility is a good investment.



TIP

Think of the extra cost that you pay for flexibility as a kind of insurance policy. You're paying more up front to have that insurance policy, but in return, you're protecting your supply chain from a possible disruption.

Global perspective

The ability to share information instantly and to move products anywhere means that every company today operates in a global marketplace. Many companies operate facilities around the world and rely on suppliers in other countries. Markets, tariffs, and regulations change, so production may move offshore, or it may be reshored. As a supply chain planner, you need to recognize that your business depends on global factors to supply inputs and drive demand for outputs. You also need to think globally about competition. After all, your company's real competitive threat could be a company you've never heard of on the other side of the planet.

Risk management

When you combine high performance requirements with complicated technologies and dependence on global customers and suppliers, you have a recipe for chaos. Lots of variables exist, and lots of things can go wrong. Even a small disturbance, like a delayed shipment, can lead to a series of problems further down the supply chain, such as stockouts, shutdowns, and penalties. Good supply chain planning involves detecting and surfacing threats to put them in processes that mitigate and minimize risk. Stability may be the key to making supply chains work smoothly, but risk management is the key to avoiding or minimizing the costs of dealing with surprises. Done well, risk management can provide opportunities to capture value during times of uncertainty.

Visibility

You can't manage what you can't see, so supply chain planning makes visibility a priority. Knowing what's happening in real time (or close to real time) lets you make better decisions faster. Visibility comes at a cost, however: You have to build your supply chain in a way that lets you capture data about key steps in the process. The value of visibility is that it lets you make decisions based on facts rather than on intuition or uncertainty. Having better visibility into supply and demand allows you to optimize the amount of inventory that you hold throughout the supply chain.

Balancing Demand and Supply

In theory, all that a manufacturing company really needs to do is balance demand and supply profitably. But because real-world demand and supply are complex and unpredictable, this one simple job is difficult.

On the demand side, the company has sales and marketing teams that are trying to push products out to customers. Although you may have some sales history to use as a basis for forecasting future revenues, it's hard to know how effective a new marketing campaign or sales promotion is going to be. It's even harder to predict how external events and trends might influence the demand for some, or all, of your products.



TIP

The COVID-19 outbreak led to an unexpected spike in demand for household products like toilet paper, which caused frustration for customers and created significant challenges for the entire supply chain.

On the supply side, companies need to maintain a careful balance to keep costs down. For example, companies may try to reduce inventory levels to free up working capital. But if they don't have enough inventory, they may not be able to manufacture products or fill customer orders. In that case, saving money on inventory can lead to a reduction in revenue and profits because you miss out on sales.

Balancing demand and supply also involves geography because you need to have products in the right place in order for your customers to buy them. Many companies pay high costs for expedited transportation to get products where they need them in a hurry, and this eats into their profitability.

Aligning Resources with Requirements

Anything that's useful for creating value can be a *resource*, and supply chain planning is about using your resources as efficiently as possible. Your employees, your buildings, and your equipment are resources. The money you have in the bank is a resource, too, and so is the money the bank will lend you on credit.

The way to determine how useful a resource can be is by measuring its capacity. For example, you can measure the capacity of a building by calculating its area. You can measure the capacity of a machine by calculating its speed or throughput.

Resources have limits, and these limits are called *constraints*. A constraint for employees might be that they can work a maximum of 40 hours per week. A constraint for a truck might be that it can't drive faster than 35 miles per hour on a certain road.

When you set goals for a business, such as how many products you plan to make or sell, you create *requirements* for your supply chain. If you plan to sell 1,000 widgets, then your requirement is to have enough production and inventory capacity to satisfy that demand. In order to know whether you have the required capacity in your supply chain, you need to account for the constraints on all of your resources.



TIP

A constraint that prevents a company from meeting a goal is often called a *bottleneck*.

Businesses usually discover the constraints and bottlenecks in their supply chain when they run out of space or when they can't fill customer orders efficiently. These issues often lead to increased costs, such as overtime labor and expedited transportation. Constraints may also be eliminated by investing in additional resources, such as new buildings and additional equipment. But in almost every case, the fastest, cheapest, and most effective way to align resources with requirements is by implementing a system to optimize supply chain planning and scheduling.

IN THIS CHAPTER

- » Forecasting the demand from your customers
- » Reducing the amount of inventory in your network
- » Managing risk and uncertainty in a volatile environment

Chapter 2

Using Supply Chain Planning to Make Better Decisions

Supply chain leaders make important decisions about when to buy materials, which products to make, and how much inventory to hold. These decisions have far-reaching impacts on every part of the business, from customer service levels to manufacturing capacity utilization. This chapter explains how effective supply chain planning is essential for meeting your customers' needs profitably, especially in today's unpredictable business environment.

Anticipating Customer Needs

When you go shopping for an item, how do you decide which store to buy it from? In most cases, you'll shop from a store that provides a product that meets your quality standards, can deliver the product at the time you need it, and offers it for the lowest cost. Thus, you have three main criteria: good, fast, and cheap.

Your customers use the same criteria when deciding whether to buy products from your business. To meet their needs, you need to stay one step ahead of them by making sure you have the products they want, when and where they need them, for a price they're willing to pay. In other words, you need to forecast their demand for your products.

Demand planning begins with an analysis of your historical sales. Looking at past trends and seasonal variation can provide important insights about what your future demand will look like. In some supply chains, you may want to analyze the demand patterns for each of your customers or distribution facilities. This approach may be useful if the demand from some of your customers is growing quickly while the demand from others is shrinking. In other cases, like when the demand is changing at the same rate for all of your customers, it may be simpler to aggregate the data and just look at the total demand.

Most companies need to perform demand planning for each product they make. But some companies sell variations of the same product and assign a different stock-keeping unit (SKU) to each one. For example, a beverage company might sell soda in 6-packs and 24-packs. In that case, they would do demand planning at both the product level and the SKU level in order to plan effectively.

Some demand planning systems incorporate industry data and translate it into a demand forecast for more realistic and accurate demand plans.

Demand planning can also include predictions about the impact of future promotions, changes occurring in the market, and even government regulations.



REMEMBER

The goal of demand planning is to collect as much information as you can about what your customers are likely to buy and when they are likely to buy it, so that you can be prepared to sell it to them good, fast, and cheap.

Trimming Excess Inventory

Inventory is expensive. It ties up working capital, and it takes up space in your facility. Sometimes, inventory gets damaged, lost, scrapped, or stolen. And the longer you have it, the greater the

chance that inventory will lose its value because it has spoiled, expired, or become obsolete. But you need to have some inventory on hand to keep production lines running smoothly and to fill customer orders quickly. The goal is to have just enough inventory, and no more than you need.

Supply chain planning (SCP) is the key to setting inventory levels correctly and adjusting purchasing and manufacturing plans to ensure that you don't end up with too much or too little inventory. SCP can help you make sure you have the right amount of inventory for each product, and that it's stored in the right locations.

You need to consider lots of factors to set your inventory targets correctly and put the right replenishment policies in place. Most companies begin by thinking about inventory in terms of two categories: cycle stock and safety stock. *Cycle stock* is the inventory expected to be sold based on demand forecasts over a specific period of time. This period could be defined as the purchase or production lead time or another period based on an optimal lot size.

Lot size and *cycle stock* are sometimes used interchangeably. The difference is that *lot size* is the final order quantity with optimizing production and purchasing costs in mind.

For example, a manufacturing company might purchase its raw material in a shipping container with 1,000 widgets once per month and then consume those widgets throughout the month. In this case, the lot size is 1,000 widgets, and the cycle stock would range from a maximum of 1,000 widgets at the beginning of the month to a minimum of zero at the end of the month. This cycle stock ensures that the company consistently has enough material on hand to meet demand from its customers until the next container of material arrives.

In real-world supply chains, the demand is not always steady, and that's why you need safety stock, or "just in case" inventory, too. You can use lots of fancy algorithms to calculate optimal safety stock levels, and these formulas are built into many supply chain planning systems. The important thing to understand is that safety stock is like an insurance policy that protects you from running out of inventory if you get a large order, or if your supply chain gets disrupted. The more unpredictable your customers and suppliers are, the more safety stock you need.



TIP

On average, the amount of inventory on hand is half the lot size plus safety stock.

When you combine the cycle stock with the safety stock, you get your total inventory target. Companies often borrow money from a bank in order to buy inventory, so they estimate the cost of holding inventory based on their cost of capital. If a company has to pay an interest rate of 10 percent to the bank for the inventory it's holding, that expense reduces profitability. Because reducing the unnecessary inventory is like trimming the fat out of a supply chain, it is commonly referred to as making the supply chain *lean*.



REMEMBER

When you're making decisions about how much inventory you should have, your goal is to make sure that you have enough of each product in the right places to respond to the expected and unexpected demand from all of your customers. But you also want to make sure that you don't have more inventory than you need.

Responding to Uncertainty and Disruptions

If supply chains were predictable, managing inventory would be fairly simple. But real-world supply chains deal with a constant series of surprises that affect even well-thought-out plans. Think about the impact that each of these events can have on your ability to make or distribute products to your customers:

- » A labor strike occurs at the port your inbound materials are shipped through.
- » A celebrity posts a positive review of your product on social media.
- » Changing trade rules cause your customers to place a huge order.
- » A pandemic prevents your customers from using your product.

Unpredictable issues like these occur in supply chains every day, and they have the potential to disrupt the flow of materials. To protect your supply chain from disruption, you need to implement a supply chain risk management process.

You may find people using the words *risk*, *threat*, and *disruption* interchangeably, but in the context of supply chain planning, each of them means something slightly different. A *risk* is an event that may or may not occur, such as a hurricane. *Risk* is just another word for uncertainty. A *threat* is the impact the risk would have on your supply chain; in the case of a hurricane, one threat might be that your factory would be flooded. A *disruption* is how the threat would affect your business and that of your supply chain partners. If a hurricane flooded your factory, your supply chain would be disrupted because you couldn't manufacture products.

Strictly speaking, risks can be good or bad. There is a risk that you might receive a big order, but there is also a risk that you could lose a customer. Good risks, such as big orders, are called *upside risks* because they are related to growing your business; bad risks are called *downside risks*. Either type of risk can lead to supply chain disruptions. A rapid increase in customer orders can trigger a buildup of inventory and overwhelm a distribution center, for example. The result would be a disruption in the ability of the distribution center to process shipments efficiently. Even so, it's typical for supply chain risk management processes to focus mostly on the downside risks.

A supply chain's vulnerability to disruptions can have serious consequences for all the businesses involved. Reducing this vulnerability requires collaboration among the firms in a supply chain so that they can help one another deal with threats as they emerge. The goal, of course, is to engineer and manage your supply chain so that it can function during and after a disruption — in other words, to be resilient.

The first step in managing risks is identifying them. You likely have a good idea of some of the things that might go wrong with your supply chain. To fully understand the scope of risks, however, you need input from other people who see, understand, and manage different parts of the supply chain.

After you identify your risks, the next step is scoring them. Risk scores can help you prioritize which risks you need to be most concerned about.

You score risks based on how likely they are to occur (probability) and how severe their effects would be (impact). Then you multiply these scores to get an overall risk score.



WARNING

Risk scoring is handy but not perfect. Just because a risk gets a low score doesn't mean that you should ignore it, especially if the potential impact is severe. Any risk that has the potential for someone to get hurt must be addressed, even if the probability (and the risk score) are low.

In order for supply chain risk analysis to make a difference in your supply chain planning, you also need to decide what to do about each risk. The action you decide to take is called the *risk treatment*. The good news is that your risk treatment options are fairly simple. You have four choices:

- » **Accept the risk.** Even though you know that a risk exists, you don't always have a good way to resolve it. The risk may be relatively small, or it could be so enormous that it's impossible to avoid. In those cases, you may decide that the risk is part of the business you're in and that you'll deal with the consequences if the risk materializes.
- » **Transfer the risk.** Sometimes, you can make someone else deal with a risk for you, which is exactly what insurance companies do. You pay the company for a policy, and it accepts responsibility to pay for the damage if something goes wrong. You can buy insurance to cover many of the risks that can come up in a supply chain, such as theft, fires, and accidents.
- » **Avoid the risk.** In some cases, the best way to deal with a risk is to make it go away. If you're concerned that a certain supplier won't be able to meet your requirements, you can switch to a different supplier. If you're afraid that a certain port may have a labor strike, you can ship your freight through a different port. Avoiding a risk can be the cheapest and easiest way to deal with it.
- » **Mitigate the risk.** If you can't accept, transfer, or avoid the risk, the only option left is to do something about it — that is, mitigate the risk. The goal of mitigating a risk is to reduce the probability, the impact, or both. That is, you're trying to lower the risk score. How much you need to lower the score depends on how much the risk could cost you and how much money you can afford to invest in mitigation. Generally, you should mitigate a risk to the point where you're willing to accept it.

- » Integrating business planning
- » Reaching consensus and driving accountability
- » Satisfying customers while improving profitability

Chapter 3

Implementing a Repeatable Planning Process

Performance and planning go hand-in-hand. Inadequate planning hinders responsiveness and business agility. Supply chain leaders understand that numbers-based decisions are better than averages and hunches. The process of aligning the key stakeholders in a company is called *integrated business planning* (IBP). An effective, repeatable IBP process makes it easier for everyone in the company to complete their daily tasks and drive accountability for results. This chapter describes 7-Ds, simple steps that you can use to implement a continuously improving IBP cycle.



TECHNICAL
STUFF

Some companies use the terms *sales and operations planning* (S&OP) or *sales, inventory and operations planning* (SIOP) to describe their IBP process. Many companies purchase specialized software to manage their IBP.

Deciphering the Data

The first step in launching an SCP planning cycle is to assemble the data from throughout the organization. Departments

responsible for demand, supply, and finance need to run analytics to understand performance, opportunities, and risks. Segmenting demand and supply data by product, geography, and other characteristics provides insights about trends and patterns.

In some companies, deciphering the data is a challenge because there isn't a clear understanding about what data they have and how to access it. In other companies, the challenge is that there is so much data that it's hard to know where to start. In both of these cases, a good rule is to use the Pareto Principle and identify the 20 percent of data that affects 80 percent of the business.

During this stage, it is also important for companies to agree on the definitions of key terms and calculations to avoid misunderstandings. Having the right data, knowing what it means, and being able to analyze it will put you in a strong position to move forward with SCP. It may also provide insights about processes throughout the organization that you need to modify in order to more easily generate future plans.



TIP

The APICS Dictionary is a free mobile app that includes definitions for 4,900 supply chain terms. It's available for download at <https://www.apics.org/apics-for-individuals/apps/apics-apps>.

Developing the Demand Plan

The demand plan answers the questions, "What are we going to sell, who are we selling it to, and when are they going to buy it?" Demand plans can be a quantitative statistical forecast, a subjective qualitative forecast, or a combination of both.

Quantitative forecasts use historical patterns in data to project future demand. The quantitative forecast should account for statistical patterns like trends and seasonality in the sales history. This data could come from an order management system, point of sale data, or e-commerce data, for example. The quantitative forecast can also use correlations to external data, such as economic forecasts, to estimate future demand. When analyzing the demand data, it's a good idea to look for errors, including statistical bias. It's also important to check for events such as stockouts, when customers may have been unable to buy your products, to get a full understanding of the demand potential.



TECHNICAL
STUFF

Statistical bias is an error that occurs when data is consistently too high or too low because of the way it is being collected or analyzed. If you identify bias in your data, you can add or subtract that bias to improve the forecast.

Qualitative forecasts are based on expert judgment about what is likely to happen in the future. This type of forecasting is useful when you have no historical data to work with, such as when dealing with new products or new markets. Qualitative forecasting is also used to estimate the sales that will be generated by promotions or one-time events. When collecting qualitative data, it's important to consider the reliability of your sources. For example, some salespeople tend to give overly optimistic estimates of their revenue potential, and others might provide a low estimate that will be easier for them to achieve.



TIP

Your demand plan is an estimate, so don't waste too much time trying to make it perfect. Just make sure that you are using the insights from the process to drive continuous learning about your business.

Most companies create their demand plan based on both quantitative and qualitative input and validation from sales, marketing, and finance. The demand plan also involves building budgets, including the cost of goods sold and net margin projections.

Driving the Supply Plan

The supply plan answers the question, "Where will we get the products to sell to our customers?" Will you fill orders from inventory, or will you need to buy or make more products?

During this step you use the demand requirements to understand the impact on inventory, capacity, and resources. You may find that you need to schedule manufacturing far in advance of a promotion to level out the load on your production schedule. For companies with a national or global footprint, the supply plan can also provide insights about fulfillment costs, including the cost of transportation.

The demand plan provides a baseline for optimizing the timing of purchases and production scheduling. You also should account for uncertainty built into the demand plan. For example, what

if the demand estimates are too high, or too low? To deal with these risks, the supply plan should include estimates for safety stock inventory and provide flexibility to protect against supply chain disruptions. The supply chain should also be analyzed for its impact on cash flow.



TIP

Make sure you consider downtime for holidays and maintenance when creating the supply plan.

Delineating the Constraints

Gaps always exist between what you want to do (the demand plan) and what you can do (the supply plan). These gaps can be in material, manpower, machines, methods, or money.

Sometimes you can find easy ways to reconcile the gaps between the demand plan and the supply plan. For example, if you don't have enough production capacity, you may be able to outsource work to a contract manufacturer. Or, you may choose to work extra shifts and pay overtime for labor.

In other cases, gaps between supply and demand can reveal the need to change capital equipment, or even to move entire facilities.

You also need to consider the financial risks that are built into the supply and demand plans. One of the best ways to understand these risks is to run scenarios that assess the impact of potential outcomes.



TIP

Supply chain planning software can simplify the process of comparing many supply-and-demand scenarios.

Delivering Consensus

Once the plans have been reconciled and finalized, senior management should lead a final review. This is often called the *executive SCP meeting*.

During this meeting, planners should explain the plan, along with the risks, assumptions, and contingencies. If any further adjustment or scenarios are required, these can be added to the plan. The goal is for the senior leaders and stakeholders in the meeting

to adopt the plan as their own and to accept accountability for the results.

This executive review provides a single source of truth and helps to ensure that all of the processes in the supply chain are synchronized.



TIP

You can download a sample agenda for an executive SCP meeting from <https://www.demandcaster.com/implementing-sales-and-operations-planning-sop/>.

Deliberately Executing

In order to benefit from the investment that was made in planning, everyone in the organization should focus on executing the plan consistently. Many companies apply tools from Lean manufacturing to provide process discipline and enable continuous improvement.

For example, many companies hold daily or weekly check-in meetings to monitor progress and discuss whether they need to make adjustments to the plan. They may hold Kaizen events to look for ways to improve a process. And when adjustments are made, they use this information to improve future planning and execution.



TIP

SCP can help manufacturing companies become more resilient because having a well-defined planning process makes it easier to respond to unplanned disruptions when they occur.

Doing It Again

The more experience a company gets with SCP, the better the results. Applying continuous improvement processes like Lean can help to reduce the time and effort required for planning, and to improve the quality and consistency of execution.

For most companies, the SCP process should be completed every month, with the forecast reaching out 12 to 18 months in the future. But when companies are dealing with a lot of uncertainty or market volatility, they may need to shorten that cycle and run through the SCP process every week.

IMPLEMENTING SUPPLY CHAIN PLANNING AT ASK POWER

ASK Power is an Aurora, IL-based manufacturer of electrical power connectors for the transportation, military, telecommunications, and original equipment manufacturer (OEM) markets. The company's enterprise resource planning/material requirements planning (ERP/MRP) systems couldn't provide the flexibility of detailed capacity planning or sales and operational planning that the company needed to remain competitive. They still planned manual forecasts in spreadsheets and could not get detailed control of the work on the shop floor. Using visual finite capacity planning did not give a realistic snapshot of work center loading, late jobs, lead times, or inventory. Many of the company's raw materials came from overseas and required a two to three-month lead time. In order to provide a high level of service to the company's top 100 customers, they were forced to stockpile large amounts of inventory.

By implementing these seven simple steps to the supply chain planning process, ASK Power achieved 99 percent on-time delivery performance for 11 out of 12 months and went from two to three inventory turns to as many as six annually, while reducing order lead times from five to six weeks, down to two to three weeks. As a result, ASK's profit margin increased from 2 percent to more than 10 percent.

The first few planning cycles are sometimes difficult. But when you use the right software, and everyone on the team becomes familiar with the process, it becomes easy to gather the data, analyze the options, and commit to a plan.

- » Following the arc of new supply chain technologies
- » Identifying internal barriers to supply chain planning
- » Recognizing unique supply chain challenges for discrete manufacturing, food and beverage, and consumer packaged goods companies

Chapter 4

Digitizing Your Planning Process

Information technology has become an essential part of supply chain management and planning because virtually every process in a supply chain involves entering, processing, sharing, and retrieving data. Automating the tasks for a process can increase your efficiency, but choosing the best way to automate a task can be complicated. Within each category of software, you'll find several companies that sell software packages with different features, capabilities, and price tags.

The good news is that if you start by understanding what must happen in a supply chain — the processes — it's much easier to understand what the software tools are intended to do and how they work together. This chapter explains how supply chain processes evolve into software platforms, how these platforms integrate with one another, and how to get help in choosing the right combination of software for your supply chain.

Understanding How Processes Evolve

These days, it's hard to find a supply chain planning process that isn't tied to a piece of software. You can't place an order or make a phone call without logging a transaction in one or more systems. But processes don't become automated instantly — they evolve.



TIP

A planning process must be a stable and repeatable process before it can be automated effectively. Automating an immature process often leads to extra work, such as correcting inaccurate data and overriding rules in the system.

Supply chain software is a business investment. When you evaluate any business investment, it is a good idea to compare the financial consequences of making something versus buying or renting it. You can apply this approach to evaluating an investment in automating a supply chain process by comparing four options:

- » Run the process manually, without software (do nothing).
- » Buy software off the shelf from a vendor (buy).
- » Subscribe to a cloud-based solution (rent).
- » Create a program from scratch (make).

The buy option is straightforward. You talk with a sales representative, spend some time negotiating price, install the software on your computers, and train your team.

The rent option is newer but is rapidly becoming the norm. Instead of buying and installing software on your own computers, you can get a subscription to software that runs in the cloud. You have nothing to install; you just access the software through a web browser or an app, and pay for it as you use it. In other words, you rent the software.

Making supply chain software involves writing your own software code. For companies that have unique requirements, writing their own software may be a worthwhile investment. Many companies, however, end up using spreadsheets like Excel to make their own software without realizing it is happening. Here's an example of how companies can accidentally create problems by making their own software:

1. Someone decides that he has a lot of information to keep track of and that things are slipping through the cracks, so he creates a spreadsheet to start organizing his data. The spreadsheet becomes a critical part of managing that process.
2. The spreadsheet takes on a life of its own, with more fields being added to perform complex analysis, and it's shared with other people who start to rely on it and make improvements.
3. As the spreadsheet gets bigger and is used more often, people write macros and create complex formulas (some of which are error-prone) to automate process steps. At this point, the spreadsheet has become a simple software application, but no one realizes that fact yet. Unlike purpose-built planning software, there is limited support and documentation to keep this critical spreadsheet working.

The lesson is to be careful about storing important data in spreadsheets. Although using a spreadsheet may be a low-cost option in the short term, it may lead to an expensive migration in the future. If you see this scenario beginning to play out in your supply chain, it's a good idea to stop and ask whether a better commercial solution is available. Recognizing that software solutions are available for most supply chain processes, and starting with them early in your process maturity, can save you time and money.



REMEMBER

An important rule applies to every supply chain planning software system: The usefulness of the system depends on the accuracy of the data it has to work with. Garbage in, garbage out. Providing quality data to the system in the first place is important, and so is maintaining the integrity of that data over time.

Preparing Your Organization for Supply Chain Planning

Before a manufacturing company can embrace an effective supply chain planning solution, the company generally must overcome barriers with its existing processes for successful adoption. This section covers five challenges that most companies encounter.

Improving collaboration

Seamless in-house communication within the business is needed to optimize production and ensure everyone is on the same page. Using manual planning solutions often leads to multiple operators working on the same task. It also creates a bottleneck for managers when they are trying to optimize operations. Collaboration is likewise important for managing relationships with suppliers who are expected to respond quickly to changing requirements.

Gathering historical records

Many initiatives across the business depend on the availability of historical records. These initiatives include demand forecasting, inventory management, and supply chain planning. Although paper records may exist dating back a few years, these reams of binders become more difficult to use as the months go by. When this data is inaccessible or inaccurate, companies often rely on trial and error or intuition to prepare demand forecasts and develop production schedules. To build an efficient, repeatable SCP process, companies need to have easy access to accurate digital records.

Analyzing available data

Sometimes data exists that was generated by a system but is curated on paper or in spreadsheets. Aggregating months of paper data to calculate overall equipment effectiveness percentages or effective equipment performance becomes a chore. These difficulties also extend to inventory management when you try to estimate available inventory and decide how much is required to meet fluctuating orders. The combination of manual effort and inaccurate data results in poor estimates. That leads to stockouts and the need to scrap excess materials.

Unlearning bad habits

Many companies rely on a single supplier for each product because this simplifies supply chain management, but this common practice creates a risk. Diverse factors such as increased customer awareness, the need for accountability, and fluctuating demand mean a more diversified supply chain is required. Using old techniques to handle new challenges or manage three or more third-party suppliers is next to impossible. Companies that can't manage relationships with multiple suppliers end up with low service-levels and no flexibility to meet unexpected demands or complex orders.

Broadening business insight

The manual forecasting and planning tools used in many companies provide limited insight into the future operations of the plant floor. This forces managers to create new plans from scratch for each production cycle and makes it harder for them to respond quickly or to plan for growth.

Addressing the Unique Planning Challenges in Your Industry

Supply chain planning is important for every company that does manufacturing. No company wants to carry more inventory than necessary, or to run out of the products that their customers need. But the impacts of poor planning can be slightly different, depending on the industry that you work in. Three industries that clearly illustrate the challenges associated with supply chain planning are discrete manufacturing, food and beverage, and consumer packaged goods.

Discrete manufacturing

Discrete manufacturing companies are often focused on maximizing the utilization of their plant capacity. They want to schedule long production runs with minimal changeovers. But they don't want to order unnecessary raw materials, and they want to keep finished goods inventories as low as possible. For discrete manufacturing companies, supply chain planning helps to make sure they are making the right products at the right time. This approach helps them satisfy customer demand while minimizing their materials and production costs.

Food and beverage

For companies in the food and beverage industry, meeting customer expectations for availability is critical. If your products aren't available, then you're losing out on sales, and you're creating an opportunity for your customers to switch to a competing brand. Food and beverage companies also must ensure that customers are getting fresh products. They can't simply rely on having lots of inventory. Instead, they need just enough of the right inventory, and they need it in the right place at the right time.

Consumer packaged goods

Consumer packaged goods (CPG) companies deal with fast-changing consumer trends. When products are in high demand, they need to respond quickly by increasing production and distributing products to the right locations. They also need to plan ahead for the impact of promotions and seasonality. Many CPG companies depend on retailers to stock and sell their products. In order to protect these relationships and their shelf space, CPG companies must ensure that they always have product available. That means they need to track sales patterns and respond to the data.

SCP AT OLDE THOMPSON

Olde Thompson is the world's largest manufacturer of salt and pepper mills and a leading manufacturer of private label and branded dry spices and seasonings. The company offers a complete range of spice solutions, including spice racks, pepper mills and saltshakers, spice grinders, gourmet rubs, and accessories.

On the company's old supply chain management systems, it was difficult to determine how much it was costing to make certain products, which products were most profitable, and how much of a discount the company could afford to offer while trying to land new customers.

After implementing a cloud-based supply chain management and planning solution, the company reduced inventory by \$10 million during rapid growth. Olde Thompson is approaching just-in-time delivery capabilities. Savings like these have enabled the company to ramp up production without making a proportional increase in budget. And in less than two years following its connected supply chain planning implementation, the company has become the largest private label spice supplier in the U.S.

When the COVID-19 pandemic arose in early 2020, Olde Thompson didn't suffer a drop-off in business like so many smaller companies. Its volume in March 2020 reached double the company's monthly average. Revenue broke the company's monthly record by 40 percent.

- » Preparing your organization for SCP
- » Identifying and preparing the people for change
- » Aligning the best metrics for supply chain improvement

Chapter 5

Adopting a Planning Solution

Before embarking on the supply chain planning (SCP) journey, companies must first ensure that the key stakeholders are on board and understand the business reasons for introducing a change. It is critical they understand how the change will affect people, processes, and technology currently in place. Next, gain their commitment to participating in and sponsoring the change. Finally, collaborate to set performance targets that demonstrate the results of the company's planning process.

Uniting the People, Processes, and Technology

SCP involves analyzing a lot of data from many different sources and applying it to a variety of different resources and business processes. For businesses that make a variety of products, buy materials from any supplier, and sell to multiple customers, the calculations required for effective SCP exceed the capabilities of an informal process. As a company grows and expands its supply chain footprint, the need for change becomes evident. The current way of working will eventually inhibit growth and profitability.

Understanding these *inhibitors* — or pain points — in the areas of people, process, technology, and data provides input to required capabilities so the intended SCP process will produce positive business outcomes. It also helps stakeholders to support a new way of working and to put change management processes in place before and after implementation of SCP.

SUPPLY CHAIN PLANNING FOR STM BRANDS

STM Brands was founded in 1998 by Ethan Nyholm to make high-quality, award-winning accessories for tablets, laptops, and phones. Years later, his business was booming, though he noticed that the company was spending a lot on costly air freight to ship products to regions where demand was the greatest.

As the costs for air freight rose, Nyholm dug deeper and realized that the root cause was inaccurate (or inadequate) supply chain planning. The spreadsheet-based planning system that his team was using didn't provide the business an accurate picture of its demand volatility. Disconnected planning and decision making also limited collaboration among sales, purchasing, and production. "When we identified our escalating supply chain costs, we knew it was time to find a better way of doing things — that became the catalyst to transform our supply chain planning methods and processes," said Nyholm.

Replacing their spreadsheets with a supply chain planning solution provided Nyholm and his team with insights about market shifts and allowed them to respond more effectively. By enabling data-driven decisions, they experienced an increase of 20 percent in operating margin and a 50 percent increase in sales profits. Freight costs to sales also dropped by 25 percent year-over-year. Nyholm also says, "If we know we are expecting a new deal for 3,000 units in February, we can prepare for it. Plex DemandCaster Supply Chain Planning allows us to ask the right questions about why, when, and how which helps us plan around the peaks and valleys, as opposed to us relying on our intuition or gut."

Pursuing Positive Business Outcomes

Many small businesses reach a point where they need specialized software to manage their SCP. It can be hard for these companies to decide whether to keep pushing the limits of a spreadsheet or to implement new software.

To ensure that an organization adopts a new way of working, supply chain planning champions first need to understand how a new process and tool will improve their day-to-day lives as well as the business. As new technology is considered and then introduced, including users early in the process is critical. These are the people who know what isn't working today. They can identify process gaps, what offline spreadsheets are being used, and how to incorporate that data into digital processes. Including users early also gives them baseline product and process knowledge and involvement in the implementation effort so that they can influence change. It's also critical to continuously monitor performance with consistent key performance indicators (KPIs) to minimize the risk of people falling back on their old ways.

Aligning KPIs for Supply Chain Planning

One of the most important decisions for companies to make is how they will measure the results from their SCP process. Here are five KPIs that are often used to help leaders track performance over time.

Reduction in inventory

It's common to measure inventory at the beginning or ending of a planning period. (It usually doesn't matter which you choose, as long as you are consistent.) Senior leaders may only be interested in the aggregate inventory level, and they may want it reported as a dollar value. For other people in the company, it may be helpful to track inventory based on units, geographic locations, and product type. Implementing an SCP solution often allows companies to reduce inventories by 20–30 percent.

Increase in service levels

When customers place an order, they expect their supplier to deliver. One of the important benefits of supply chain planning is that it can help a company achieve higher service levels by having products ready when and where customers want them. Some companies measure service levels using metrics such as line fill rate and order fill rate. Other companies take a more rigorous approach and track on-time in-full or perfect order performance. Regardless of which metric is used, implementing SCP typically boosts customer service levels by at least 10 percent.

Decrease in production lead times

Production plans determine what a company will make, and when it will be made. In order to execute a production plan, the company needs to have all of the tooling and raw materials in place, and those can take time to assemble. Effective supply chain planning can shorten production lead times by 60–77 percent, which allows a company to be more flexible and responsive to changes in demand. Shorter production lead times can also help to reduce inventories because raw materials can be ordered using a just-in-time approach.

Improvement in manufacturing capacity

One of the biggest challenges for successful manufacturing companies is ensuring that they have enough capacity to make the products that their customers want to buy. In many cases, increasing capacity involves purchasing expensive capital equipment, expanding facilities, or paying overtime. But an integrated approach to planning can increase manufacturing capacity without any of those additional costs because it allows the company to schedule production runs more intelligently. When there is a clear understanding of what the company needs to make and when it is needed, managers can minimize changeovers and eliminate shutdowns caused by materials shortages. Many companies experience an increase of 22–30 percent in their manufacturing capacity once they implement an SCP solution.

Increase in sales revenues per employee

Companies should look beyond the supply side impacts of SCP, and measure benefits on the demand side, too. When sales and marketing teams have a clear understanding of what products they need to sell, and who needs to buy them, they can focus their efforts on executing the plan. Providing this clear direction typically allows companies to increase their sales revenue per employee by 24–33 percent. For many companies, SCP unleashes their potential for growing revenue without adding salespeople or investing in promotions.

- » Making sure goals are properly aligned
- » Building a roadmap for accountability
- » Earning a profit while meeting customers' needs

Chapter 6

Maximizing the Business Benefits of Supply Chain Planning

Like any investment, SCP should be evaluated in terms of return on investment. The value that companies generate from SCP depends on what systems and processes they implement, and how closely they integrate SCP with day-to-day operational decisions. Although accurate data and analysis are essential for creating an accurate plan, the real value of an SCP solution is realized when the plan is embraced by the entire organization and is executed consistently.

Gaining Alignment

Each of the functions in a supply chain tends to focus on a different set of goals and metrics. Manufacturing operations managers pay close attention to capacity utilization, procurement managers focus on raw materials prices, and logistics managers watch inventory turns and transportation costs.

Each of these functions contributes to the efficiency and profitability of a company, but it's also important to understand how these functions affect one another. Procurement may negotiate lower prices from a supplier by agreeing to purchase in larger lot sizes, but these larger lot sizes work against the efforts by logistics to reduce space requirements and increase inventory turns.

Supply chain managers need to consider potential trade-offs when a decision to improve metrics in one part of a supply chain can have a negative impact on other metrics. One of the benefits of SCP is that it can help all key stakeholders understand the total costs of operating the supply chain, and get them aligned around a common set of goals for the organization.

Driving Accountability

Managers make day-to-day decisions based on their understanding of what is best for the organization. Providing them with clear guidelines and instructions makes it easier for managers to do their jobs well. It also helps to hold them accountable for their decisions, as well as the results.

Because SCP gathers inputs from stakeholders across the organization and is supported by a consensus from the executive team, it provides clear guidance for everyone about what they need to do each day and how their work fits into the big picture.

When the plan is not being followed, managers can spot variances quickly and address the issues that caused someone to deviate from the plan. In some cases, a deviation might be a clue that the situation changed or the plan failed to address an important constraint. This new information can then be used to revise the plan and improve the planning process.

In other cases, deviations from the plan occur because of poor judgement or miscommunications. These issues can be addressed by improving communication and holding team members accountable for sticking to the plan rather than making ad hoc decisions.



REMEMBER

In companies with a mature SCP process, the plan allows everyone on the team to hold each other accountable for ensuring that the organization meets its goals.

Satisfying Customers

Customers depend on their suppliers to provide the products they need, when they need them. Many supply chain professionals describe this as *perfect order fulfillment* and establish metrics to ensure that they are providing

- » The right product
- » In the right quantity
- » To the right place
- » At the right time
- » For the lowest total cost

Supply chain planning allows all of the key decision makers in a company to look closely at what their customers are going to buy so they can ensure they have the resources in place to satisfy that demand. Supply chain planning helps companies prepare so that they can deliver perfect orders to their customers.



REMEMBER

Satisfying customer demand consistently can help a company to grow revenues, build market share, and strengthen customer loyalty to a brand.

Improving Profitability

Companies earn a profit when their revenues are greater than their expenses. Effective supply chain planning can increase profits by both growing revenues and reducing costs.

By creating a demand plan, companies create a realistic picture of what they are going to sell, and who is going to buy it. The demand captures assumptions from the sales and marketing departments about trends, promotions, risks, and competition in the marketplace. Most importantly, the demand plan provides a baseline for evaluating and optimizing a company's revenue potential.

The supply plan provides an understanding of the resources that will be required in order to satisfy customer demand. These include raw materials purchases, inventory costs, labor costs, and

more. Thus, the supply plan helps a company estimate the costs for meeting its expected demand.

Once the demand and supply plans have been created, executives can model different scenarios to optimize profitability. Perhaps it makes sense to invest in promotions to increase demand so that they can do longer production runs and lower the per-unit cost of their products. Or, they may decide to change the product mix to increase revenues and lower costs.



REMEMBER

Maximizing profitability involves balancing the costs for making products with an accurate forecast of customer demand.

Minimizing Costly Mistakes

Mistakes happen to all of us, especially when we are under time pressure. For manufacturing and distribution companies, simple mistakes can have expensive consequences.

For example, when deciding how much inventory to buy, many buyers base their decisions on past history. Although historical demand can provide useful insights about trends, it doesn't address the potential impacts of future factors like new customers, new products, or upcoming promotions. If a company doesn't have the material to meet these needs, it can undermine the relationship with new customers, disrupt a product launch, or miss out on the opportunities created by a promotion.

SCP makes it easy to collect lots of information about customers and what they are likely to buy. Then it compares this demand information with insights about inventory and capacity. When the company aligns demand with supply and communicates the plans clearly, everyone can make better decisions about what needs to be done. The result is better performance for the entire organization, with fewer mistakes along the way.

- » Creating a shared understanding of your supply chain goals
- » Gaining support for integrated business planning
- » Implementing an effective supply chain planning solution

Chapter 7

Ten Questions to Ask About Your Supply Chain Planning Process

Supply chain planning (SCP) is the key to aligning a company's resources so that it can profitably meet the demand for its products. These ten questions can help you identify gaps in your SCP process and find better ways to satisfy your customers' requirements while increasing profits for your company.

What Tools Do You Have for Planning and Managing Your Supply Chain?

It's important to understand that procurement, manufacturing operations, and distribution logistics are all critical links in the supply chain. These functions must work together in order to profitably meet the demand that is generated by sales and marketing. It takes specialized supply chain planning and management tools to coordinate all of this information effectively.

Can Your Supply Chain Adapt to Changes?

Part of building an effective plan is identifying the trends and risks that are likely to affect your supply chain in the months ahead. An effective supply chain plan should forecast demand and supply for 12 to 18 months in the future so that you can plan for seasonal patterns as well as major changes that are likely to impact your company. If a business is relatively stable, it should update the plan at least once per quarter. For companies that are operating in a volatile environment, it is often better to update the plan monthly, or even weekly.

Does Your Supply Chain Differentiate You from Your Competitors?

Effective supply chain planning is the key to meeting customer needs consistently and profitably. By developing better forecasts and reducing unnecessary inventory, companies can achieve higher service levels for their customers while also lowering their costs. In highly competitive industries, these results are often the key to gaining a competitive advantage. Although looking internally for opportunities to improve your supply chain is critical, it is also useful to benchmark against your competitors to ensure that you aren't slipping behind.

What Changes Might Lower Your Inventory Costs?

Companies need to keep two kinds of inventory in their supply chains. *Cycle stock* is the “just in time” inventory that they use to handle predictable demand. *Safety stock* is the “just in case” inventory that they use as an insurance policy to protect against spikes in demand or disruptions in supply. Effective planning helps you calculate the optimal level of inventory to satisfy the demand you expect from your customers, as well as deal with the surprises that are an unavoidable challenge for every supply chain.

How Much Value Can SCP Unlock for Your Business?

An effective SCP solution can create value and increase profitability for your business in several ways. Improving service levels for your customers can increase sales revenue and grow market share. Reducing inventories can free up working capital and reduce warehousing and distribution costs. Streamlining the process of building alignment between the stakeholders in a company can reduce the time and resources that teams waste when they aren't working toward a common goal.

Which KPIs Should You Use for SCP?

You can measure the benefits of SCP in several ways. Some of the common key performance indicators (KPIs) that companies use to evaluate the effectiveness of their planning processing include:

- » Reduction in inventory
- » Increase in service levels
- » Decrease in production and delivery lead times
- » Improvement in manufacturing capacity
- » Increase of sales revenues per employee

Who Should Be Involved in the SCP Process?

An effective SCP process aligns the demand data from the sales and marketing team with the supply data and constraints from the logistics, operations, and procurement teams. Once this data is compiled into an integrated business plan, the executive team reviews the plan and ensures that the entire team is prepared to execute it.

How Can Your Supply Chain Planning Be Improved?

One of the simplest ways to simplify and standardize the planning process for a company is to implement a cloud-based SCP solution. Specialized SCP software makes it easier to gather data, analyze it, and share it with stakeholders. Using a cloud-based solution means that you don't need to install any software, and your stakeholders can access the data from anywhere in the world.

How Consistent Is Your Planning Process?

One of the greatest benefits of SCP is that it creates a common plan that everyone can execute. Another is that it makes it easy to hold people accountable for their parts of the plan. Companies can achieve these benefits only if they use the same process every time they complete a planning cycle. Consistency and repeatability make it easier for everyone to understand what needs to happen and when it needs to happen, while also enabling continuous improvement of the planning process.

How Resilient Is Your Planning Process?

SCP is a critical function that drives the day-to-day decisions for many of the functions in a company. All too often, the entire process is managed by one or two people who gather and process the data manually using spreadsheets. But what happens if the planner gets sick, takes a vacation, or moves on to a new job? It's important to have an easy solution for training new people on the tools and the process, and to have a pool of candidates who can keep your SCP running smoothly.

Glossary

bottleneck: A constraint that prevents a process from producing the amount of products that are needed.

capacity: A measurement of the maximum amount of anything that a resource can provide or produce.

capacity planning: Estimating how many products a company can make in a certain period of time.

constraint: Something that limits the capacity of a resource.

cycle stock: “Just in time” inventory that is used to satisfy expected demand from customers.

demand planning: Estimating the amount of a product that customers are likely to buy at a particular time in the future.

discrete manufacturing: Making products that are distinct, stand-alone units such as electronics or cars.

disruption: How a threat can affect your business and that of your supply chain partners.

enterprise resource planning (ERP): A computer system that provides high-level financial plans for a manufacturing company.

executive SCP meeting: A final review of the demand and supply plans during which senior executives approve the plans and key stakeholders commit to executing the plans.

integrated business planning (IBP): A formal process that gathers inputs from key stakeholders and executives to create a single shared plan for aligning supply with demand.

inventory turns: A way to measure the efficiency of a company's inventory. High inventory turns are good, because they mean a company is selling its inventory quickly.

key performance indicator (KPI): A metric that is used to evaluate how well a process is working.

Lean: A manufacturing process improvement philosophy that was first developed by Toyota.

lot size: The final order quantity with optimizing production and purchasing costs in mind.

perfect order fulfillment: A metric used to measure if the right products, in the right quantities, are delivered to the right place at the right time.

requirement: Something that you need to have, or to do, in order to execute a plan and achieve a goal.

resilience: The ability for a supply chain to respond to a disruption.

resource: Anything that you can use to create value.

risk: An uncertain event that could affect a supply chain either positively or negatively.

safety stock: "Just in case" inventory that can cover supply chain disruptions or spikes in demand.

stock-keeping unit (SKU): A code that is used within a company's inventory management system to identify each version of a product.

supply chain planning (SCP): The process of aligning customer demand with business requirements and constraints so that leaders can make data-driven decisions.

supply chain planning system of record: A name used by Gartner to describe any software that enables an integrated business planning process.

S&OP: Sales and Operations Planning is a process for aligning sales forecasts with production forecasts.

SIOP: Sales, Inventory, and Operations planning is similar to S&OP, but includes a more comprehensive assessment of inventory requirements.

threat: The impact a risk might have on your supply chain.

ACCELERATE BUSINESS GROWTH

PLEX
DEMANDCASTER

Do you have a handle on your inventory? Is critical information and data trapped in silos? How profitable is your business when meeting fluctuating market demands? If yours is like many businesses, you lack the visibility needed for effective supply chain planning. Plex DemandCaster Supply Chain Planning puts you in control with the proper planning tools to grow your business and keep customers satisfied.

- Benefit from sales and operations planning (S&OP)
- Gain visibility to optimize inventory levels
- Provide the right products at the right time to customers
- Clearly balance demand and supply cost-effectively
- Anticipate rapid change to remain agile

A black and white photograph of a man with a beard and glasses, wearing a polo shirt, in a warehouse setting. He is holding a handheld device in his right hand and a tablet in his left hand, looking down at the tablet. In the background, there are stacks of boxes and warehouse shelving.

Learn more at www.plex.com/demandcaster

Maximize the business benefits of supply chain planning

From inventory requirements to demand forecasting, a supply chain planning (SCP) solution helps integrate many critical business functions, allowing you to make better decisions and continuously improve with accurate near real-time data. In this book, you'll learn what SCP is and how it can help you pursue operational excellence throughout your company.

Inside...

- Why manufacturing companies need SCP
- How SCP improves business decisions
- How to apply a repeatable SCP process
- How to digitize SCP
- How to prepare for SCP adoption
- How to drive value with an SCP solution



Rockwell
Automation

PLEX

Ara Surenian is a supply chain veteran with more than 30 years of manufacturing and technology experience. He leads product management for Plex DemandCaster Supply Chain Planning. **Daniel Stanton** is an internationally recognized public speaker and the author of *Supply Chain Management For Dummies*.

Go to **Dummies.com™**
for videos, step-by-step photos,
how-to articles, or to shop!

ISBN: 978-1-119-90633-9
Not For Resale

for
dummies®
A Wiley Brand



WILEY END USER LICENSE AGREEMENT

Go to www.wiley.com/go/eula to access Wiley's ebook EULA.