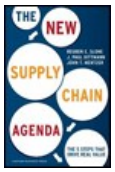

The New Supply Chain Agenda: The Five Steps That Drive Real Value

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Chapter 1: Focus on Supply Chain as the Driver of Shareholder Value

Overview

Chances are, if you have picked up this book, you already feel that your supply chain is not delivering excellence, or that it could deliver more. Given the economic pressures brought on by the end of cheap energy, the increasingly global nature of manufacturing and retail competition, and the worldwide Great Recession of 2008–2010, you probably are also looking for ways to unlock capital within your organization as an alternative to equity and debt.

We have written this book to be as free of jargon as possible so that it can be read by anyone interested in learning more about the new supply chain agenda. But we have targeted it especially for the senior supply chain professional. Perhaps you are looking for a way to move your supply chain to the next level. Perhaps you know the tremendous potential power of your supply chain, but are frustrated with how slowly your company is moving to realize that full potential. Either way, we assure you that this book will help you unlock true supply chain excellence in your firm and provide a sustainable way to reduce inventory and costs, while increasing customer-order fill rates. These actions will translate into balance sheet, income statement, and cash flow improvements that together yield more *economic profit* for the firm. As we will show, economic profit connects supply chain excellence directly to shareholder value.

The goal of this book is *not* to convince you that you can make these improvements. Our goal is to show you how to achieve them. We should know, since we have had to do it ourselves and have discovered, sometimes the hard way, the basic elements along the pathway linking supply chain excellence, economic profit, and shareholder value. Together we have had long careers in industry and academia. We have had to deliver supply chain excellence, and we have seen others do it as well. Collectively, our experience has put us in contact with hundreds of companies, many of which have come to the University of Tennessee for in-depth supply chain audits or have attended the supply chain forum sponsored by the university. Stories from those audits and forum contacts have been collected into a database of five hundred companies from which we drew the examples, stories, and quotes used throughout the book. (See “Source of Examples.”)

What You Will Learn in Each Chapter

In this chapter, we will explain how to focus your supply chain team on what is most important to your firm: growing shareholder value. It will help you translate your initiatives into the language of the boardroom and get the priority you need. Chapter 2 guides you in laying out the five steps to achieve supply chain excellence in your company. The path begins with the creation of a supply chain strategy. We strongly believe that this strategy needs to include the five steps which we introduce in chapter 2 and then explain thoroughly throughout the rest of the book. Chapter 2 also includes a self-test to evaluate where you stand now in your journey. Chapter 3 describes the first of the five steps—hiring talent. If you don’t have the right people in place, you can’t build and execute an appropriate strategy. You will see how finding talent for supply chain positions has unique challenges due largely to the cross-functional and cross-company process challenges supply chain executives face. Chapter 4 describes the next step along the pathway, which is the choice and implementation of the right supply chain technology. Improperly understood or implemented, technology can cause severe damage rather than improvement. You must be careful in selecting and applying technology. In this chapter, you will find the things to do and avoid. Chapter 5 shows how each function in your firm plays a critical role in a successful supply chain and will help you develop a clear vision for how functions work together to achieve supply chain excellence. In addition, at the end of the chapter, an assessment test helps you honestly evaluate your process for aligning your company’s demand and supply sides. Chapter 6 focuses on how your company can achieve breakthough results by collaborating externally. You should pay special attention to the best practices for working together with suppliers and customers. Chapter 7 addresses the last but equally critical step toward a strategy for supply chain excellence—change management. Everything else is for naught if you don’t execute successfully. This chapter will give you practical advice on how to increase your chances of success. Chapter 8 provides detailed case studies of two companies we were involved with—a manufacturer, Whirlpool, and a retailer, Stage Stores. Each firm developed and then executed a supply chain strategy that delivered excellence, economic profit, and shareholder value. In both cases, we had more than front-row views of the considerable challenges; we were actually part of the teams that drove the results.

Source of Examples

In this book, we illustrate concepts with many examples and stories. We have drawn those from our interactions with hundreds of companies, both as professionals and consultants. Unless otherwise noted, stories, examples, and quotations in this book derive from the five-hundred-company database at the University of Tennessee, which houses details from supply chain audits conducted by the university, as well as interactions with attendees of the university’s

annual supply chain forum.

Driving Shareholder Value with Your Supply Chain

Given the hype of the last ten years surrounding the supply chain excellence of companies such as Walmart, Toyota, and Amazon, why do so many firms still not get it? The success of the firms ranked in AMR Research's Supply Chain Top 25, such as Apple, IBM, and Procter & Gamble, should have made everyone focus on supply chain as the driver of shareholder value.[1] We hear a lot about the importance of supply chain, but actions often do not match words.

The most neglected pathway to increasing shareholder value runs through the supply chain. This isn't a cost-cutting argument, though supply chain excellence often dramatically reduces costs over the long term. In fact, reaching excellence is expensive, both in terms of executive attention and actual cash outlays. Supply chain excellence drives shareholder value because it controls the heartbeat of the firm—the fundamental flow of materials and information from suppliers through the firm to its customers. Unfortunately, too many companies have a supply chain in which this flow is crippled by the lack of a strategy, the absence of talent, a misapplication of technology, internal and external silos, and a basic lack of discipline in managing change, all issues we address in later chapters.

In company after company, we see behavior that is inconsistent with this expansive idea of the supply chain function. Yet this broader view has been around for years (see "Standard Definition of "Supply Chain").

When we mention supply chain in this book, we refer to *the activity that manages the flow of information, money, and material across the extended enterprise, from supplier through the functional silos of the firm to customer*. This book generally does not cover manufacturing; its focus is on the supply chain outside the four walls of the plant.

The supply chain isn't just trucks, pallets, and warehouses. But being trapped in a traditional view is one of the primary reasons that few companies are taking advantage of the shareholder value opportunity presented by supply chain excellence. You, like many executives we talk to, may be skeptical that investing in this new, expansive vision of a supply chain is worth it. So we'll begin by looking at the unequivocal link between supply chain excellence and shareholder value by focusing first on *economic profit*, which is the linchpin between the two.

Standard Definition of

The Council of Supply Chain Manag*Supply Chain*ement Professionals (CSCMP) defines the supply chain as encompassing the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies.

[1]AMR Research provides subscription advisory services and peer networking opportunities to operations and IT executives in the consumer products, life sciences, manufacturing, and retail sectors. For 2007, the AMR Supply Chain Top 25 portfolio of companies outperformed the market, this time by a wide margin. The average total return of the Top 25 portfolio for 2007 is 17.89 percent, compared with returns of 6.43 percent for the Dow Jones Industrial Average (DJIA) and 3.53 percent for the S&P 500.

Driving Shareholder Value by Creating Economic Profit

Economic profit very simply is *profit less the cost of capital needed to generate that profit*. That profit is a big deal because it means the company is delivering returns above the cost of the capital invested. Generating economic profit should be the prime goal of all firms. Most CEOs intuitively know that economic profit drives shareholder value. *But many don't clearly comprehend the linkage that begins at supply chain excellence and continues to shareholder value via economic profit*. Supply chain excellence very often can deliver the most upside to economic profit and shareholder value because its full potential has been so underutilized in the past compared to other corporate initiatives.

Economic Profit Increases Shareholder Value

When economic profit increases over time, shareholder value increases. Stern Stewart & Co. has done extensive research on this concept which it calls economic value added (EVA). It has shown through analysis in many companies that the relationship is very strong, especially over time, when the data is normalized.[2]

To understand the impact of economic profit, consider the following example: suppose a newly formed company earned $10 million in net income on a capital base of $100 million. This capital base includes both physical capital, like factories and warehouses, and working capital, like inventory and receivables.[3] In this simple example, the company has a return on capital of 10 percent. However, suppose the required return that investors demand for having their money locked into this new venture adds up to an investment expectation of 13 percent on the invested capital. That means that, although this firm is enjoying accounting profits, it actually lost 3 percent last year for its shareholders compared to their expectations. Economic profit charges the company a penalty for tying up investors' cash to support operations. The capital on the balance sheet becomes just as important as the net income on the income statement.

As Peter Drucker said, in a *Harvard Business Review* article, "Unless a business returns a profit that is greater than its cost of capital, it operates at a loss."[4] Interviews we conducted with stock market analysts from several different investment firms substantiate Drucker's view. They confirm that the price of a firm's stock depends on whether investors see it earning a good return over its cost of capital over time, that is, a good economic profit.[5]

The Supply Chain Drives Economic Profit

In an increasing but still small number of firms, the CEO and the board understand the value of the supply chain to their firm. But many other CEOs, battered by an immense range of items competing for their attention, do not see this link clearly. Yet the link is there. Using the expansive view of the supply chain described earlier, in many firms, the supply chain controls most of the inventory, manages 60 percent to 70 percent of the cost, is the foundation to generate revenue by providing outstanding product availability, and manages most of the physical assets of the firm (see figure 1-1).

We believe the Great Recession of 2008–2010 will increase the focus on economic profit. In an era of tighter credit, supply chain levers can be used to free cash reserves from balance sheets rather than depending on restricted credit markets. The opportunity to increase shareholder value in the future will be to take care of both the income statement and balance sheet through supply chain excellence.

Creating Economic Profit at a Retail Chain

The savvy CEO of a major department store chain, when asked by his executive vice president of supply chain what he expected the function to deliver, said, "I want the highest possible availability with the lowest inventory investment and lowest possible logistics cost." With this simple, direct statement, the CEO focused the organization simultaneously on the key elements of economic profit, namely revenue growth, cost reduction, and low asset utilization. The executive vice president translated his CEO's direction into three broad objectives for the organization:

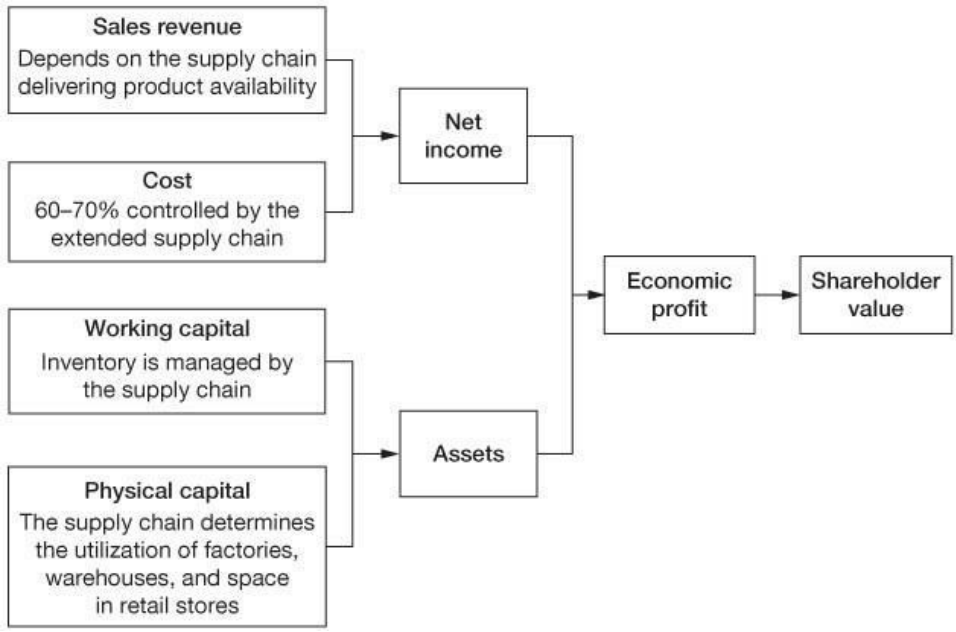


FIGURE 1-1: How changes in revenue, cost, working capital, and physical capital flow into economic profit and shareholder value

1. Drive high customer-order fill rates, reducing out-of-stock products to generate more revenue (move from 95 percent to 99 percent).
2. Achieve that goal with low inventory levels to improve cash flow (reduce inventory 30 percent over the next 18 months).
3. Achieve it with excellent cost productivity to increase profit margins (cut cost 10 percent).

Higher sales, increased margins, and more cash flow with lower capital invested form a pretty effective recipe for increasing economic profit. The real question is, how can the supply chain deliver on these three broad objectives?

The supply chain managers in this company asked themselves what levers they could pull to achieve the executive vice president's objectives. After much debate and analysis, they came up with the set of major initiatives for the next eighteen months:

- *Reduce stock-keeping units (SKUs)*. The company carried nearly fifteen thousand SKUs of different types of products in its stores. The managers set a specific goal to drive a 25 percent reduction in slow-moving SKUs, and they planned to visibly track progress every month.
- *Improve forecasting*. They made forecast accuracy an important goal for sales and marketing, as well as the forecasting group. Measuring forecast accuracy using mean absolute percent error (MAPE), they set a goal to cut error by 25 percent.[6]
- *Increase frequency of store replenishment in a low-cost way*. The managers planned to go from one store-replenishment delivery per week to three deliveries per week, and they planned to revise their network flow and their *private fleet to do this for only a 15 percent increase in cost*, even though they planned tripling store deliveries. With more deliveries, they expected to greatly improve product availability to support revenue growth.
- *Improve inventory accuracy*. In both the stores and the warehouses, they planned to put in place a more disciplined cycle process to randomly count small amounts of inventory in the warehouse continuously over the year to improve accuracy from 98 percent to 99.5 percent.
- *Manage new product transitions in a world-class manner*. The managers resolved to follow a stage-gate process to introduce new products put in place two years earlier (we describe stage gates fully in chapter 5). They planned to involve the supply chain deeply in all of the key decisions.
- *Collaborate aggressively with suppliers*. They chose their top-ten suppliers and planned to openly share information on forecasts and strategy, set joint metrics, and launch specific joint initiatives to improve such activities as damage and on-time delivery.

At the end of the eighteen-month period, these initiatives produced impressive results, which the team documented carefully. In some cases, as shown in table 1-1, they exceeded their goal, and in others, they fell slightly short.

But what about the overarching objectives dealing with cost, inventory, and availability? Were the projects summarized in the table truly the right levers required to deliver the fundamental components of economic profit? The managers were indeed able to celebrate success, with customer-order fill rates improving from 91 percent to 98 percent, inventory falling $175 million or 24 percent, and total cost as a percentage of sales declining by 8 percent or $28 million. The team later agreed that the fill-rate improvement yielded at least $75 million more in revenue, which yielded $36 million more in net income (cost reduction plus the income from the increased sales). The net income increase of $36 million along with the working capital decrease of $175 million yielded a major increase in economic profit (net income minus the cost of capital).

Table 1-1: Results of a retail company's supply chain excellence initiatives

Initiative	Goal	Actual after 18 Months
Reduce SKUs	25 percent reduction	15 percent
Improve forecast accuracy	25 percent MAPE improvement	28 percent
Increase delivery frequency	300 percent increase in deliveries at a 15 percent cost increase	300 percent increase at an 18 percent cost increase
Improve inventory accuracy	Improve to 99.5 percent	99.8 percent
Manage new product transitions	Follow stage-gate process and involve supply chain	Improved, but still a gap

Collaborate with suppliers	Collaboration activities with top 10 suppliers	Collaboration activities with 7 suppliers accomplished

The team knew that although accomplishing these initiatives was challenging, maintaining the change as a permanent way of life would be the real driver of sustained economic profit increases over time. The firm continued gradual improvement for the next two years and now is wrestling with how to raise the bar and move performance to an even higher level.

[2]G. Bennett Stewart, *The Quest for Value* (New York: Harper-Collins, 1999).

[3]Working capital is defined as current assets minus current liabilities, but for practical purposes, it is inventory minus account receivables plus accounts payable.

[4]Peter F. Drucker, *Classical Drucker: The Wisdom of Peter Drucker from the Pages of the Harvard Business Review* (Boston: Harvard Business School Press, 2006).

[5]Gary Balter, managing director at Credit Suisse; David Strasser, managing director at Bank of America Securities. Interview, October 2008, Chicago, Illinois.

[6]MAPE is the absolute value of forecast minus actual, divided by the actual, converted to a percentage.

The Link Between Shareholder Value and Supply Chain Excellence

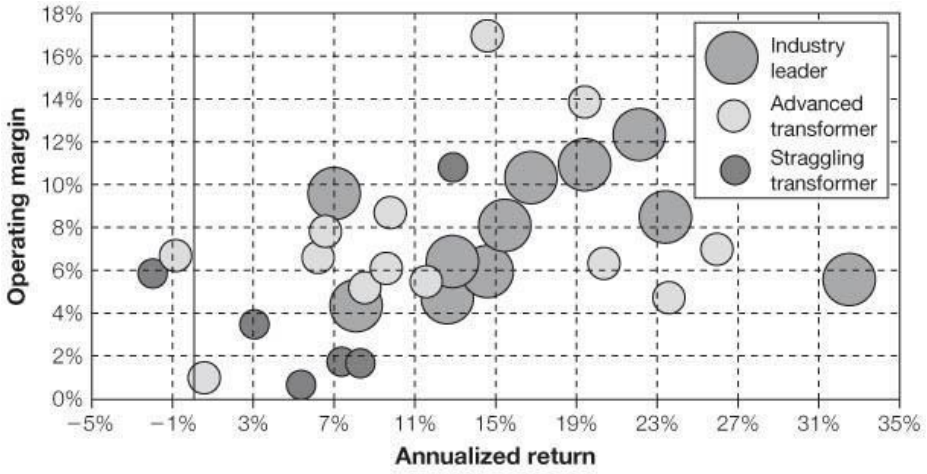
World-class supply chains create economic profit when they:

- Support higher *revenue* by providing flawless delivery to customers.
- Reduce *cost* through ever more efficient operations.
- Reduce *capital* requirements with lower inventory, overall working capital, and streamlined physical networks.

Effective supply chain management means driving enterprise cross-functional integration to produce the highest availability with the minimum cost and capital investment. This increases economic profit because it supports higher revenue at lower costs and with lower working capital. An increase in economic profit supports an increase in shareholder value.

In the 1990s, the relationship between supply chain excellence and shareholder value was not well understood. For example, Gary Balter, managing director of Credit Suisse, observed that few analysts likely appreciated the major change that occurred at Target in the late 1990s and early 2000s, when Target went from a distribution system clogged with slow-turning merchandise to a flow-through system, with distribution centers dedicated to carry fast-turning merchandise.[7] Balter observed that this resulted in a major reduction in inventory, with improved product availability. But as appreciation of its improving supply chain grew, so did its relative stock market improvement versus Walmart and Kmart. Interestingly, when Walmart later began its Remix supply chain program, all stock market analysts focused on it. Walmart highlighted Remix because, by then, analysts and Wall Street had begun to appreciate the positive impact and importance of the supply chain. More CEOs and boards are now taking notice due to stock analysts' consistent questions regarding the state of firms' supply chains and Wall Street's reward for supply chain performance.

As another confirmation of the link of company performance to supply chain excellence, Credit Suisse identified firms that, based on its analysis, have leading versus underperforming supply chains. Then it compared them to the return on invested capital and margins. Figure 1-2 shows the results of their analysis and illustrates the benefit of supply chain excellence.



Source: Company data, Credit Suisse estimates. Used with permission.

FIGURE 1-2: Companies with leading supply chain systems have higher operating margins and outperform other retailers

In order to further gauge the increase in earnings and stock performance due to supply chain excellence, the Credit Suisse analysis in table 1-2 looks at several companies that were successful in transforming their supply chains. It also quantifies the benefits that stragglers could realize should they embark on that mission successfully. For Nordstrom, Michaels, Best Buy, J.C. Penney, and Target, there is an average improvement in operating margins of 518 basis points, an average increase of 17 percent in inventory turns, and a 20 percent increase in sales per square foot.

[7]Gary Balter, managing director at Credit Suisse; David Strasser, managing director at Bank of America Securities. Interview, October 2008, Chicago, Illinois.

How One Manufacturer Drove Higher Economic Profit

There are other ways to generate economic profit, including new products, new marketing programs, acquisitions, and simply squeezing cost and assets. Most firms have worked these approaches to death for years. The supply chain is often a new horse to ride, with huge potential. Consider one company that had tried everything to increase shareholder value. In desperation, the CEO and CFO turned to their supply chain.

Table 1-2: Credit Suisse's analysis of the impact, real or potential, of supply chain excellence on various retail chains

	Annualized returns		Operating margin			Inventory turns			Gross margin per square foot			Sales per square foot		
	Total	Relative	Prior	After	BPS Increase	Prior	After	Increase	Prior	After	Increase	Prior	After	Increase
Nordstrom	33.1%	25.2%	2.6%	10.6%	804	4.1x	5.5x	33%	$121	$171	42%	$340	$437	28%
Michaels	20.6%	7.4%	5.7%	10.4%	470	2.4x	2.7x	13%	$61	$81	32%	$184	$216	17%
Best Buy	28.1%	17.3%	3.6%	5.6%	200	7.8x	7.4x	-6%	$212	$238	13%	$938	$951	1%
J.C. Penney	34.7%	26.8%	3.1%	9.7%	660	2.2x	3.3x	53%	$57	$76	33%	$171	$193	13%
Target	10.0%	2.9%	3.9%	8.5%	458	7.2x	6.5x	-9%	$69	$108	58%	$227	$321	41%
Average	25%	16%	Average		518	Average		17%	Average		35%	Average		20%

Source: Company data, Credit Suisse estimates, Bloomberg.

*Total returns relative to the S&P 500 retailing index.

The CEO and CFO of a *Fortune* 150 manufacturer of consumer durable goods had a problem. They were returning from the latest quarterly results conference call, still smarting from the beating they had received for the sorry state of cash flow in the corporation. Even though net income was excellent, the cash flow and economic profit were disappointing to investors. They knew they had to take aggressive action fast, not only to support the stock price, but for the long-term viability of the company. They decided to implement a creative and radically different plan to increase cash flow. For several months, they had been debating whether to use their supply chain organization as the catalyst to drive down

working capital and improve cash flow. They realized that the time for debate had passed.

The CFO hurried to his office and placed a call to the vice president of supply chain and the vice president of manufacturing requesting a quick meeting. When the four gathered, the CEO and the CFO shared with them the critical need to generate more cash flow. They said they wanted to try something totally different. The plan was to leverage the company's supply chain to drastically reduce working capital. The firm had nearly $1.2 billion of cash tied up in working capital. The executives issued an extreme challenge: cut working capital by 50 percent and do it using improvements in the supply chain. And there was one more thing . . . do it within twenty-four months.

When the CFO gave this assignment, the supply chain and manufacturing vice presidents looked at each other and realized they both were thinking the same thing, "I wish I could remember the definition of working capital, but I'm too embarrassed to ask right now!" Obviously, the project had a humble beginning, but the firm accomplished the stretch goal. Leveraging its supply chain, the company reduced working capital by half and managed to free $600 million in cash. Side benefits led to reductions in operating cost and improvements in availability, as they managed to hit on all cylinders of economic profit. But it was far from easy.

Working capital has been called "the capital that doesn't work." It just sits there as inventory and receivables and consumes the company's cash. Any business is much healthier with its assets in motion. From the supply chain perspective, a more descriptive term for working capital is cash-to-cash cycle time, or asset velocity.

Overall, working capital for most firms consists of four components or "buckets": (1) finished-goods inventory; (2) raw and work-in-process inventory; (3) accounts payable; and (4) accounts receivable. Put another way, working capital is essentially total inventory plus receivables minus payables.

With the working capital goal set, the company formed a supply chain working capital team to create a strategy for accomplishing the goal. The team members launched projects in each of the four buckets, starting with their comfort zone—finished-goods inventory. They created a detailed plan to rationalize finished inventory to 50 percent of its current level, a $250 million reduction, without negatively affecting product availability.

1. Finished-Goods Inventory

The inventory reduction plan depended on four tasks:

1. Cut the number of SKUs in order to manage inventory across fewer finished products.
2. Improve manufacturing flexibility to react faster to demand changes.
3. Address slow-moving inventory—30 percent of the inventory was just plain not selling—and create a product segmentation strategy allowing fast-moving SKUs to carry the highest inventories. (Prior to this initiative, profitability suffered because customers of fast-moving SKUs were served with the same inventory levels as slow-moving ones.)
4. Manage demand to more perfectly match the abilities of the supply chain. The goal here was to drive inventories to a bare minimum by managing demand to levels that could be quickly met by flexible manufacturing plants and logistics. This required new internal cross-functional collaboration, with sales, marketing, manufacturing, and logistics all pulling in the same direction, requiring significant cultural changes.

All four of these initiatives required radically new thinking and cross-functional cooperation. Fortunately, the CEO provided the leadership and support the team needed to succeed.

SKU and Product Complexity Management

The team members knew that the firm had a lot of inventory spread across thousands of models, and even worse, they knew they had no formal process for killing off old, underperforming SKUs. Most firms ignore slow-moving and obsolete SKUs, sometimes for years. Management doesn't want to think about it, knowing that it's going to mean margin cuts to get rid of the stuff. But eventually, the company must deal with it, if for no other reason than the huge amount of warehouse space consumed. In a panic, firms then typically launch a program to rid themselves of the offending merchandise, generally by marking it down or scrapping it. This process, like the seasons, repeats without end.

This firm was no exception. The team members realized the only permanent fix was to install a monthly process to remove underperforming SKUs, writing off small amounts regularly versus large amounts under duress. They also knew from past experience that the supply chain organization as it existed could never successfully lead an SKU-reduction project. They could do a great analysis, but simply did not have the power to cut SKUs. SKU management was the realm of the marketing department. So they handed this piece of the project over to the vice president of marketing, though the CEO

demanded regular reports on progress.

First, the working capital team members adopted a goal of a 25 percent reduction in SKUs. They then allocated that goal across all of the individual product/brand combinations in the firm. As an aid in carrying out the SKU reduction, the team then determined the cost of carrying an SKU (see table 1-3).

Table 1-3: The cost of an SKU

Category	Cost element
Manufacturing costs	Changeovers Schedule change costs Component part management Unique tool maintenance Work-in-process inventory management Overhead to manage added complexity
Logistics costs	Warehousing and facility costs Inventory management Overhead to manage complexity
Sales and marketing costs	Training Communications Closeouts
Procurement	Supply base management Materials management
Design engineering	Developing and maintaining design specs Testing
Customer	Warehouse space Storage space Display changes Inventory holding cost

The firm found that just the manufacturing and logistics costs alone totaled over $100,000 for each SKU. Surprised and shocked at the cost, the team members decided to take aggressive action. To control this cost, they knew they had to cut SKUs and then maintain the progress. This led to installing a set of automated decision rules:

1. When an SKU's sales fell below a target threshold of a hundred units sold in the last quarter, it automatically transferred to a "watch list."
2. After thirty more days, it then was reclassified as "discontinued," but with the same pricing still in effect.
3. After another thirty days, its classification moved to "obsolete," with an automatic price reduction of 20 percent.
4. Every month, the price was automatically reduced by another 20 percent.
5. At somewhere around the 40 percent to 60 percent price level, if any product still remained, it was scrapped, donated to charity, or placed on an eBay auction.

Now they had a process to flush out unproductive SKUs at their end of life. But that was only half the battle. They also needed discipline at the *beginning* of life. For this, they added a "add one–cut one" corporate policy that required an old SKU to be retired whenever a new one was introduced, unless extensive justification occurred.

Of course, getting rid of obsolete SKUs meant eliminating the inventory that went along with those SKUs. Some supply chain managers tell us that when they request funds to write off obsolete inventory, paralysis sets in. They can't get rid of the inventory because financial reserves don't exist to write off the inventory. The negative impact of an inventory write-off on the bottom line could mean missing profit expectations for the current quarter. However, in this case, the company fortunately was having a pretty good year; and some reserves were freed for the write-off. (One firm in our database routinely sets aside an amount every month for write-offs and eliminates a modest amount of obsolete inventory every month, never letting the problem grow too large.)

Manufacturing Flexibility

The working capital team members realized that their internal manufacturing operations were not flexible enough to react to

demand changes. Manufacturing at this firm occurred in mega-factories, each employing thousands of people. Production schedules were reset on a monthly basis and frozen, with long production runs being the norm. Two problems existed: (1) the thirty-day frozen period was much too long to stay in synch with demand changes, and (2) the long production runs meant that the company could only make twenty models in a typical day. Therefore, it took roughly a month to cycle through the five hundred SKUs made in a typical factory.

The team attacked the problem on both fronts, with a new process supported by new technology. The planning systems moved from monthly to weekly and eventually to daily cycles. Each major supplier was required to supply component parts with continually shorter lead times. And all this depended on a new mind-set that speed and flexibility were essential. This led to a range of initiatives using lean manufacturing concepts as the foundation to attack cycle times.

The firm successfully moved its manufacturing frozen period from thirty days to three weeks and then to two weeks. The frozen period was the time when the production schedule was locked in and could not react to changes in customer orders. At that point, it converted to a daily reduction goal, starting at a ten-working-day frozen period and targeting a reduction to five. Now, the planning systems could roll in a new refreshed schedule on the sixth day out, not thirty days. This breakthrough in flexibility allowed inventory to be reduced dramatically.

The team then attacked the issue of long production runs. Consistent with the lean manufacturing efforts, the number of SKUs that the factories could turn out each day doubled and then tripled. They accomplished this by aggressively reducing setup times and model changeover times on nearly every process, a very tedious and difficult undertaking. The manufacturing flexibility breakthroughs alone drove a major reduction in finished-goods inventory, because the company could now react to changes in demand with production flexibility, not simply inventory.

A number of manufacturing people initially resisted the changes. After all, they had to meet aggressive cost targets, and their intuition told them that more flexibility increases cost. But the COO took a personal interest in the initiative and embraced the need for more flexibility. He knew the future of the company and his bonus lay in serving the customers faster than the competition. He also suspected that by using lean concepts, more flexibility could be achieved with no additional cost. He strongly urged the manufacturing people to pursue flexibility. In the end, they found that more flexibility did not mean higher cost.

Inventory Segmentation

The team members decided they could not meet their goals and also carry the same amount of inventory across all models. They knew that many firms used a product segmentation system called ABC inventory classification. They decided to implement it and put some real teeth in it. They defined the A products as the fast movers, which were the top 50 percent of the models, generating 85 percent of the sales. Next, they defined the B products as the next 25 percent providing 10 percent of the sales. For these A and B products, the team changed very little. But they implemented a drastic change for the slow-moving C products—the remaining 25 percent of the models generating only 5 percent of the sales. For these low-volume products, the firm instituted a three-week lead time, so the products could be built to order and required no inventory. This totally eliminated the chronic problem of a highly disproportionate amount of inventory carried for these low-volume, slow-moving models by totally eliminating that inventory.

Initially, the sales function pushed back hard, concerned about a potential loss of market share. One sales manager said, “We might as well not even offer the C models for sale! We are going to lose a lot of sales to our competitors.” The project was about to stall with this resistance. When the CEO heard of the problem, he passed the word down the organization that he was willing to take this risk and also in general wanted to see the functions collaborating with each other. (He had the right perspective. They were only risking 5 percent of the business.) So, finally, sales agreed to a test program with the concept piloted in one market first. The sales managers believed that the three-week lead time would result in lost sales and would clearly kill the initiative. On the contrary, the test market showed an actual increase in the overall business. When surveyed, retailers said that the sales increase was due to having better availability for the models that were selling.

Slow-Moving Inventory

The ABC inventory segmentation worked, but more effort was needed, since a lot of slow-moving and obsolete inventory still clogged the warehouses, some having been there for literally years. The working capital team agreed on a definition of slow-moving inventory as any inventory exceeding a thirty-day supply and was shocked to discover that nearly 30 percent of the inventory fell into that category. Reducing overall inventory was impossible without aggressive action on this front, then the other initiatives would deliver the results. The SKU reduction dovetailed with this initiative. The newly acquired manufacturing flexibility meant the firm could avoid long runs far in advance of actual demand. And ABC segmentation meant inventory on low-volume, impossible-to-forecast products could be kept very low.

Demand Managed to Equal Supply

One difficult problem remained that had to be addressed. Sales had little regard for manufacturing or supplier capability, and the supply people often ignored sales forecasts, which they felt were essentially fictional. The firm desperately needed a process to align supply with demand. It latched onto a process which many companies call sales and operations planning (S&OP). This cross-functional process involves sales, marketing, supply chain, manufacturing, finance, and so on in an activity to reach consensus on aligning supply with demand (we describe S&OP in much more detail in chapter 5). The company implemented both manager-level and executive alignment meetings to achieve full cross-functional buy-in. Although not perfect, the process provided an excellent forum in which to drive goal alignment and support the other cross-functional initiatives. At the end, sales had a demand plan and operations had a production plan that better aligned.

Finished-Goods Inventory Results

The four initiatives combined to drive nearly $250 million out of finished-goods inventory over the next three years. Product availability improved despite the inventory fall. As Taiichi Ohno, the father of lean manufacturing said, “The more inventory you have, the less you have of what you really need.” This apparent contradiction holds true when inventory flows in sync with demand. The company learned it could dramatically lower inventory without hurting customer service by simply focusing its enhanced flexibility on models that were selling. The team was well on the way toward achieving its goal.

2. Raw and Work-in-Process Inventory

Even retailers and their suppliers could learn from the actions this manufacturer took to reduce its raw and work-in-process inventory. At the same time the finished-goods initiative proceeded, a subteam simultaneously attacked the raw material inventory in the factories.

This raw and work-in-process inventory (RWIP) was the entire inventory in the factories prior to becoming finished goods. RWIP consisted of inventory driven by a different set of factors than finished-goods inventory. Projects were launched in four areas with a stretch target to cut RWIP nearly 70 percent—to less than one-third of its starting level—eventually achieving a $75 million reduction over the next two years. The components of the plan were:

1. Reduce component part complexity. Fewer parts in the factories simplify processes and drive down cost.
2. Collaborate with the six hundred major suppliers to shrink component supply lead times, reduce costs, and improve quality.
3. Reduce the $40 million in nonproduction material such as maintenance supplies.
4. Continue implementing world-class (lean) manufacturing techniques.

The team discovered many egregious examples of component part complexity spinning out of control. For example, one product had thirty different types of wiring harnesses, with each harness consisting of fifteen to twenty-five wires. On two of those harnesses, everything was exactly the same except for one wire that was a quarter of an inch longer than the same wire on the other harness. Clearly, the design engineers had had no incentive to standardize parts, a situation that demanded a revision of engineering objectives to include factors other than minimizing component cost. With the right metrics in place, a significant reduction in component parts occurred over time.

The firm worked with each major supplier to set goals to reduce lead times. In return, all internal company forecasts were shared with the supply base. Nearly 30 percent of the components were converted to a vendor-managed inventory basis (VMI), with the suppliers now responsible for the inventory and for restocking until it was consumed.

Together, these projects reduced the days of inventory on hand from eighteen days of supply to less than five, which included the nonproduction material. This amounted to a $75 million inventory reduction over a two-year period.

3. Accounts Payable

The supply chain working capital team then ventured far from their traditional responsibilities and geared up to address accounts receivable and accounts payable. These nonfinancial people took awhile to fully understand the positive impact of payables on working capital. Like good and bad cholesterol, this was good working capital. The company had $300 million in payables and wanted to increase it to $450 million. How to increase payables was at first somewhat of a mystery to the team, but by collaborating externally with their suppliers, they found a way. Payment terms to suppliers were in the range of thirty to forty-five days. Finding a way to get as many suppliers as possible to ninety days became the objective. With ninety-day terms, the amount of payables doubled versus the old forty-five-day terms. The firm was able to hold on to its cash longer, reducing working capital.

This firm probably had enough clout with many of its suppliers to simply force them to increase payment terms. But the working capital team realized that in the long run it would be counterproductive. The team members wanted to find a win-win arrangement and worked with each core supplier to find a way to help offset the payment terms increase. This involved a combination of increased business for the core suppliers, longer-term contracts, and open sharing of data, technology, and strategy for the future. In addition, they developed an online information system, so suppliers could see when their invoice was scheduled for payment. This allowed suppliers to decide whether to wait for full payment or sell the invoice to a financial institution and receive payment the next day. Even better, they could generally sell the invoice based on their customer's investment grade credit rating. Over the next three years, the increase in payment terms resulted in a $150 million increase in accounts payable.

4. Accounts Receivable

The toughest area for the team members to address was accounts receivable. This $800 million gorilla was the largest component of working capital and could not be ignored if they were to meet the goal. Good progress in the other three areas meant that accounts receivable had to be cut "only" 20 percent or $175 million to make the overall working capital reduction goal of 50 percent. Could this possibly be done using supply chain tools? One common technique firms use to cut receivables is to simply sell them to a financial institution, a tactic called *factoring*. Anyone can factor receivables. But the working capital team asked, how can we cut them in reality? So the team focused now on collaborating externally at the other end of the chain, with its customers.

Receivables, of course, depend on payment terms. In a very real sense, negotiating payment terms with customers is the same thing as negotiating pricing, and that is normally led by the sales organization. Unfortunately, it's rare to find a company whose sales organization understands how to use the supply chain in these negotiations. Sales managers need either to involve the supply chain group in the customer negotiations or to fully understand the cost impact of agreeing to specific methods of storage and delivery. That's exactly what this team did.

The working capital team members decided to use faster resupply as a lever. As compensation for the benefit of faster resupply, the firm asked for a twenty-day reduction in payment terms from a base level of sixty days. This allowed them to reduce their accounts receivables by $95 million. Why would the customer agree to this change in payment terms? Because the firm showed its retail customer how it could greatly cut the inventory it was holding due to the much faster resupply. This was a win-win for both parties. The supplier reduced its working capital (accounts receivable), and so did the customer (inventory). Furthermore, the retail customer reduced its out-of-pocket costs for holding and storing the inventory.

Goal Achieved

In summary, the team members attained their goal and took $600 million out of working capital. They also slightly improved customer-order fill rates. Less inventory meant less inventory holding cost and also less need for warehouse capital. To drive this improvement with their supply chain, they used technology and collaborated externally with their suppliers and customers, and internally across the functional silos. And they had a disciplined process for managing change and getting things done. So, the team hit on all cylinders of economic profit. They greatly reduced invested capital, which indirectly cut cost, and contributed to revenue growth with the improved availability of product.

Speaking the Language of the CEO and the Board

In the case described, the CEO patiently explained the concept and nuances of working capital to the supply chain executives. All supply chain leaders should ensure that they and their organizations understand the financial ratios critical to the executive team and the board, including ratios such as:

- Net profit margin (NOPAT) is net operating profit after tax.
- Capital turnover (CT/O) is revenue divided by total capital.
- Weighted average cost of capital (WACC).
- Return on invested capital (ROIC) is net profit margin multiplied by capital turnover (the same as net operating profit after tax divided by total capital).
- Economic profit (EP) is NOPAT less WACC.

Can the CEO help supply chain executives translate how their work drives NOPAT, CT/O, ROIC, and EP? If he does, he will unleash the power of the supply chain in a way not previously imagined. Supply chain executives have to know how

their actions affect these ratios and drive economic profit for their firms. First, they need to improve their understanding of ratios, which may take some education and commonly available sources.[8]

Supply chain executives need to clearly understand why they must speak the language of the CEO and the board. The answer is the same one the famous bank robber Willie Sutton gave when asked why he robbed banks: “Because that’s where the money is.” It’s a two-way street. If the supply chain organization wants the resources to make supply chain improvements, it needs to translate it into how it affects economic profit (see table 1-4).

Table 1-4: Supply chain terminology versus CEO and board terminology

CEO and board speak	Supply chain speak
NOPAT, CT/O, WACC, ROIC	Fill rate, shipments, and cost
COGS, SG&A	Transportation cost, warehousing cost
Working capital, cash flow, DSO	Inventory turnover
Shareholder value, PE ratio	Rarely mentioned
EBITDA	Cost, cost, cost
Economic profit	Rarely mentioned

Some companies such as OfficeMax have taken advantage of the opportunity to achieve supply chain excellence already and are using the language of the board to communicate about supply chain issues. (Reuben Slone, one of the authors, manages the supply chain at OfficeMax.) Every supply chain initiative at OfficeMax is evaluated based on its impact on economic profit. For example, the supply chain team doesn’t just measure days of inventory, it measures the cost of days of inventory and thereby the impact on economic profit of decreasing days of inventory. Here’s the calculation:

- Current inventory days: 55 days (6.5 turns per year)
- Inventory level: $1,068 million
- Investment per day of inventory held: $19.4 million
- Cost of capital: 8 percent
- Cost per day of inventory: $1.55 million[9]

The supply chain organization should look for simple forms of communication to make the work it does come alive for the CEO, the executive team, and the board. It needs to show the clear relationship between supply chain initiatives and shareholder returns. For more examples of how OfficeMax translates supply chain initiatives into economic profits, see table 1-5.

Table 1-5: How OfficeMax links economic profit and supply chain initiatives

Supply chain initiative	How each initiative is reframed into a driver of economic profit
Increased supply chain velocity	Lower inventory and lower working capital in general
More efficient use of physical assets like warehouses and scheduling of factories	Lower physical capital
Better availability and customer service	Higher sales
Lower distribution costs	Better margins

The executive team at OfficeMax realizes that the supply chain has a role in all of the components of economic profit and is a critical enabler to driving economic profit in all dimensions.

[8] *Forbes* Investopedia.com is an excellent source.

[9] Calculation done by the supply chain organization at OfficeMax.

Conclusion

A small but growing number of companies are reporting that they leverage their supply chains to make working capital and cash flow improvements to drive economic profit and shareholder value. Supply chain organizations of the future must focus on far more than just driving out cost and improving product availability. Instead, they need to become engines of overall financial improvement for their companies. Smart companies will use innovation in their supply chain to generate the cash to fund further innovation in their product lines and growth in their business.

When the credit markets froze from 2008 to 2009, a few firms realized that they could free up cash internally without having to go to the bank. Huge amounts of cash exist. A study by AlixPartners showed that $562 billion is trapped in working capital across a thousand companies in fifty-six different U.S. industries.[10]

A major lesson learned in our work with many firms is that this focus must be driven from the top of the company. Without strong consistent support from the CEO, CFO, and COO, an initiative such as that described could not have been successful, due to the massive alignment of functional silos required. The fundamental learning from the case is how the supply chain can be used as a lever to dramatically lower working capital and improve cash flow. Since these changes positively affect economic profit, investors reward these efforts as they realize higher shareholder value.

The supply chain will not drive economic profit without a supply chain strategy. After working with hundreds of firms, we have found surprisingly few that have a real supply chain strategy.

The next chapter details how to develop such a strategy and the steps to take to build it. But there is a very basic prerequisite. The supply chain organization must challenge itself to take a broad, economic profit-based view, and must understand the CEO's language and that of the board.

[10] *Investment Weekly News*, November 1, 2008. (AlixPartners is a global business advisory firm that specializes in improving corporate financial and operational performance, executing corporate turnarounds, and providing litigation consulting and forensic accounting.)

ACTION STEPS

1. Translate supply chain actions into the language of the board and CEO.
2. Focus the supply chain strategy on driving economic profit and initiate supply chain projects that clearly drive the levers of economic profit. Openly communicate that strategy across the corporation.
3. Use the supply chain to not only attack cost and improve product availability, but also drive reductions in working capital on all fronts. Make the supply chain a cash flow creator and a driver of economic profit.