COSTS

By James B. Ayers

L et's face it: Cost reduction sells supply chain improvement projects. Although supply chain projects can create significant strategic advantages and customer service improvements, management often sees these benefits as "icing on the cake." Their philosophy is, "If you're going to spend money, you need to get money back."

The actual savings for many supply chain projects, however, frequently have been disappointing, if not downright invisible. The reason often is that the project treats the symptoms and not the root causes of the cost. The problem is that some factor in the environment—some barrier—has prevented the project team from uncovering those root causes. This article identifies the most common barriers and shows how companies can overcome them so that they can successfully weed out costs and nurture a healthy supply chain.

Six Root Causes

Practically any example of unnecessary supply chain cost can be traced to one or more of the following six root causes, described in *The Handbook of Supply Chain Management.*[1]

1. *Lack of clarity.* Accounting practices and an unwillingness to share cost information among supply chain partners make it difficult to pinpoint costs and cost drivers at both the company and supply chain levels. This makes it hard, if not impossible, to do the right thing when trying to reduce the cost.

2. *Variability.* Basically, variability is anything that creates uncertainty in supply chain operations—such as missed deliveries, unforeseen demand, and poor quality material. This uncertainty produces significant costs in the supply chain through, for example, extra inventory, overtime pay, lost sales, and returned products. The causes of variability fall into two main categories: unreliable operating processes and ineffective management practices, like end-of-the-quarter sales pushes. Unreliable operating processes can be addressed by engineering approaches, while management practices require changing habits and instilling discipline in the organization.

3. *Product design.* The bulk of a product's cost is "baked in" during product design through decisions made in material choices, software design, suppliers, and ease of fabrication and assembly. Shorter product lifecycles that increase design content make this an increasingly critical cost factor.

Getting to the
ROOT CAUSES

Supply chain cost-reduction projects must forsake quick-fix solutions in favor of a disciplined approach that addresses the root causes for the costs. Unfortunately, barriers stand in the way to discovering and addressing these root causes. This article pinpoints the five most common barriers and offers some practical advice on how to overcome them.

4. *Lack of Information Sharing.* To coordinate their supply chains effectively and efficiently, companies need to share information with their partners. Not doing so can create repercussions such as the bullwhip effect, which results in increased costs. The "bullwhip effect" takes its name from the wide swings in production volumes along a supply chain when final demand is actually quite stable.

5. *Weak Links.* Link management encompasses make-or-buy decisions, the choice of partners, and the nature of relationships among those partners. Significant costs can be incurred if these decisions and relationships are not managed well. Examples of such costs include poor supplier selection and expending internal resources on an activity that is not a core competency.

6. *Unintended consequences.* Good intentions can produce bad results. An effort to reduce costs in one area of the supply chain might actually raise costs across the entire supply chain. For example, choosing the lowest-priced, but under-performing, supplier might not result in the lowest total cost for the supply chain. Management must be aware of the unfortunate side effects from the well-intentioned actions they take.

Addressing the root causes of supply chain costs is essential to any supply chain improvement project. Unfortunately, many managers embarking on such projects base their work on hunches, place blind faith in proposed solutions, or succumb to arm twisting by vendors. They may also decide to "wing it" to demonstrate action—no matter whether the chosen course of action will do the job or not. Often they pursue such so-called action as a way to get demanding bosses off their backs and not as a well-thought-out response to a supply chain problem.

Process for Supply Chain Cost Reduction

Unlike hurried knee-jerk attempts at cost reduction, a more effective process would take a deliberate, disciplined approach. In such an approach, the company first analyzes *how* the supply chain currently works, what costs are incurred, and the level of service provided. Coupled with how the supply chain works, the analysis will also look at *how well* it works. These "how well" evaluations rely on customer surveys, competitive data, benchmarking, metrics for cost and service, and analysis of the company's process documentation.

Next, the company creates a "destination" supply chain design, which would deliver competitive cost and service performance. The destination vision would include supply chain features of importance such as organization, facilities, systems, products, and other components. In actual practice, most managers skip this step, launching change initiatives with little thought to the ultimate destination. Instead of a detailed vision, the destination is only defined by a simple, numerical goal—for example, "save 12 percent."

For those that map out their ultimate destination in the level of detail suggested above, the rewards are considerable. First, having a detailed vision reduces the risk that short-term projects won't support long-term goals. The supply chain destination establishes a basis for accepting or rejecting proposed solutions. Second, a detailed vision allows managers to be more flexible in responding to the inevitable changes that occur over the course of any project. If the goal is simply to save 12 percent, the company may focus only on making that percentage instead of responding to new market conditions or other changes as it strives to achieve larger goals, like increased market share. Third, the company can share its vision with trusted partners as a way of setting the stage for collaborative efforts.

Having set a destination vision, the company will then use a gap analysis to determine the difference between where its supply chain is and where it wants to go. The gap analysis leads companies to the root causes of supply chain cost. That is, the gap is the "why" for the difference between the existing and the desired supply chain state. The identified root causes will likely fall into one of the six categories listed above. This analysis also facilitates the implementation effort, which helps managers in setting priorities.

Barriers to Improvement

Successfully reducing supply chain costs is not easy. Companies will run into barriers that limit their ability to identify and address the root causes. The barriers discussed here are the ones most difficult to address—those that are ingrained in the company psyche and that people in the organization may not even be aware exist. Unfortunately, they do exist because of a number of factors—employee selection, company history, products and markets, the industry, an abundance of or lack of competition, government regulation, power relationships between departments, and more.

This does not mean there aren't other important barriers

such as inadequate computer systems, price wars, materials shortages, tight budgets, and obsolete products. However, these barriers are on the surface where potential solutions are clear. The barriers we talk about here are more insidious because they lie beneath the surface.

Exhibit 1 identifies the five barriers covered in this article and shows which barriers are most likely to conceal which root causes.

		Root Causes for Cost					
Barrier	**Description**	Lack of Clarity	Variability	Product Design	Information Sharing	Weak Links	Unintended Consequences
No Focus	"We don't follow through."	✔		✔			✔
Confusion	"We don't understand."	✔	✔	✔			
Motivators	"Objectives are fuzzy or wrong."		✔				✔
Boundaries	"Our influence is limited."	✔	✔			✔	
Rigidity	"We are slow."				✔		✔

EXHIBIT 1

Why We Fail: Barriers to Supply Chain Cost Reduction

Barrier 1: Lack of Focus

Supply chain projects are, by definition, ambitious. They require participation not just from partners inside the company but also from external partners. Implementing an ambitious project across multiple companies requires the application of disciplined project management techniques. Simply having a continuous improvement mentality won't cut it. Instead, success depends on the project having clear goals and a clear scope.

Unfortunately, many companies give half-hearted support to proper supply chain project management. They often don't understand or ignore common sense project management practices. Furthermore, instead of creating a dedicated team, companies often "bootstrap" their supply chain cost reduction efforts. In other words, they assign the project to employees to complete in the time remaining after their regular work—which often means no time at all.

Also companies often fail to deploy the right "army" to attack supply chain problems successfully. For example, the engineering department is frequently omitted from a supply chain improvement effort. As a result, the supply chain costs baked into the product design are never addressed.

Without a focused team following disciplined processes, it is difficult to identify clearly the root causes of supply chain

costs and create a detailed plan for reducing them. Instead the project becomes muddled and has the unintended result of achieving superficial, local savings far below what a focused project with broad participation could achieve. A common excuse is "we don't have the budget for a dedicated team." Fair enough, but don't expect meaningful results.

With a focused approach to a limited number of projects, more improvements will be achieved. The following sections describe two solutions for creating a focused project that centers on project management basics and effective team building.

Project Management Basics

More and more supply chain efforts are being deployed as projects, or "temporary efforts that produce a product, service, or result,"[2] instead of as ongoing operations. But frankly, most of us do not fully understand project management. Fortunately, there is a body of knowledge on project management maintained by the Project Management Institute. A good start to any supply chain project is establishing a project infrastructure within the company using this body of knowledge.[3] This approach recognizes that supply chain cost reduction requires a dedicated effort and raises the visibility of those efforts.

According to project management practices, it's essential to define the reason for a project in order to achieve focus. At the very outset, how we define the deliverable makes a huge difference in how we execute the project. For example, a *product* definition of a project might be "establish a truck route between point A and point B." A *service* definition might be "establish transportation links between point A and point B." A *result* definition might be "lower logistics costs between point A and point B." The first definition is very specific and easily verified. However, it limits the choice of method to be used. The second opens up options to the project manager. For example, roads, railways, and air could be used. The third expands the options to include not only transportation links but also logistics services like warehousing, cross-docking, load consolidation, and so forth.

For the best results, a supply chain cost-reduction effort should be defined in terms of the desired *result* and not the *means* for achieving that result. The result definition gives the project team the freedom to analyze and pursue different options for reducing costs. For example, a technology company took this route in framing its bill of material cost-reduction effort. The result was a series of actions—ranging from value engineering to renegotiated prices—that slashed material cost by 20 percent annually.

Team Building

Achieving the proper project focus also depends on selecting the proper team with the proper level of dedication. Key project team members should be selected at start-up. This process includes selecting a project manager and staff (if necessary), steering committee, and design team. Also included on the team should be those supply chain partners considered to be "keepers"—the ones you want for long-term relationships. This process of putting together a team is an excellent time to rationalize a supplier base or review distribution channels for poor performing partners and unprofitable products. Of course, an important criterion for inclusion in the keeper category is the willingness of the partner to collaborate on cost-reduction efforts.

If the company wants to create significant cost reductions, it should assign a dedicated project manager. Additionally, to ensure that the project receives the attention and follow-through it deserves, company executives—including CEOs or COOs—should populate steering committees. The design team should consist of mid-level managers who will do the early work on the project. Depending on the needs of the project, participating functions should include engineering, finance, planning, procurement, distribution, and manufacturing.

Because costs are incurred all along the chain, not just in any one company, a supply chain cost-reduction project should be a multicompany effort. A multicompany steering committee should be formed at start-up to achieve buy-in from supply chain partners. Some suppliers, for example, may greet cost-reduction efforts with suspicion. That is why creating a dialogue early on is important.

Barrier 2: Confusion

A second barrier to getting to the root causes is confusion within management, the project team, and among supply chain partners about the project. The opportunities for confusion are many. There may be different ideas about what is included in a supply chain project and what is not. Some of these problems are related to the varying definitions of the supply chain itself. In addition, if other supply chain efforts are already underway, there can be confusion about whether or not these efforts are included.

Another source of confusion is technology. There is no shortage of solutions providers ready to solve a supply chain manager's problems. Yet few managers have the time or the training to match all these solutions to the needs of their sup-

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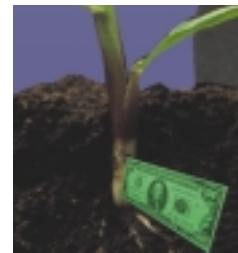
ply chains. Information technology solutions in particular are confusing, and some may be wrong for the business. Under pressure to accomplish supply chain improvements, managers may grasp at the latest management fad or slickly marketed software package. This reinforces the argument for a defined destination for supply chain design.

All of these sources of confusion can get in the way of clearly identifying supply chain costs and understanding how to reduce supply chain variability. Companies can take two actions early in the project to reduce confusion: promote supply chain management and adopt a graduated approach.

Promoting SCM

An important, initial step that will reduce confusion is to educate the company about supply chain management. This begins by emphasizing the strategic role that the supply chain plays in the business. Often, people in the functional areas typically associated with the supply chain are considered second-class citizens. In a recent visit that the author made to a technology company, it was apparent that supply chain department managers had a huge inferiority complex. The company's fortune was based on high-tech products, and engineering and finance were held in high regard. Nontechnical supply chain functions, however, were afterthoughts and taken for granted. Because of this, the supply chain group had little interest in going outside their comfort zone—the purchasing, warehousing, and distribution functions. In companies where this kind of attitude prevails, supply chain projects should be viewed as an opportunity to promote a new view of the supply chain's importance to the business.

The company should also clearly define all of the elements of supply chain management. The Supply-Chain Council's SCOR (Supply-Chain Operations Reference) model is useful at this stage. Particularly valuable are the model's 10 enabling processes, which are listed in Exhibit 2. These processes make up the basic elements of any effective supply chain. They are to the supply chain what pavement is to the highway—without them any supply chain improvement will face a bumpy road. Companies can use the 10 enabling processes as a checklist that reveals where a supply chain needs to improve.

Graduated Approach

A common source of confusion is matching the right solution to the real supply chain problem. This activity is further complicated by the complexity of most supply chains. Most extended supply chains include three to eight external partners. Each of these partners has at least two internal departments with their own interfaces, such as between procurement and manufacturing or manufacturing and distribution. To select the right solution and not be overwhelmed by complexity, supply chain improvement initiatives should be implemented in graduated steps.

For example, one way to reduce costs is to shift from a forecast-driven supply chain with long leadtimes to a demand-driven supply chain with short leadtimes. By compressing supply chain cycle time, this shift will significantly reduce sources of variability in the supply chain. Shifting from forecast-driven to demand-driven should be a three-step process. The first step converts long leadtime process steps to short leadtime steps through process engineering. If these changes aren't possible, the alternative is to use small buffer inventories to serve as shock absorbers. The second step is changing technology and procedures to reduce setup penalties, making product changes economical along the chain. These two steps make possible the third step of substituting actual demand for forecasts in supply chain decision making. Understanding the steps involved removes a source of confusion.

This graduated approach also will help reveal where technology is needed and what the company's requirements for that technology are. This makes it easier for the multicompany steering committee to review and approve proposals for these technology solutions.

Barrier 3: Ineffective Motivators

Implicit or explicit performance measures drive reward and punishment in an organization. Explicit measures are "what we say" is important; implicit measures are "what we do" in terms of dispensing rewards and punishment. The two measures are often inconsistent. One example is a drive for cost reduction at the expense of quality. No management team would ever admit to such behavior, but it's quite common. Although many organizations are turning to broader, more enlightened approaches, most still stress company financial success as their essential measure. This is natural, as the company that doesn't make money has lost its most important reason for being in business—at least to its investors.

However, the existing tools for financial measurement are outmoded. Accountants concoct their budgets following accounting practices developed decades ago, with performance in internal supply chain functions tied to budget adherence. A typical result is an oft-encountered measure like "supply chain costs as a percentage of sales." Few companies use broader measures that look across the entire external supply chain.

The risk of stressing company financial performance is that this approach fails to take into account how a decision or action affects variability and cost across the entire supply chain. Furthermore, excellence in supply chain management requires more than focusing solely on financials. To motivate desirable results, companies need to use broader, supply chain-wide measurements.

Broad Measures

Companies need to make sure that the metrics they use reinforce the broader supply chain goal of matching supply with demand.

EXHIBIT 2

List of SCOR Enabling Processes

Establish and manage rules
Assess performance
Manage data
Manage inventory
Manage capital assets
Manage transportation
Manage supply chain configuration
Manage regulatory compliance
Align supply chain and financials
Manage supplier agreements

Otherwise, metrics can drive dysfunctional behavior and unintended consequences. If the measure is "percentage of sales," the person or department being measured will surely ratchet down on supply chain costs without regard to the fallout. If the company is selling hot products with short lifecycles, that cost-conscious supply chain manager will cause money to be left on the table and customer goodwill to be destroyed. This isn't good for the company or its supply chain partners. Ample inventories, expedited airfreight, and extra manufacturing capacity can be a good thing if it signifies that supply is overtaking fast-growing demand that has been underestimated.

Although it's easier said than done, measures need to reflect product lifecycle costs. For example, the individual commodity manager or buyer whose measure is lowest price paid for materials may end up selecting a bad source of materials for a new product, causing headaches later.

Finally, measurements ideally should look across the entire supply chain and not just internally. For example, one company shifted raw material inventory to its suppliers in order to relieve its balance sheet. But an anonymous survey disclosed that this practice cut into supplier profit and did not reduce total supply chain costs.

Barrier 4: Boundaries

Boundaries are both figurative and literal barriers to supply chain improvement. At the basic level, the individual, whether a frontline worker or the CEO, exercises a high level of control over his or her immediate environment. When additional players are introduced, an individual's control and visibility diminish. By extension, the same is true at the company level when several work groups take part in an initiative and at the supply chain level when multiple companies are involved. In other words, boundaries make it harder to see supply chain costs or control supply chain variability. An example of the impact of boundaries is the bullwhip effect. Small changes (or low variability) in final, end-user demand are amplified at each level of the chain, producing wide swings in demand (high variability) at the back-end of the chain.

Effective supply chain management means we must manage improvement not only across our own department boundaries but also across company boundaries. To be successful, we must somehow enlist key players in other departments and in our partners' organizations. This requires skills that many lack—such as persuasiveness, proactiveness in leading change, and creativity in devising "win-win" solutions with partners.

The boundary barrier can be circumvented by first being more selective in the choice of supply chain improvement projects. This divide-and-conquer approach will help you gain the commitment of select players,

which will then lead to multicompany participation. The next sections describe the divide-and-conquer approach and the mechanisms for multicompany participation.

Divide and Conquer

As companies implement a supply chain improvement effort, they may want to bite off one piece of their supply chain at a time. This approach builds a firewall around what might be a risky endeavor if too much is undertaken at once. It also allows the company to focus limited resources on priority supply chain activities.

Different companies will have different supply chain priorities. A high-tech, engineering-intensive company, for example, depends on its suppliers more than a distributor of commodity chemicals does. Therefore, the tech company will focus on the upstream supply side, while the distributor might focus on the downstream distribution side. Similarly, each customer segment will have different requirements in terms of customer service expectations, products consumed, and so forth. Companies will focus on improving different parts of the supply chain for each of its customer segments.

A company can divide and conquer by carving its supply chain into "spheres" defined in terms of three-dimensional customer-product-operations combinations. These spheres set aside pieces of the supply chain for focused improvement. An aftermarket parts distributor for rail vehicles used this concept. It profiled three markets for parts, each requiring its own supply chain with different physical flows, inventory policies, and pricing.

In this way, the divide-and-conquer strategy creates workable projects and reduces the risk of designing a one-size-fits-all supply chain. It is also a tool for setting priorities if resources are limited. The highest priority project can address the needs of the most important parts of the business.

Multicompany Participation

Once a piece of the supply chain has been chosen for a makeover, the company can identify its most important partners and focus its resources and efforts on getting their buy-in. If a multicompany steering committee doesn't already exist, then it should be formed. Key partners must contribute to gain the full benefit of the effort. Contributions may include the following:

■ Supplying data for process flowcharts for cost and time across the chain.

■ Providing points of contact across boundaries in a variety of functions.

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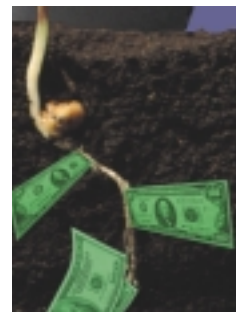
■ Providing information on costs and cost drivers.

■ Making technology improvements that would enhance the supply chain.

■ Suggesting ideas for cost reduction that address root causes.

■ Forming contracts that encourage ideas for cost reduction.

Partners that balk at making these contributions are an occupational hazard of any supply chain project. A company's steering committee should anticipate lack of cooperation and have a contingency plan in its pocket. Such a plan should consider work-around options, partner replacement, or suspending the effort until the needed cooperation is forthcoming. The major mistake is not confronting the situation and allowing the effort, full of boundary-related barriers, to muddle along when success is doubtful.

Barrier 5: Rigidity

The final barrier to addressing root causes of supply chain cost is a company's rigidity or inability to change. The press reminds us frequently that the pace of change, or "clockspeed,"[4] has quickened. Yet while clockspeeds have increased, the decision-making and information-sharing processes at many companies have not. A barrier exists if a company's processes continue to move slower than the pace of change needed to stay competitive and if a company is not implementing new supply chain projects or modifying ongoing projects in a timely manner.

Supply chain project management must allow for changes to be made throughout the project. Otherwise, rigid adherence to locked-in operating processes can have massive unintended costs. For example, one distributor of electronic products contracted for an ambitious enterprise resource planning (ERP) system. The distributor insisted, however, that all the built-in forms and reports for the new system had to be identical to the legacy system's format. This rigidity led to vast overruns and a unique, high-maintenance system. The financial bleeding from this project triggered a rapid pullback in the company's fortunes, essentially putting the company out of business.

Rigidity can be both subtle and obvious. Subtle rigidity besets the mindsets of people in the organization and is hard to identify. The solution is to change mindsets. Unsubtle rigidity involves being slow to cope with changes during the execution of the project. The solution lies in better procedures.

Mindset Changes

Throughout a supply chain project, the steering committee or management team will face many, subtle change decisions. For example, the electronic product distributor described above had to decide between changing the ERP system or the way people worked. How management decides reflects their collective mindset and values. The distributor's choice to change the software and not retrain its people mucked up the software implementation and revealed the rigid company mindset that ultimately did it in.

The solution to this barrier lies in fostering new mindsets by replacing or adding people. As facilitating consultants, for example, we often fill the role of devil's advocate to help the client team challenge their rigidity and make it through the project.

Changing the Project

Another source of rigidity comes from sticking with a project plan for too long. For many project managers, persistence through thick or thin is a virtue. These managers take pride in staying the course despite the fact that the forces of change are hard at work.

Post-mortem research into ERP implementation projects show the danger of this position.[5] Robert Austin and Richard Nolan of the Harvard Business School maintain that executives drop the ball when they treat large-scale ERP implementations as rigid IT projects.[6] A better model, they suggest, is the new business venture. Such a venture needs to change frequently in response to new circumstances. The Project Management Institute calls this "progressive elaboration," which requires project processes to realign the project with each new reality. To be successful, projects must have well-oiled change-management processes and be willing to change or add project tasks, schedules, and team members as needed.

Going to the Root

This article has described five barriers to supply chain cost reduction and highlighted ways to overcome them. Many of these barriers are difficult to unearth because they are under the surface, embedded deep in the company's culture. Awareness of the barriers, however, is the first step to neutralizing them. Without this awareness, companies risk missing the true sources of cost in their supply chain and wasting time and effort on ineffectual improvement efforts—time and effort that may never be recovered. The ultimate consequence of this oversight could prove life threatening

Overcoming the barriers will shine a light on the root causes of supply chain costs. It will enable supply chain managers to see these core problems clearly and take decisive action to address them. Whether the root cause lies in lack of clarity, variability, product design, poor information sharing, weak links, or unintended consequences, managers have a better chance to marshal their resources to attack the problem.   ∞

Footnotes

[1]Ayers, James B. *Handbook of Supply Chain Management*, Boca Raton: St. Lucie Press/APICS, 2001.

[2]*PMBOK Guide - 2000 Edition*, Project Management Institute: 2000. PMBOK stands for Project Management Body of Knowledge.

[3]For a description of how to do this, refer to *Supply Chain Project Management* by James B. Ayers published by St. Lucie Press in 2003.

[4]Clockspeed is a term originated by Charles Fine of the Massachusetts Institute of Technology.

[5]Cliffe, Sarah. "ERP Implementation: How to Avoid $100 Million Write-Offs," *Harvard Business Review,* January-February 1999, pp. 16-17.

[6]Ibid.