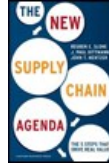


# Chapters *To Go*



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

by Reuben E. Slone, J. Paul Dittmann and John T. Mentzer  
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## Chapter 4: Selecting the Appropriate Technology

The next step along the pathway to building a strategy for supply chain excellence is to make sure your company chooses and successfully implements the right technology. Improperly understood or implemented, technology can cause severe damage rather than improvement, so you must be careful in selecting and applying it. In this chapter, you will learn what you must do to make technology part of your supply chain excellence strategy.

### The Foundation of Competitive Advantage

Many firms have found that they can make major reductions in cost by leveraging their warehouse and transportation management systems, and using bar codes, advanced picking, and even RFID technologies. Other firms have dramatically reduced inventory and improved customer service by using advanced planning and scheduling systems. Still others have saved millions by analyzing in-depth the facility network. Many companies have balanced the pain versus the gain of new technology and have achieved huge benefits. Properly applied, technology can be a major part of turning your supply chain into a generator of economic profit, enabling your company to cut cost and inventory as well as enhance customer service.

For example, in 2005, Coca-Cola Bottling Co. Consolidated drastically upgraded its demand-planning and collaboration capabilities with a new inventory management process supported by software from JDA Software Group. Coca-Cola Bottling reduced inventory levels by 50 percent, while improving fill rates by 15 percent, and won Sam's Club Supplier of the Year award in 2006. In addition, it simultaneously absorbed a staggering 300 percent increase in product offerings. This drove an economic profit surge by greatly reducing assets, while supporting growth in revenue due to the enhanced product availability.

Black & Decker implemented a demand- and master-planning technology and saw a major improvement in forecast accuracy. But, more importantly, that translated into a huge reduction in production cycle time—from two weeks to four hours. As a result, it improved order fill rates to major customers like Home Depot and Lowe's, while being able to hold less inventory than their competitors. Again, this stoked the economic profit engine as fill rates supported revenue growth, while inventory was reduced.

### Pain versus Gain

A wide array of supply chain technology exists, and the benefits can be huge. Yet serious risks lurk nearby. For example, a supply chain professional from a retailer specializing in children's toys told of trying to implement a new fulfillment system that went far over schedule and budget. The Christmas spike exploded before the fulfillment system was complete, resulting in an inability to process orders. People throughout the company worked fifty days straight, including Sundays, to try to stay ahead, yet the firm was forced to send thousands of letters saying, "Sorry, your toy order will not arrive before Christmas."

In another alarming example, a candy maker spent over \$100 million installing a new supply chain decision support system. The "go-live" for this project slipped from April to September. As the Halloween spike approached, the firm pushed the system into operation before it was ready and subsequently missed \$150 million of sales. The stock dropped 45 percent. In yet another situation, a shoe manufacturer installed a complex new system to run its supply chain. Again, there were major delays. The company's CEO announced that there would be a \$100 million sales shortfall due to the new software, causing the stock to fall 20 percent.

Is there a fundamental cause at the root of these problems? One theory holds that supply chain projects fail due to a lack of internal collaboration (which we discuss in detail in chapter 5). In some firms, the supply chain organization simply doesn't have a broad enough span of control to drive the improvements needed, with supply chain functions fragmented throughout the organization. In a home appliance manufacturer, for example, manufacturing, procurement, logistics, and planning all report to totally different functional vice presidents. On the other hand, in concerns like the parts and service division of Cummins Inc., the leader of the global supply chain organization has broad authority for manufacturing, procurement, logistics, and planning. Clearly, this facilitates project success, although it's only one variable in the mix.

Another hypothesis endorses the idea that failure results from overfocusing on the technology, not on the underlying process changes. Projects often fall short due to change management deficiencies, not technical or process problems. Some firms have a culture of driving so relentlessly to meet schedule and budget that they often skip the soft, but ironically more important change management tasks. "On time, on budget, but not used" does not equal success.

This chapter leaves the details of that technology to other sources and will instead focus on the keys to managing supply chain technology. (Chapter 7 covers the topic of change management with practical advice on how to implement supply chain projects.) With the relentless advances in technology, supply chain professions have no choice but to leverage new technology to avoid competitive disadvantage. The landscape of supply chain technology can be intimidating. As indicated in the examples, firms face the real danger of a failed application that can severely cripple them along with the careers of supply chain and other executives. Before we discuss how to avoid the pitfalls, a high-level review of the supply chain technology landscape is in order.

### Supply Chain Technology: What's New?

It is useful to think of technology in four buckets: software, e-business technologies, visibility and productivity, and process advances (as outlined in chapter 2 and summarized in [table 4-1](#)).

By including process advances in the table, we do not mean to lump them together with conventional technology. In fact, we feel that processes should be addressed first and then enabled later with software and other technology.

Firms vary widely in applying such technologies. For example, in our experience, over half of all warehouses still run on paper-based, manual systems, but many others have adopted the most advanced warehouse management software and product location and tracking technologies. Generally, larger firms implement more sophisticated technologies, but not always. For example, a \$1 billion automotive parts manufacturer still warehouses thousands of SKUs without even using bar codes. Yet technology is waiting to explode. AMR Research forecasts a major increase in spending on supply chain management applications.<sup>[1]</sup>

**Table 4-1: Summary of supply chain technology categories**

Technology category	Description
Software	Includes IT systems for activities such as forecasting, transportation, warehousing, inventory management, collaboration, etc.
e-business technologies	Includes such technologies as automatic ship notices, EDI, Web portals, electronic invoicing, and payment tied to shipping, etc.
Visibility and productivity	Consists of technologies such as advanced bar codes, RFID, voice- and light-picking systems, event management, etc.
Process advances	Includes process advances applied to the entire end-to-end supply chain, such as lean manufacturing, six sigma, collaborative planning, forecasting, and replenishment, etc.

What is the next big thing that will shape supply chain technology? We believe it will be technology that clearly drives economic profit, both short term and long term, and it will be heavily influenced by the external environment. For example, if transportation costs in the long run increase much faster than overall inflation, companies will need to apply increasingly powerful technology that can answer such questions as these:

- What are the best locations for my warehouses?
- How should I place inventory in the network?
- How can I plan transportation to minimize cost and maximize service?

If future customers require more choice and customization, firms will need to handle and react to increasingly large volumes of data and customize supply chain service and product solutions for individual markets. As software capability continues to advance, availability of leading software solutions will become more convenient with concepts such as “software as a service” (SaaS). Optimization technology will also become more prevalent, allowing firms to maximize economic profit while simultaneously considering constraints such as customer product-availability requirements.

Kevin O’Marah, chief strategy officer of AMR Research, says, “The most important emerging technology is the enormously powerful data processing capability available today. Very complex problems can be solved in minutes, not hours or days. Huge simulation and optimization engines can be built practically today.”<sup>[2]</sup> The assumptions of executives about what is possible can become obsolete almost overnight. Therefore, staying abreast of the rapidly changing technology environment is imperative.

<sup>[1]</sup>Kevin O’Marah, executive, AMR Research. Interview, January 2009, Boston, Massachusetts.

<sup>[2]</sup>Ibid.

## Senior Executives and Supply Chain Technology

Senior executives play a critical role in ensuring that technology contributes rather than hampers a strategy for supply chain excellence. They must have a good knowledge of supply chain technologies and of plans to apply the new technologies. More importantly, the supply chain leader and staff must ask the right challenging questions about supply chain technologies. (Seven questions senior executives should ask are listed at the end of the chapter in [table 4-2](#).) Senior executives have to become involved because a misapplication of technology can cause a supply chain disruption tearing at the basic fabric of the firm, as illustrated in the previous examples.

In an analysis of 827 supply chain disruptions, researchers found that stock price declined an average of 40 percent from peak to trough.<sup>[3]</sup> Technology can provide a distinct competitive advantage, but it can also severely damage a firm’s supply chain. This happens when companies fail to apply the three rules we discuss next for successfully implementing supply chain technology. By asking a few simple questions (detailed below) at the beginning of a technology project, senior executives can reduce the risk of implementing supply chain technology.

<sup>[3]</sup>Kevin Hendricks and Vinod Singhal, “An Empirical Analysis of the Effect of Supply Chain Disruptions on Long-Run Stock Price performance and Equity Risk of the Firm,” *Production Operation Management* 14, no. 1 (Spring 2005): 35–52.

## Three Rules for Successful Implementation

The three important rules for successfully implementing new supply chain technology can apply to almost any new technology in any area. But the complexity of supply chain issues, with their huge impact on economic profit and share price, make these rules even more critical to follow.

### Rule One: Use Leading-Edge (Beta) Technology Appropriately

Beta technology refers to new technology not yet fully debugged. The complexity of global supply chains often pushes supply chain executives to the limits of new technology. One supply chain executive from a retailer said he felt strongly that the only way to maintain an industry advantage was to strike while a technology was still very new, "How else can I get a competitive advantage?" An executive from another retailer, competing in many of the same product lines, related how his firm critically needed an inventory-allocation capability not available with existing software. He felt his only option was to partner with a software firm to develop this capability. He knew that such software simply did not exist and had no choice but to pursue the new technology if he was going to address a critical business objective and customer requirement.

To engage in a beta implementation, firms must have an appetite for projects with no definite end or set budget. Yet ironically, supply chain executives must often meet very demanding and disciplined business targets, with definite schedules and budgets, creating a challenging dilemma.

### **Fast-Follower Strategy**

While the innovation approach clearly holds great potential value, a supply chain executive in a very cost-competitive industry told us passionately that he felt he lost very little by implementing quickly once a new technology stabilized. He strongly argued that it was far better to let the early adopter expend all the time and money to debug the new technology, and then dive in when it is cheaper and faster to implement.

The majority of senior executives do not easily tolerate projects with indefinite time lines and budgets, and many companies have a culture with a low tolerance for risk. Proposing beta projects in such an environment can damage careers as well as the firm itself. Those companies should avoid beta technology. And, of course, firms with severely limited financial resources should also adopt a fast-follower strategy.

### **A Beta Surprise**

Regardless of the culture, a hidden danger exists. Sometimes an overhyped technology may not appear on the surface to be an immature beta version, when in fact it is. After buying based on an exaggerated sales pitch, one clearly frustrated and angry project manager said she thought she was getting stable production-planning technology. She found out too late as the project encountered bug after bug that the software marketing promises were overblown. She had to constantly explain to her very disappointed boss why the project was still not finished. To avoid this problem, project leaders should ask for references on at least one other company using the new technology and follow up on any references.

In another example, a frustrated supply chain manager told us about his boss, who fancied himself an innovator. Unfortunately, the boss consistently succeeded in confusing the organization. The manager said that his boss heard a colleague in another firm brag about implementing a "demand signal repository" (to store and manage point of sale data). Caught in the neat buzzwords, the boss wanted to make sure he maintained his image of being on the leading edge. He launched an initiative to implement the technology and less than sixty days later, he lost interest when the next new idea appeared. Subordinates in this organization, who said he repeatedly did things like this, termed the behavior "whack-a-mole management." He continually jumped from bandwagon to bandwagon, never letting what seemed like a good idea pass by without churning his organization. "Focus and complete" beats "launch and leave" every time. This holds especially true for complex global supply chains in which it is all too easy to stray from the strategy and chase the operational problem or the technology of the day.

Whether a firm has the tolerance for beta technology or not, it is unforgivable if the firm discovers it is on the leading, untested edge in the middle of the initiative, as did the project manager in the previous example. This unfortunately is all too common with supply chain projects. For example, during a supply chain audit, we heard from a supply chain executive about how a new inventory decision support system was going to solve a lot of problems. Six months later, at a supply chain forum meeting, we asked how the project was going. He sheepishly admitted that had he known he would be on the "bleeding edge," he would never have approved the project. He was two months past schedule and didn't want to think about the budget situation. Of course, he was getting huge pressure from his boss and was worried that things could get worse before they got better. In retrospect, he knew he should have asked the critical question, "Who else has implemented this technology, and have we spoken with them?"

In another case, the leader of a project team told us about glowing reports from a software sales representative on the capability of a new transportation planning application. However, four months into implementation, major problems with unstable software surfaced with a vengeance. The team finally did some research and found that claims of implementation in other firms were simply untrue. At best, some customers were currently involved in difficult implementations. They could not find a truly live, stable environment. The project team members learned the hard way that they needed to do more research at the beginning of the project. They found too late that they could not trust the claims of the software vendor.

### **Bleeding Edge to the Leading Edge**

Some firms partner with a technology supplier to develop an application for addressing a unique need in the supply chain area, fully expecting the difficult journey ahead. They fundamentally believe that once ahead of competition, they can stay ahead. As they work with a supply chain software developer, the software product takes on the character of their unique processes. A supply chain executive told us how he partnered with a leading software firm to develop a warehouse management application that allowed his company's customers to be segmented into groups, enabling his firm to implement a different customer service strategy for each group. This gave the firm a distinct advantage by having a service plan tailored to each customer. The executive expected that the project would be a long-term effort and was not surprised when unforeseen events occurred, delaying the project for months. In this kind of an environment, the beta project thrived and eventually yielded a very powerful leading-edge application for his firm.

Recently, we asked a supply chain executive why she decided to implement new, untested software to assign inventory to customer orders. She told us that she didn't really like leading-edge projects, but sometimes they were the only way to accomplish a required business objective. When her firm's largest customer demanded priority service, she presented the problem to her technical staff. This customer represented over 20 percent market share for the firm. Yet the system used at the time to handle thousands of orders per day operated on a first-come, first-serve basis. After reviewing the capabilities available, her staff reported that the request was not doable with currently available

technology from the software supplier and changing to a new supplier would be a huge undertaking. She then agreed to a development project, striking a partnership with the technology supplier. She agonized over the fact that this added a lot of complexity to the process, violating her usual principle of striving to keep processes as simple as possible. In the end, she felt that the customer requirement dominated. As she told us, “Sometimes meeting customer demands means you have no choice but to live on the edge.”

### **Rocket Science**

A barrier that confronts firms as they decide how close to the leading edge they dare tread is the availability of qualified people. As one supply chain executive observed, “This stuff really is rocket science!” AMR Research believes that close to 100 percent of companies do not have sufficient talent to smoothly implement leading-edge supply chain technology projects.<sup>[4]</sup> Supply chain talent in general is rare (as we discussed in chapter 3), but supply chain expertise *and* the ability to handle the new software technology are especially rare. The competition for this talent is intense for the limited resources available.

### **Lead or Follow?**

In summary, companies with risk-avoidance cultures should avoid beta projects in the supply chain area and adopt a strategy to follow once the technology stabilizes. On the other hand, firms that can tolerate higher risk have the opportunity to develop a successful application and competitive advantage. But in both cases, the most unforgivable sin is to be in the middle of an implementation and suddenly and surprisingly learn that the technology is beta and has not been successfully implemented anywhere.

## **Rule Two: Realize That People Issues Are Tougher Than Technical Issues**

People issues are always the toughest, but in the supply chain arena, cross-functional and cross-company issues add a much higher dimension of complexity. Often, completing the technical tasks is the easy part of an implementation. All the principles of disciplined project management must be in place, with excellent leadership. But the tougher issue involves getting people to use and embrace the new supply chain technology.

For example, a supply chain retail executive told us that his company recently implemented a \$25 million software package to do inventory planning, with the new software to be used by the firm’s buyers. The buyers reported to merchandising, but the supply chain people were asked to lead the implementation, since they had the overall accountability for inventory management. The software was truly state of the art and used optimization techniques involving some very sophisticated underlying mathematics.

A couple of weeks after the go-live date, the supply chain executive walked through the area where the buyers were working so he could get a feel for how they were using the new system. On every screen, he noticed an Excel spreadsheet. As soon as he returned to his office, he asked the project manager if the new system had Excel spreadsheets in it. The project manager admitted it did not. After further intense questioning, he found that the users still relied on Excel because they did not understand the new system. The buyers with little technical background had no chance of understanding the underlying mathematics and sophisticated logic, and had not even received proper training. Therefore, when the new software produced illogical numbers, they had no clue what adjustments to make. To get orders out to the suppliers on time, their only choice was to rely on their old Excel spreadsheets and do the calculations offline. Then they would manually insert the answer into the new software. In effect, they had performed a complete bypass on a \$25 million system, rendering it worthless.

### **A Plan for Changing People**

How could the situation described in the example happen? Studies show that people challenges, not technical issues, pose the greatest danger to a new supply chain technology implementation. Senior supply chain executives must have a change management plan for all new projects and especially those involving new technology. The plan must lay out the process for gaining full organization buy-in and for in-depth training. Senior executives need to have confidence that the supply chain leaders will step away from their offices, wade into the operation, and relentlessly follow up to ensure the change management plan is executed successfully.

According to our data, people management represents the most important component of project success. That’s why we’ve covered it in much more detail in chapter 7.

### **Software to Match the Needs of the Line Operation**

The supply chain includes many line operations that may be vulnerable to corporate staff selecting a technology solution without line buy-in. For example, a warehouse manager had a close call with some new technology that could have caused a real problem. The corporate supply chain staff went along with the recommendation of the corporate IT organization and selected new order-picking technology for his warehouse. Although the technology was perhaps good for the large warehouses in the company, the warehouse manager felt that it was far more than his operation needed and would result in a cost increase, causing him to miss his cost targets. When he complained, the corporate departments told him to “change your processes to be consistent with the new technology, because we want everyone to be on the same system.”

At this point, the line manager faced two choices. He could try to live with it, or he could make it an issue, with both approaches involving some risk to his operation and to him personally. He summoned the courage to choose the latter course, put together a compelling story, and presented it to his director. Fortunately, the director had a long history of front-line experience and understood immediately. The project was halted soon thereafter. The corporate staff groups and their leaders who had sponsored the new technology lost a lot of career credibility. They could have avoided this mess if they had taken the time to listen to the concerns of the line managers.

Technology projects should provide new capability to help supply chain line operations cut cost, reduce working capital, or improve product availability, thus enhancing economic profit. The process owners of critical line applications in the supply chain such as transportation, warehousing, inventory management, order management, and demand forecasting systems are the ones who will use the technology after it is implemented. Therefore, they must lead the implementation project.



## User Unfriendliness

Often, supply chain processes and systems become so complex that no single person understands everything. Sometimes technical people become irrelevant due to their own arrogance. For example, a sales manager in a farm supplies business said that with a recent major systems implementation, he lost sight of inventory levels. He angrily said, "We were selling blind. I literally have no idea what is in stock." When we asked the supply chain people what happened, they said there was actually a straightforward approach to getting this information out of the new system: "We showed that guy how to do it!" The sales manager confirmed that the supply chain folks demonstrated the system to him once, but he found it to be much too complex when he tried it himself and gave up. Needless to say, the supply chain organization needs to involve other functions like sales early in any technology effort.

During a supply chain audit, production planners in an apparel company described a production planning system that had five different tools, depending on the situation, which created an incredibly complex process for them that no one fully understood. They used one special tool for high-volume "super A" products; second, they had to apply an ABC volume segmentation of the product; next they were required to run an inventory tool to calculate desired safety stock inventory; and the fourth step involved reviewing real customer orders to make sure they reacted to any unmet needs. If this weren't enough, a pull approach was being piloted for some product lines. For every product type, they were required to use a different scheduling technique and, in some cases, more than one.

Complex technology should not look complex to the users. The people struggling with the demands of daily line problems do not have time to troubleshoot technology. A key question should be, "Will the new technology make line jobs harder or easier?" Murphy's law guarantees that things will go wrong with new technology, especially in the complex, interdependent supply chain world. When this happens, people need to fall back on their training and their support system. Did senior managers ensure that sufficient training was done and done at the right time? Did they ensure the availability of adequate support available from the vendor when problems inevitably arise?

The Toyota plant in Georgetown, Kentucky, approaches new technology differently. For example, several years ago, people pedaled three-wheel bikes around the plant, manually picking up the cards requesting more material (known as *kanban* cards) and taking them to materials control to request a resupply of needed component material. When asked why they just didn't send an electronic signal to the materials area requesting the material, they explained that they wanted to keep the flows visible and understandable to the workforce. That way, the employees generated more and better ideas for improvement. They believed that sometimes technology creates such a complex operation that people no longer understand the way the place works and therefore cannot offer ideas for improvement. Now Toyota has reconciled needs like this with extensive training and is more comfortable using electronic signals. Toyota continually seeks ways to balance the need for user simplicity with the promise of a new technology.

## Rule Three: Ensure That the Technology Project Has a Business Case

One key theme of this book is that supply chain excellence generates the most important commodity in the boardroom: economic profit. Therefore, every supply chain technology project should be put in terms of economic profit.

### Benefits Not Quantified Equal Worthless Benefits

Senior executives should understand that line supply chain people often struggle with quantifying the benefits of their new technology proposals and do themselves a great disservice in the process. Senior executives should make clear that if a project team fails to quantify a benefit, that benefit is treated effectively as zero. For example, one CEO described a project designed to save \$11 million in cost and also improve product availability. He continued to be chagrined throughout multiple reviews that only the \$11 million received any attention. Ironically, he knew that the improvement of availability would be the far greater benefit, but it was effectively ignored because no dollar value was attached. He strongly urged the supply chain group to get creative and quantify all benefits. Then once quantified, they further had the responsibility to continually remind the organization of the benefit at stake as the project progressed.

A supply chain executive in a manufacturing company understood this very well. She mentored her team in developing a business case for a major supply chain decision support system. She was determined to show the project's impact on economic profit. The business case for the initiative called for a \$110 million inventory reduction, a \$12 million freight-cost reduction, and a four-point improvement in the availability percentage from 92 percent to 96 percent. Her team worked hard to get sales to agree that the availability percentage improvement would translate into a one-point improvement in market share, yielding another \$25 million in bottom-line profits. The supply chain executive then became almost legendary in her company for beginning every meeting during the next thirteen months reminding everyone of the commitment to achieving these savings. She gave exactly the same speech word for word at the beginning of every meeting. Not only was it impossible for people to forget the promised benefits, but after several months, they said they could quote them in their sleep. She even translated the benefits into economic profit and led the CEO to understand the positive impact on share price that the initiative could drive.

The executive realized that after project sign-off, the organization focuses on the tasks required to get the project done. As the intensity of task completion increases, she knew the team members could easily forget why they were doing the project. She made sure that did not happen.

### Cost and Benefit Compared to What?

Few supply chain managers have an aptitude for developing a solid business case. For example, a supply chain manager at a retail chain said that he seemed to read an article on RFID almost every day. He felt that his company would fall behind if it did not quickly embrace this new technology. He did a quick analysis of the implementation cost and put together a proposal for a pilot project that involved a reasonably modest effort. He felt his boss would jump at the chance to stay abreast of market leaders.

When he presented the proposal to his boss, she asked the correct question, "What is the business case for RFID?" He realized that he had a good handle on the cost, but had not bothered to quantify the benefit. Feeling humbled by this oversight, the project manager hurried to identify and quantify benefits. He felt that RFID would generate benefits such as better tracking and inventory control, reducing inventory investment, and improving order fill rates. He put some estimates together to fully quantify the cost versus the benefit. Feeling confident, he hurried back to

his boss, proudly showing her the complete business case.

His boss then asked another excellent question, “What is the business case versus the next-best option?” Initially confused, he quickly realized that most of the new functionality could actually be delivered by advanced bar-code technology. Looking at the incremental cost and the incremental benefit of RFID versus the alternative of a bar-code system caused the business case to virtually disappear.

The supply chain executive knew the right questions to ask about a new technology. In this situation, she elected to proceed with RFID for strategic reasons, but at least she knew the facts. Unfortunately, in all too many cases, a glamorous initiative gains momentum on hype, not substance, and once set in motion seems to have a life of its own.

In another example, a project team proposed installing a warehouse system to guide the work of picking products for orders. The team members wanted a “voice picking” system in which the workers would wear headsets and a computer-generated voice would guide them in picking the items for an order. The supply chain senior executive reviewed the business case and was initially impressed with the productivity improvement and the return on investment promised by the team. However, he had just visited a Dell operation where he saw an order-picking system that seemed simpler and less costly. In that system, workers were guided to areas by small lights indicating which product they should pick for an order (i.e., a pick-to-light system). He asked the team for the cost benefit of voice picking versus a pick-to-light approach. The voice-picking approach still won the day because it excelled in the accuracy so extremely important in this application. But the team was now grounded in an approach that they knew was right for the next decade.

### Eliminate Before You Automate

Another example involves a business case based on a totally incorrect premise. A supply chain director for a farm machinery maker told us that the materials group implemented the latest automated storage and retrieval system (ASRS) technology to warehouse parts in its factories. This was a high-rise warehouse, with a robot to put away and pick material. Later the group found that it could have totally avoided the expense of the system. They devised a way to take material *directly* from the receiving docks to the point of use in the factory, totally avoiding the high-rise automated warehouse.

For several years, on plant tours, the group would show guests the automated storage and retrieval system. But the unique thing was that it was *empty*. They referred to it as “the epitome of a monument to waste,” explaining that it was far better to eliminate the handling of inventory rather than automate it. “Eliminate before you automate” became a common mantra in this firm. Automated storage and retrieval systems definitely have their place. But a key question to ask is whether the fundamental need for the new technology can be eliminated by redesigning the process.

<sup>[4]</sup>Kevin O'Marah. Interview, January 2009, Boston, Massachusetts.

### Seven Questions About New Technology

As these examples show, many dangers await the unsuspecting supply chain leader asked to approve a new supply chain technology implementation. But if supply chain professionals and others in management up to the CEO ask seven key questions at the beginning of any supply chain technology project, many of the pitfalls of failed implementation can be mitigated if not avoided entirely. The seven key questions to ask, especially for supply chain projects, and the actions to take are shown in [table 4-2](#).

**Table 4-2: Questions supply chain leaders and senior executives should ask before acquiring or implementing supply chain technology**

Question	Action
1. Who else has implemented this supply chain technology, and have you spoken with them?	If this has not been done, stop the project until it is.
2. Are you implementing a cross-functional change management communication plan and is it tailored to the individuals and functions critical to this effort?	This has to be done. Ask to see the written plan with dates, assigned responsibilities, and a time line.
3. Will this make line jobs in the supply chain easier or more complex?	If easier, great. The answer is more likely to be “more complex.” If more complex, make sure there is a clear training program and a clear return on the investment supported by those who are doing the real work.
4. Do you have a plan for sustaining the cross-functional change once it is made?	If not, write it up, make assignments, and hold people accountable for date-driven tasks.
5. What is the complete business case to generate economic profit for this project?	Make sure the benefit is quantified and clearly communicated.
6. What is the business case vs. the next-best option to generate economic profit?	A tough but necessary question. If asking this makes your ROI disappear, you have a problem. Stop the project and evaluate further.
7. Can we eliminate the need for the technology by eliminating non-value-added supply chain operations?	Eliminate before you automate.

### Conclusion

Supply chain technology is a critical, enabling step toward building a strategy for supply chain excellence. There are major tools to apply if a firm is to compete successfully in the supply chain arena. As we discussed, there are myriad possible pitfalls that can be avoided by following our advice. With the systems and process advances of the past decade, we see many firms making major advances in driving down operating

cost, cutting working capital, improving product availability, and enhancing revenue— all key components of economic profit. With technology and talent, we have two steps of our supply chain strategy in place. But there are three more to consider. Next, we turn to the area of collaboration, both internal and external collaboration, covered in the next two chapters.

## **ACTION STEPS**

1. Stay abreast of supply chain technical capability as it rapidly changes and advances.
2. Avoid the three deadly sins of implementing new supply chain technology: incorrectly applying beta technology, underestimating people issues, and having a weak business case to drive economic profit.
3. Ask seven key questions about any new technology at the beginning of any supply chain technology project.