

# SUPPLY CHAIN MANAGEMENT REVIEW®

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# PREDICTIVE SOURCING: The Straight Path to PROFITABILITY

By Frank J. Bernhard and Wendy Vittori

Many companies today are struggling with the strategies and tactics related to the sourcing of goods and services. How should they source, and whom should they source from? Where should they source? And if it's a service or product that can be delivered in house, should they even turn to an outside provider in the first place? The situation has been further complicated by the political winds swirling around the whole issue of outsourcing—winds that have been particularly fierce when the outsourced activity is to be performed overseas.

In this dynamic, often confusing environment, supply chain managers need an approach that helps them make the right decision when it comes to the sourcing of goods and services. They need a sourcing methodology that will not only satisfy the near-term cost concerns but also position the organization for long-term operational success and profitability.

That approach is aptly called predictive sourcing. Under this methodology, the company's sourcing strategy is linked to its overall business strategy. Predictive sourcing starts with identifying the company's core economic value and what differentiates it from competitors. It then predicts the future direction of the company and how the sourcing of a particular good or service will affect that core economic value. Successful predictive-sourcing programs—such as those

Recent years have seen a rise in the level of outsourcing. The appeal is often simple: Companies can realize significant savings by shedding labor, assets, and infrastructure costs. But they need to take care that these sourcing decisions do not end up eroding their core competencies. Instead companies need a strategic approach that takes the long view of sourcing decisions. This approach is known as predictive sourcing.

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highlighted in sidebars throughout the text—have helped create a significant competitive advantage for the companies involved. They not only have produced short-term decreases in the cost of goods and services but also have maintained the company's strategy for long-term economic growth.

### The Need for Predictive Sourcing

Recent global economic developments have created an environment that calls for predictive sourcing. Whether or not you subscribe to the latest headlines, the global economy does appear to be awakening from its deep slumber of lagging performance. In December, the Institute for Supply Management announced that its weighted index of manufacturing activity rose to 66.2 from 62.8 in November 2003.

Simultaneously, the U.S. Bureau of Labor Statistics announced a spike in overall domestic productivity with a 9-percent gain in output for the manufacturing sector alone (for the third quarter of 2003). By most accounts, the economy could be described as generally upbeat with the trend line moving in a positive direction.

Flip the page of that same newspaper and chances are that you will read about XYZ Company moving their operations to an overseas plant—or shifting to a flexible staffing approach. Offshoring, or the practice more commonly labeled as outsourcing, created its greatest stomp in 2002 as U.S. companies hacked away at one of their greatest costs—the cost of labor. Proponents of outsourcing argue that there's a direct connection between the increase in outsourcing and the recent improvement in the economy.

Indeed for some years now, the cost of factory workers abroad have been luring dollar-conscious manufacturers to look beyond the U.S. border to harness discrete capital and labor savings. Not only are the average hourly wages lower in other labor markets, but domestic employee benefits are also proving increasingly cumbersome. Whether it's multi-modal freight handling or the final assembly of finished products, infrastructure anywhere other than the United States has been—and continues to be—viewed as a lower cost alternative. It is this obsession with *any* lower cost alternative that drives domestic producers to continuously search elsewhere for a labor source that fits the mold of a declining cost input model. The reasoning behind this obsession is simple: If all other factors are held constant, lower-cost goods more often equate to higher earnings and marginal profit.

For this reason, shareholders have rewarded companies that have concentrated on controlling supply chain expenses while reducing the long-term costs associated with manufacturing. According to data from the Bureau of Economic Analysis, the U.S. stock markets rewarded companies that have aggressively controlled supply chain costs with a return of nearly 27-percent growth on average in 2003.

Clearly, operational efficiency is a top-level mandate worth pursuing. Make no mistake, an inefficient supply chain cannot survive for sustained periods in a highly competitive marketplace where customers and commodity suppliers are vying for lower-cost goods. However, the knee-jerk reaction to hedge labor costs may ultimately dig a grave for those companies that fail to implement sourcing opportunities that also sustain their ability to innovate. Ultimately, the endgame is about extending supply chain opera-

### State of Arizona:

## Optimizing Labor Costs



Long before offshoring became headline news, state and local governments began to feel economic pressure to curtail the export of jobs and manufacturing. In Arizona, displaced workers and those affected by the departure of regional manufacturers lobbied the government to help them retrain the labor supply. To accomplish this, government agencies partnered with executives of regional

companies to develop training programs that met their job requirements. For these regional companies, developing a highly skilled labor supply in their own backyard made economic sense; it helped them maintain their innovation competency and, thus, their long-term growth and development.

Sandra Watson, director of innovation for the State of Arizona's Department of Commerce, cites examples of logistics companies and manufacturers in the state working to achieve the dual objective of having skilled labor and cost efficiency. "Where jobs were previously sourced to countries outside the United States for immediate cost adjustments, the new paradigm of thinking has shifted toward finding ways to engineer value in the supply chain at the very heart of manufacturing," says Watson. "By sending high-cost, low-technical labor contributions elsewhere, manufacturers retain higher dollars to train domestic employees for jobs that add incremental economic value."

One example of such a predictive sourcing arrangement is the joint manufacturing of high-tech consumer packaged goods in Mexico and the Phoenix region. Stock assembly parts can be manufactured in Mexico at a lower cost than in the United States. These parts are then fed to more complex manufacturing operations in Arizona, where workers do the final assembly of the product.

Growing this skilled labor supply in Phoenix makes economic sense for these locals companies not only because it is where their headquarters are located but also because of the area's already existing educational resources. The universities have made great progress in developing educational offerings that will enable employers to source value-adding jobs locally, says Watson.

These regional companies have grasped the concept that labor costs should be optimized instead of minimized. Instead of aiming to source the lowest-cost labor for every single operation, they've discovered the advantages of spending more on work and workers that contribute to long-term growth.

tional efficiency while not losing sight of the core competencies that sustain profitable growth. Managing shareholder value and market pressures requires intelligent steps during the product's entire lifecycle—from initial sourcing decision to product maturity.

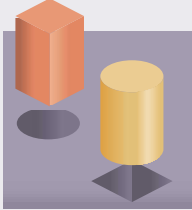
The lessons learned from outsourcing production in the 1980s illustrate this point. During that time, many North American electronic-equipment manufacturers and high-tech fabrication companies moved entire plants overseas because they believed that Asia-Pacific operations would provide better quality and greater production scale at a lower cost. But the steady migration of raw production capacity out of the country began to take its toll on engineering jobs at home. What started as a move toward lower cost manufacturing and quality improvement rapidly resulted in the unintended export of the competencies and skills that have fostered innovation in American business. In other words, the search for operational efficiency ultimately resulted in a complete transfer of core engineering and knowledge-based manufacturing skills out of the country — an unintended, and quite possibly undesired, consequence.

Once the initial cost savings in manufacturing were realized, supply chain executives found themselves left holding the empty bag. Their declining cost model failed to be sustainable without the introduction of new technology. They became keenly aware that a solid economic future meant retaining knowledge competence at the core of their operations in North America while moving manufacturing (including distribution) to geographical areas that promised greater cost savings.

If you fast-forward to the present day, the complexities of outsourcing have only increased. For one thing, more and more manufacturing operations now rely on just-in-time processes. This means that any outsourced operations must be able to closely parallel

consumer demand. Furthermore, we're no longer just talking about behind-the-scenes operations. Rather, the sourcing dilemma has also touched front-office, customer-facing activities, with the advent of virtual call centers and Internet-based support. Finally, those who rushed to transfer resources overseas are suddenly facing political and regulatory backlashes, opposition by a number of stakeholders, and

## Kyocera Wireless: Knowing Your Core Competency



The first time you step into Kyocera Wireless's San Diego operations facility, you might think that you have walked into an Asian-Pacific manufacturing plant. The sterile production lines for chipset assembly and the regimented order of operations looks Japanese in layout. Yet the workforce performing the final assembly of Kyocera's personal communications devices is largely American.

Kyocera's decision to source manufacturing labor in the United States may seem unusual, but it is based on an assessment of where the company adds value for its customers. "Kyocera Wireless embraces manufacturing as a core competency and competitive advantage," explains Terry Quinn, vice president and chief operations officer.

At the San Diego facility, line workers do more than simply stamp together silicon chipsets and clamshell cases. Rather, the process of building quality personal communication devices requires a high level of skill and adds great value to the product. The testing and quality assurance work that occurs here greatly reduces defect rates. In turn, low defect rates help the company preserve its tight profit margins and meet the rigorous benchmark standards of customers like handset giant Qualcomm.

According to company executives, it is this aspect of Kyocera that sets it apart from the competition. Quinn is in charge of ensuring that customers like Qualcomm receive their products on time in a well-coordinated manner. He explains: "Our emphasis on control of the engineering environment and our innate ability to flex with customer demand have enabled us to help reinvent the supply chain in consumer electronics for many different industries. Collaborative planning with our customers and the matched agility of the production model allow us to accurately source the best possible labor and raw materials and set the best possible scheduling scenarios."

Performing these activities in the United States—close to customers such as Qualcomm—enables this agility. And while this approach might have a higher cost, it supports the company's value model. Yet at the same time, supply chain efficiency is still a crucial part of Kyocera's labor-sourcing strategy. Across the border in Tijuana, Mexico, an assembly line is building components that are then shipped to San Diego for final assembly. With a distance of only 35 miles—30 minutes by highway—operations engineers from San Diego can easily travel to the Tijuana facility for inspections, training, and quality-assurance control. Additionally, the proximity assures that production schedules are met and the effects of chasing the sun between time zones never become an issue.

But while the physical distance between the two sites is small, the difference in labor costs is wide—a ratio Kyocera estimates at 3-to-1. The dollars saved on Mexican labor are used to create new skilled labor in the United States and to solve the technical challenges in the final assembly process. "As quality is paramount to our success as a manufacturer," says Quinn, "so is the resident engineering knowledge that sustains the ability to continuously add products of higher economic value."

For Kyocera, predictive sourcing means looking at manufacturing, logistics, and demand planning needs collectively—instead of basing sourcing decisions only on manufacturing costs. Sourcing different labor skills in different labor markets has allowed the company to optimize its shop floor operations.

the inevitable loss of intellectual capital necessary to sustain an economically viable organization.

Companies need to make sure that they are building long-run supply-management structures that not only create efficient operations but also invest in core competencies that create ever-increasing economic value. This means ignoring the impulse to sell out the very competency that makes the operation an economic value generator. To accomplish this task, executive leadership must take an active role in determining the criteria for sourcing decisions—they need to implement a predictive sourcing approach.

### Four Steps to Predictive Sourcing

To develop a competency in predictive sourcing, executives should begin by following four key steps. They need to perform an environmental assessment, determine their company's core economic competency, understand the need for ongoing innovation and engineering, and consider all aspects of product cost from sourcing through customer delivery.

**Step 1: Conduct an environmental assessment.** To ensure a successful sourcing strategy, executives must consider the entire *value chain* for the company's products—not just the supply chain. Under a value chain perspective, companies would look carefully at how economic profit is being produced by the individual steps of the sourcing process. Those factors that influence perceptions of quality and distinguishable performance, such as front-line customer service, must be taken into consideration as an impact of linked value to the consumer. Decision makers must assess both the internal and external elements of the full value chain surrounding the manufacturing operation in question. Ultimately, such assessment will help executives understand the competitive situation they face at all levels of the value chain and the key issues for all relevant stakeholders.

One vertical industry segment, telecommunications equipment, provides an excellent example. No doubt, the past five years have been tumultuous for telecommunications companies with waning customer loyalty and increasing price pressures in commodity bundling. Additionally, deregulation and the advent of the Internet have changed the industry from being relatively stable to having a boom-bust cycle. In the aftermath of these difficult years, executives are seeking to lower the cost structure for a much broader, more dynamic set of communications capabilities. This goal has made rationalizing the value chain behind these services a paramount concern. To achieve volume economies and dramatic reductions in cycle time and equipment cost, companies are driving their suppliers to embrace industry standards and loosely couple their manufacturing capabilities across the entire industry. In this way, executives are connecting their supply chain decisions to

movements in the customer base. This connection is one of the most essential elements of instituting a predictive sourcing discipline.

**Step 2: Determine core competency and sustainable competitive advantage in the value chain.** Assuming that all competitors have equal access to low-cost outsourcing options, how will your company sustain its competitive advantage? In today's world, manufacturing can be moved to a lower cost structure offshore in less than two years—and often within 6-12 months. Once all your competitors make the move, how will you differentiate your offering? Your competitive advantage will not be long lived if it is based solely on the cost savings from outsourcing.

Consider the case of a large consumer-packaged-goods (CPG) retailer that decided to outsource parts of its logistics operations. This CPG firm decided to avoid the rising costs of maintaining a dedicated fleet operation by sourcing a subset of individual freight lanes to a well-known motor carrier. The carrier promised the CPG operations group a lower total freight spend and equal or better logistics performance by managing the delivery process. And to its credit, the carrier did make good on its promise and performed above initial expectations.

To ensure a successful sourcing strategy, executives must consider the entire *value chain* for the company's products—not just the supply chain.

The CPG operations team continued the trial by having the carrier manage its primary lanes and major distribution centers throughout the once proprietary network. Transport costs continued to decline and full truckload shipments arrived on schedule. However, the retailer slowly started failing to meet stock requirements across its chain of consumer outlets. Now that the motor carrier was managing the entire logistics operation, fulfilling infrequent demand for specific products proved to be a challenge. Unexpected jumps in demand used to be fulfilled with less-than-truckload (LTL) shipments. But LTL shipments were incompatible with the carrier's network model because they elevated overall distribution costs. Because the company was no longer making as many LTL shipments, out-of-stock rates were rising and customer satisfaction was falling. As a result, sales across the retailer's outlets began to drop.

What went wrong? The concept initially seemed so simple: reduce liability for distribution costs by sourcing motor freight operations. And the initial payoff realized from sourcing a few freight lanes seemed to add credibility to the idea. Looking back on the 18-month period, however, the CPG company realized that one of its core competencies was

demand planning and buffering against stock fluctuations. Logistics execution and distribution is a significant part of this competency—meaning that this function needed to be controlled internally for the sake of creating economic value.

The pitfall demonstrated by this example is a common one: being distracted from managing your core competency by the promise of short-term savings. Focusing solely on present-day earnings poses a threat to any organization seeking to truly maximize profit while working to ensure long-run economic survival.

But in some instances, failure can be turned into a positive outcome. For this CPG company, it required more than 26 months to re-establish a freight operation that was as robust as the one in place prior to outsourcing. However, along the path to recovery, the company did find an opportunity to reintroduce select sourcing of freight lanes to an outside carrier. The difference this time: The company maintained control over managing core operations while sourcing only the nonvalue-added components.

**Step 3: Understand the need for ongoing innovation and engineering throughout the entire product life cycle.** Before any sourcing decision, companies need to consider whether the product requires downstream engineering or tailoring to meet specific customer needs. “Just-in-time” engineering is difficult to accomplish and costly when engineering resources are far away from manufacturing prototyping and piloting facilities. Managers also need to determine how long the product will need to be maintained in production. Do they anticipate any component end-of-life issues or technology advances that will require “refresh” cycles with engineering inputs?

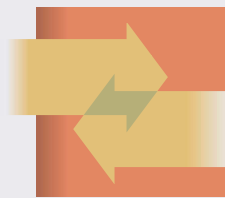
A one-time “outsourcing” decision may look very different in light of the need to manage products through a more extended and complex life cycle. Consider a couple of examples of what companies are already beginning to deal with today.

■ Many products in the consumer arena today are considered disposable—if the product stops working, throw it out and get a new one. Lower-cost manufacturing capabilities have proved to be very compatible with this disposable environment. But, what happens to this picture when companies become liable for haz-

ardous waste in landfills? What if governments require manufacturers to recycle these discarded products? And what happens when environmentally aware consumers demand more? A low-cost manufacturing infrastructure that is centralized in one area of the world may not be the answer in these scenarios. Companies should consider their options in the long-run scheme of managing their products’ lifecycles.

■ What if the differential value of a product is more the result of just-in-time innovation than just-in-time manufacturing? Increasingly, customers for many technology products

## Abrams Airborne Manufacturing: Valuing Supplier Integration



Even for large manufacturers, such as Raytheon, General Dynamics, Applied Materials, or Intel, sourcing exclusively from other large conglomerate firms does not necessarily make sense. Rather, these corporations are more apt to turn to local specialists to fill required niche components, such as PC server chassis, aerospace equipment, or medical device panels.

These components are typically complex, highly engineered products that the companies need only in small quantities. Therefore the demand for them is very uncertain and can be difficult to manage. Yet they typically require a quick turnaround. These types of components are ideal candidates for a predictive sourcing approach. By analyzing total product costs, companies can ascertain that it does not make economic sense to source these products from low-cost or overseas suppliers. These products require suppliers that are located close to the company’s manufacturing site and that can assume a collaborative role. For components that have high capital costs and uncertain demand, these collaborative suppliers also can help the company by absorbing the lumpiness of seasonal demand spikes and unplanned shortages in orders.

Abrams Airborne Manufacturing, a Tucson, Ariz.-based engineering company, is one of these local, collaborative suppliers. According to president Gary Abrams, the company focuses on making “unthinkable engineering happen in real time.” He explains: “We bring to companies like Intel and others a sort of time machine that allows them to compete against the fast-changing currents of customer demand and emerging market opportunities.”

Part of Abrams Airborne’s ability to offer this fast turnaround is the company’s close proximity to its customers’ manufacturing facilities. In fact, the company is so tightly integrated with its customers that many of Abrams’ engineering personnel work side-by-side with customer counterparts on site. This arrangement helps to reduce line-down errors and to fuel process improvements on the fly. “Synergy between sourced partnerships and the final goods manufacturer should never be underestimated,” says Abrams. “The time-tested commitment to the customer is only met by working hard to reach the ever-increasing demands of their markets—and this means fostering an unusual intimacy with their supply chain.”

This intimacy also helps Abrams Airborne’s customers maintain strict quality over their products—a critical part of maintaining their long-term viability in this marketplace. “Everyone talks about quality at the ISO level in large-scale manufacturing, but the passion [for quality] really starts at the grassroots level of limited-build operations,” Abrams says.

The benefits of this tight relationship extend beyond the shop floor, reaching into the economics of the business model itself. “We act not only as a manufacturing arm of our customers but also as a guardian of their economic interests in build-to-order markets,” says Abrams.

are looking for the downstream addition of tailored components, some of which require real-time engineering inputs. True, such products may include many commoditized components that can benefit greatly from low-cost manufacturing. But what drives the *profit* of the product is the flexible integration of unique components that are based on downstream customer decisions. This scenario can be extremely difficult to manage when the source of production is an ocean away, and the end product cannot be cost effectively delivered other than by ocean shipping. In this case, companies will realize a higher return on their investment by using a hybrid model that combines low-cost manufacturing of commoditized components with knowledge-based manufacturing of more customized components.

**Step 4: Consider all aspects of product cost from sourcing to delivery to the customer.** Increasingly, customers are demanding fully integrated products that reduce costs and improve time-to-service. This means that the company's overall sourcing strategy should consider not only the costs of the product or service but also the costs of fulfillment and logistics. Manufacturing abroad may decrease labor costs but operating further away from the end user will increase shipping costs. Furthermore, companies may see a decline in quality for highly engineered or customized products that require close customer collaboration. These disadvantages can easily offset

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much of the labor-cost savings. An increase in handling, for example, can increase the likelihood of costly damage. Even when covered by insurance, this damage can lead to costly delays to in-service installation. Complex products also face long delays at customs both for components and for finished products. The cost of these delays can offset the benefits of production in protected trade zones, for example.

### Sailing Toward Higher Economic Profit

The need to produce an economic profit is, of course, a basic tenet of all businesses. How much profit or where it is produced can be the key to beating the competition or succeeding during adverse conditions. As we have seen, however, the short-term sourcing solutions (such as outsourcing labor or manufacturing) are not always the most profitable ones in the long term. To succeed, then, executives must make decisions that balance supply chain efficiency and economic yield. The term "economic yield" is widely used to describe the output of goods or services that contribute to the production of eco-

nomic profit. When the cost of capital and inputs is subtracted from the production equation, the leftover result is economic profit.

The attention of every executive belongs on managing those operations that deliver core economic value and minimizing the resource sunk into noncore areas. Therefore, companies that have already separated their business into essential vs. nonessential structures will be better able to select the right elements to source. The key to positive growth is reducing the resources invested in those nonessential structures—often by sourcing them outside the organization.

The first potential targets for sourcing are obviously those elements that impose the least amount of risk exposure to the operation and create the highest amount of cost constraint. But having said that, companies should never overlook the element's strategic value to the organization's growth objective. Is an external sourcing arrangement the best method for adding to the sustainable production of economic profit? Sometimes the answer can still be "no," even when the variables may point toward an immediate savings benefit.

### From Outsourcing to Predictive Sourcing

Outsourcing may be the hot-button issue of year, but the sourcing decisions of today are not unlike those of a decade ago. In fact, companies would do well to remember the lessons learned by those organizations that outsourced their manufacturing operations in the 1980s and 1990s. Too often, these firms were blinded by the promise of cost savings and made the move toward outsourcing without first considering the potential long-term impact of their decision.

For this reason, we believe that the term "outsourcing" has become outmoded. Instead companies should be working to create a predictive sourcing mindset that strikes a balance between improving short-term cost constraints and cultivating long-term economic growth. To accomplish this balance, companies need to focus on those goods and services that create economic value while sourcing support elements to strategic partners. This means analyzing your firm to determine what constitutes core economic improvement and minimizing operations that detract from that objective.

Myopic managers who reject this broader perspective and instead look only at cutting costs will jeopardize the strategic direction of their company. They will create a supply chain that is disconnected from the firm's core competency, its customer's needs and requirements, and even its product's life cycle. As a result, they risk missing opportunities to tap into new paths to customers and to strengthen those competencies that customers value the most. Making the switch to a predictive sourcing mentality definitely requires a fundamental change in how a company views its sourcing operations. But clearly, it is a change worth making. 