

*A supply chain stays tight only if every company on it has reasons to pull in the same direction.*

## Aligning Incentives in Supply Chains

by V.G. Narayanan and Ananth Raman

### The 21st Century Supply Chain

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Managing the modern supply chain is a job that involves specialists in manufacturing, purchasing, and distribution, of course. But today it is also vital to the work of chief financial officers, chief information officers, operations and customer service executives, and certainly chief executives. Changes in supply chain management have been truly revolutionary, and the pace of progress shows no sign of moderating. In our increasingly interconnected and interdependent global economy, the process of delivering supplies and finished goods (and information and other business services) from one place to another is accomplished by means of mind-boggling technological innovations, clever new applications of old ideas, seemingly magical mathematics, powerful software, and old-fashioned concrete, steel, and muscle.

An end-to-end, top-to-bottom transformation of the twenty-first-century supply chain is shaping the agenda for senior managers now and will continue to do so for years to come. With this special series of articles, *Harvard Business Review* examines how corporations' strategies and structures are changing and how those changes are manifest in their supply chains.

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# Aligning Incentives in Supply Chains

by V.G. Narayanan and Ananth Raman

Wall Street still remembers the day it heard that Cisco's much-vaunted supply chain had snapped. On a mad Monday, April 16, 2001, the world's largest network-equipment maker shocked investors when it warned them that it would soon scrap around \$2.5 billion of surplus raw materials—one of the largest inventory write-offs in U.S. business history. The company reported in May a net loss of \$2.69 billion for the quarter, and its share price tumbled by approximately 6% on the day it made that announcement. Cisco was perhaps blindsided by the speed with which the United States had advanced into recession, but how could this paragon of supply chain management have misread demand by \$2.5 billion, almost half as much as its sales in the quarter? Experts blamed the company's new forecasting software, and analysts accused senior executives of burying their heads in sockets, but those experts and analysts were mostly wrong.

In truth, Cisco ended up with a mountain of subassembly boards and semiconductors it didn't need because of the way its supply chain

partners had behaved in the previous 18 months. Cisco doesn't have production facilities, so it passes orders to contract manufacturers. The contractors had stockpiled semifinished products because demand for Cisco's products usually exceeded supply. They had an incentive to build buffer stocks: Cisco rewarded them when they delivered supplies quickly. Many contractors also boosted their profit margins by buying large volumes from component suppliers at lower prices than Cisco had negotiated. Since the contractors and component makers had everything to gain and nothing to lose by building excess inventory, they worked overtime to do so without worrying about Cisco's real needs.

When demand slowed in the first half of fiscal 2000, Cisco found that it couldn't cut off supplies quickly. Moreover, it wasn't clear what Cisco had asked its suppliers to produce and what the contractors had manufactured in anticipation of Cisco's orders. Many contractors believed that Cisco had implicitly assured them it would buy everything they could pro-

duce. Since Cisco hadn't stipulated the responsibilities and accountability of its contractors and component suppliers, much of the excess inventory ended up in its warehouses. However, the supply chain imploded because Cisco's partners acted in ways that weren't in the best interests of the company or the supply chain.

It's tempting to ask, in retrospect, "What *was* everyone thinking?" But Cisco's supply chain is the rule rather than an exception. Most companies don't worry about the behavior of their partners while building supply chains to deliver goods and services to consumers. Engineers—not psychologists—build supply networks. Every firm behaves in ways that maximize its own interests, but companies assume, wrongly, that when they do so, they also maximize the supply chain's interests. In this mistaken view, the quest for individual benefit leads to collective good, as Adam Smith argued about markets more than two centuries ago. Supply chains are expected to work efficiently without interference, as if guided by Smith's invisible hand. But our research over the last ten years shows that executives have assumed too much. We found, in more than 50 supply chains we studied, that companies often didn't act in ways that maximized the network's profits; consequently, the supply chains performed poorly.

That finding isn't shocking when you consider that supply chains extend across several functions and many companies, each of which has its own priorities and goals. Yet all those functions and firms must pull in the same direction to ensure that supply chains deliver goods and services quickly and cost-effectively. Executives tackle intraorganizational problems but overlook cross-company problems because the latter are difficult to detect. They also find it tedious and time-consuming to define roles, responsibilities, and accountability for a string of businesses they don't manage directly. Besides, coordinating actions across firms is tough because organizations have different cultures and companies can't count on shared beliefs or loyalty to motivate their partners. To induce supply chain partners to behave in ways that are best for everybody, companies have to create or modify monetary incentives.

A supply chain works well if its companies' incentives are aligned—that is, if the risks,

costs, and rewards of doing business are distributed fairly across the network. For reasons that we shall later discuss, if incentives aren't in line, the companies' actions won't optimize the chain's performance. Indeed, misaligned incentives are often the cause of excess inventory, stock-outs, incorrect forecasts, inadequate sales efforts, and even poor customer service.

When incentives aren't aligned in supply chains, it's not just operational efficiency that's at stake. In recent years, many companies have assumed that supply costs are more or less fixed and have fought with suppliers for a bigger share of the pie. For instance, U.S. automobile manufacturers have antagonized their vendors by demanding automatic price reductions every year. Our research, however, shows that a company can increase the size of the pie itself by aligning partners' incentives. Thus, the fates of all supply chain members are interlinked: If the companies work together to efficiently deliver goods and services to consumers, they will all win. If they don't, they will all lose to another supply chain. The challenge is to get all the firms in your supply network to play the game so that everybody wins. The only way you can do that is by aligning incentives.

### Why Incentives Get out of Line

Companies often complain to us that their supply chain partners don't seem to want to do what is in everyone's best interests, even when it's obvious what's best for the supply chain. This obstructive attitude, we believe, is a telltale sign that incentives have gotten out of line and companies are chasing different goals.

There are three reasons why incentive-related issues arise in supply chains. First, when companies cannot observe other firms' actions, they find it hard to persuade those firms to do their best for the supply network. A simple illustration: Whirlpool relies on retailers like Sears to sell its washing machines because retailers' salespeople greatly influence consumer decisions. If Whirlpool doesn't offer lucrative margins on its products, Sears will plug products that do or will encourage shoppers to buy its private-label brand, Kenmore. However, Whirlpool can't observe or track the effort that Sears expends in pushing its products. Since Sears's actions are hidden from Whirlpool, the

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manufacturer finds it tough to create incentives that induce the retailer to do what's best for both companies. Such "hidden actions," as we call them, exist all along the supply chain.

Second, it's difficult to align interests when one company has information or knowledge that others in the supply chain don't. For example, most U.S. automotive vendors fear that if they share their cost data, the Big Three auto manufacturers will use that information to squeeze the vendors' margins. For that reason, suppliers are reluctant to participate in improvement initiatives that would let manufacturers or other companies collect such data. Since the suppliers insist on hiding information, the Big Three's supply chains don't function as efficiently as they could.

Third, incentive schemes are often badly designed. Our favorite example of this problem is a Canadian bread manufacturer that felt it needed to increase its stocks in stores. The manufacturer allotted deliverymen a certain amount of its shelf space in stores and offered them commissions based on sales off those shelves. The deliverymen gladly kept the store shelves filled—even on days when rival bread makers were offering consumers deep discounts on their products. The Canadian baker had to throw away heaps of stale loaves, and its costs soared as a result. The deliverymen

earned handsome commissions, but the company's profits fell because of an ill-conceived incentive scheme.

### Straightening Things Out

Our research suggests that companies must align incentives in three stages. At the outset, executives need to acknowledge that there's misalignment. Then they must trace the problem to hidden actions, hidden information, or badly designed incentives. Finally, by using one of three approaches that we describe in detail later in the article, companies can align or redesign incentives to obtain the behavior they desire from their partners.

**Accept the premise.** When we conduct straw polls with executives, almost all of them admit they hadn't thought that incentive alignment was a problem in their supply chains. We're not surprised. Most companies find it difficult at first to come to grips with the relationship between incentives and supply chain problems. Executives don't understand the operational details of other firms well enough to realize that incentives could be getting out of whack. In addition, companies tend to avoid the subject of monetary incentives because, if they raise it, their partners may suspect them of merely trying to negotiate lower prices for the products or services they buy.

Once companies get past these mental barriers, it's relatively easy for them to detect incentive misalignment. They should expect problems to surface whenever they launch change initiatives, because these modify the incentives of key stakeholders—and most stakeholders protest loudly when incentives get out of line. For instance, in the late 1990s, businesses ranging from Campbell Soup to Liz Claiborne fought the bullwhip effect—amplified fluctuations in demand—by managing inventory themselves. Rather than relying on distributors and retailers for orders, the companies set up central logistics departments to make purchasing decisions. Although these initiatives could have helped the companies' supply chains, they failed because of open resistance from distributors and retailers, who were convinced that the manufacturers had marginalized their roles.

**Pinpoint the cause.** Executives must get to the root of incentive problems, so they can choose the best approach to bring incentives back into line. In our consulting work with

## A Step-by-Step Approach

Companies face incentive problems in their supply chains because of

- hidden actions by partner firms.
- hidden information—data or knowledge that only some of the firms in the supply chain possess.
- badly designed incentives.

They can tackle incentive problems by

- acknowledging that such problems exist.
- diagnosing the cause—hidden actions, hidden information, or badly designed incentives.
- creating or redesigning incentives that will induce partners to behave in ways that maximize the supply chain's profits.

They can redesign incentives by

- changing contracts to reward part-

ners for acting in the supply chain's best interests.

- gathering or sharing information that was previously hidden.
- using intermediaries or personal relationships to develop trust with supply chain partners.

They can prevent incentive problems by

- conducting incentive audits when they adopt new technologies, enter new markets, or launch supply chain improvement programs.
- educating managers about processes and incentives at other companies in the supply chain.
- making discussions less personal by getting executives to examine problems at other companies or in other industries.

companies, we often use role play for this purpose. We ask senior managers to identify decisions that would have been made differently if they or their suppliers had focused on the supply chain's interests instead of their own interests. We then ask why decision makers acted as they did. In some cases, the answers suggest improper training or inadequate decision-support tools for managers; most of the time, however, they point to mismatched goals. And we try to figure out whether the decisions were motivated by hidden actions, hidden information, or badly designed incentives.

Aligning incentives is quite unlike other supply chain challenges, which are amenable to structured problem-solving processes that involve equations and algorithms. In our experience, only managers who understand the motivations of most companies in their supply chain can tackle incentive-related issues. Since alignment also requires an understanding of functions such as marketing, manufacturing, logistics, and finance, it's essential to involve senior managers in the process.

**Align or redesign.** Once companies have identified the root causes of incentive problems, they can use one of three types of solutions—contract based, information based, or trust based—to bring incentives back into line. Most organizations don't have the influence to redesign an entire chain's incentives—they can change only the incentives of their immediate partners. While it is often the biggest company in the supply chain that aligns incentives, size is neither necessary nor sufficient for the purpose. In the late 1980s, the \$136 million Swedish company Kanthal, a supplier of heating wires, said that it would impose penalties whenever the \$35 billion GE changed specifications without warning. The mighty GE agreed to contract changes requested by its small partner, and incentives became better aligned as a result.

### Rewriting Contracts

One way companies can align incentives in supply chains is by altering contracts with partner firms. When misalignment stems from hidden actions, executives can bring those actions to the surface—unhide them, as it were—by creating a contract that rewards or penalizes partners based on outcomes. To return to an earlier example, Whirlpool may not

be able to see what Sears's salespeople do to promote the manufacturer's washing machines, but it can track the outcome of their efforts—namely, increased or decreased sales—and draw up agreements to reward them accordingly.

It's necessary to alter contracts when badly designed incentives are the problem. Let us think back to the Canadian bread manufacturer whose deliverymen overstocked stores when they were paid sales-based commissions. The company changed the deliverymen's behavior by altering their contracts to include penalties for stale loaves in stores, which could be tracked. While the penalties reduced the incentive to overstock stores, the commissions ensured that the deliverymen still kept shelves well stocked.

That may appear to be a minor change, but it's a significant one. Companies often underestimate the power of redesigning contracts. Small changes in incentives can transform supply chains, and they can do so quickly. Take the case of Tweeter, a consumer-electronics retail chain that in May 1996 acquired the loss-making retailer Bryn Mawr Stereo and Video. For years, Bryn Mawr's stores had reported lower sales than rivals had. Tweeter's executives realized early that the incentives that Bryn Mawr offered its store managers would not lead to higher sales. For instance, while Tweeter penalized managers for a small part of the cost of products pilfered from their stores, Bryn Mawr deducted the full value of stolen goods from their pay. Since store managers faced more pressure to prevent shoplifting than to push sales, they behaved accordingly. They placed impulse-purchase products like audiotapes and batteries behind locked cases, which reduced theft but killed sales. They spent more time tracking merchandise receipts than they did showing products to consumers. They shut down stores while receiving merchandise to ensure there was no loss in inventory; never mind the sales they lost in the process.

After the acquisition, Tweeter stopped deducting retail shrink from Bryn Mawr store managers' salaries and started paying them a percentage of the profits from their stores. While both sales and shrink affect profits, the retailer effectively increased the importance of sales relative to shrink. The store managers therefore directed their efforts toward increas-

*By changing how, rather than how much, they pay partners, companies can improve supply chain performance. When that happens, everyone in the chain makes more money.*

ing sales rather than decreasing shrink. Although Tweeter left the store name unchanged, kept the product mix intact, and retained the same store managers, Bryn Mawr's sales rose by an average of 10% in 1997. As managers moved merchandise to shelves where consumers could touch products, shrink also increased, from \$122 a month to \$600 a month per store. Net-net, however, Bryn Mawr's profits rose by 2.5% of sales in those 12 months. Tweeter didn't have to change people to create a new culture at Bryn Mawr; it just changed their incentives. (For more details, see Nicole DeHoratius and Ananth Raman's "Impact of Store Manager Incentives on Retail Performance," a Harvard Business School Working Paper, September 2000.)

By changing how, rather than how much, they pay partners, companies can improve supply chain performance. When that happens, all the firms in the chain make more money than they used to. (See the sidebar "The Economics of Incentive Alignment.") In the 1990s, Hollywood movie studios, such as Universal Studios and Sony Pictures, found that frequent stock-outs at video retailers, like Blockbuster and Movie Gallery, posed a major problem. A lack of inventory on store shelves meant that everyone suffered: The studios lost potential sales, video rental companies lost income, and consumers went home disgusted. Inventory levels were low because the incentives of the studios and the retailers weren't in line. The studios sold retailers copies of movies at \$60 a videotape. At an average rental of \$3, the retailers had to ensure that each tape went out at least 20 times to break even. The studios wanted to sell more tapes, but the retailers wished to buy fewer tapes and rent them out more often.

When the studios and the retailers explored the possibility of sharing revenues, incentives began to tee up. Since it cost the studios only \$3 to create a copy of a movie, they could recoup their investment the first time a consumer rented a tape. In theory, that meant the studios could stock many more copies than the retailers could. For the model to work, though, the studios needed to derive income not from tape sales but from rentals—as the retailers did.

In the late 1990s, when video rental companies proposed revenue-sharing contracts, the studios raised no objections. They agreed to sell tapes to the retailers for around \$3 per tape

and receive 50% of the revenues from each rental. However, the studios needed to track the retailers' revenues and inventories for the revenue-sharing system to work. The studios and the video rental companies relied on an intermediary, Rentrak, which obtained data from the retailers' computerized records and conducted store audits to ensure that all tapes were accounted for. In fact, the contract-based solution wouldn't have worked if Rentrak hadn't revealed previously hidden information in the supply chain.

In less than a year, it became clear that revenue sharing had led to a happy ending in the video rental industry. The studios saw a bounce in their bottom lines, retailers began to earn more money, and consumers no longer went away disappointed. Industry experts estimated that rental revenues from videotapes increased by 15% in the United States, and the studios and the retailers enjoyed a 5% growth in profits. Perhaps most important, stock-outs at video rental stores fell from 25% before revenue sharing to less than 5% after revenue sharing.

### Revealing Hidden Information

Companies can also align incentives across the supply chain by tracking and monitoring more business variables, thereby making actions visible, or by disseminating information throughout the supply chain.

The most effective way to reveal hidden actions is to measure more variables. In the late 1980s, Campbell Soup offered distributors discounts several times every year, hoping that the savings would be passed on to retailers. However, distributors bought more units than they sold to retailers, so Campbell's sales fluctuated wildly. For instance, the company sold 40% of its chicken noodle soup each of those years during six-week promotional periods. The uptick put a lot of pressure on the company's supply chain. When Campbell realized that it gathered data on distributors' purchases but not on their sales, it invested in information technology systems that could track both. Then, by giving the distributors discounts on sales but not on purchases, Campbell eliminated the incentive to forward-buy large quantities. That helped improve the supply chain's performance.

Technology isn't always needed for managers to observe more variables. Some compa-

## The Economics of Incentive Alignment

If a company aligns the incentives of the firms in its supply chain, everyone will make higher profits. This isn't an idle claim; we can easily demonstrate it in the case of a two-company supply chain.

Let's say a publisher prints newspapers at a cost of 45 cents per copy and sells them to a news vendor for 80 cents each, and the newspaper retails for \$1.00. Let's also assume that demand for the newspaper is uniformly distributed between 100 and 200 copies a day.

The vendor has to throw away unsold copies, so he has to compare two kinds of costs before deciding how many copies to stock. He loses 80 cents for every unsold copy, but if demand exceeds supply, his opportunity cost is 20 cents per copy. The vendor's inventory level will be optimal when the marginal understocking cost equals the marginal overstocking cost—in this case, when he orders 120 copies. The vendor will stock fewer copies than the average demand of 150 per day because the overstocking cost (80 cents) is four times higher than the understocking cost (20 cents). That could lead to frequent stock-outs.

If the publisher produced and sold the newspaper himself, he would incur an understocking cost of 55 cents (the retail price less the printing cost) and an overstocking cost of 45 cents (the unit cost of printing). According to our calculations, the publisher's profits would be greatest if he were to stock 155 copies, not 120. (For details on how we arrived at the numbers presented here, see V.G. Narayanan's technical note "The Economics of Incentive Alignment," Harvard Business School, 2004.) In fact, both the publisher and the consumers would be happier if there were more copies of the newspaper on the stands, but the vendor would not be. The vendor stocks less than everyone else would like him to because it is in his best interest to do so. The publisher therefore needs to change the incentives of the news vendor so that when the vendor chooses an inventory level that is in his best interest, it increases the publisher's profits.

One way the publisher could do that is by using a revenue-sharing contract and lowering the price the vendor pays for each copy from 80 cents to 45 cents. In return, the vendor could retain, say,

65% of the sale price and pass on 35% to the publisher. The retailer's understocking costs would remain 20 cents, but his overstocking costs would fall because he'd pay less for each copy. The retailer would now be inclined to stock 131 copies instead of 120. The profits of both the retailer and the publisher would rise (see the table below).

Alternately, the publisher could pay the retailer markdown money of, let's suppose, 60 cents for every unsold copy. That would lower the overstocking cost of the retailer and encourage him to stock more copies. The publisher would more than make up for bearing some of that cost because of profits he'd gain in higher sales. In this case, the retailer would stock 150 copies.

As the exhibit shows, both the publisher and the retailer would earn more profits under the revenue-sharing and markdown-money contracts considered here than under the traditional system. The increase in profits would not come at the expense of consumers, who'd pay the same retail price. Inventory levels would also go up, which would result in greater consumer satisfaction.

Costs and Profits	Traditional Contract	Revenue-Sharing Contract	Markdown-Money Contract
Retail Price	\$1.00	\$1.00	\$1.00
Printing Cost	\$0.45	\$0.45	\$0.45
Wholesale Price	\$0.80	\$0.45	\$0.80
Vendor's Share of Revenue	100%	65%	100%
Vendor's Compensation for Unsold Copies	—	—	\$0.60
Vendor's Understocking Cost	\$0.20	\$0.20	\$0.20
Vendor's Overstocking Cost	\$0.80	\$0.45	\$0.20
Inventory Level	120 copies	131 copies	150 copies
Vendor's Daily Profit	\$22.00	\$23.08	\$25.00
Publisher's Daily Profit	\$42.00	\$44.17	\$45.00
Supply Chain's Daily Profit	\$64.00	\$67.25	\$70.00

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nies employ mystery shoppers—agents who pose as customers—to ascertain whether, say, distributors are pushing products or retailers are offering services. Like many franchisers, Mobil uses mystery shoppers to monitor restroom cleanliness and employee friendliness at its gas stations.

Information systems derived from the principles of activity-based costing are critical for measuring the costs associated with hidden actions. No company knows that better than Owens & Minor, a large distributor of medical supplies. Hospitals used to pay O&M a fixed percentage of the cost of items delivered. They could, however, buy supplies directly from manufacturers if it was cheaper to do so. For example, the hospitals sometimes bought high-margin products such as cardiovascular sutures from manufacturers to avoid the distributor's markup. The hospitals expected O&M to supply products with high storage, handling, and transportation costs—adult diapers, for instance—even though those items gave the distributor low margins. Cost-plus contracts led to a misalignment in another area, too: In general, distributors were often reluctant to provide services such as just-in-time deliveries, while the hospitals demanded more such services for the same fixed markup.

O&M found an opportunity to realign incentives when it switched to an activity-based costing system and got a handle on the profitability of its services to hospitals. Until then, O&M knew when its customers requested services such as emergency deliveries; what it didn't know was the effect of those requests on its costs and profits. In other words, customers' actions weren't hidden from O&M, but the impact of those actions was. After O&M had figured out the cost of its services, the distributor asked customers for fees according to the services they desired. But first, to test the change, O&M approached a hospital that had rejected its overtures two years earlier. O&M explained that instead of offering a cost-plus contract, it would charge per service requested. It shared its cost data with the hospital to show that the fees weren't unreasonable.

The hospital's reaction was so encouraging that, in 1996, O&M offered all its customers a choice between an activity-based-pricing system and a traditional contract. O&M's activity-based contracts offered hospitals a menu of services and quoted a price for each one. A hos-

pital could choose just-in-time deliveries, for example, but it would have to pay for them. O&M believed that by designing mutually beneficial incentives, it could induce hospitals to act in ways that would be good for both themselves and O&M. The company wasn't wrong; most hospitals were happy to have a distributor provide all the services they wanted, even if that meant paying extra. In 2003, O&M's sales from activity-based-pricing contracts reached \$1.35 billion, which was nearly one-third of its turnover of \$4.2 billion.

### Developing Trust

Companies can sometimes use trust-based mechanisms to prevent incentive problems from cropping up in supply chains. That may sound like a contradiction, since firms are more likely to trust each other when their incentives are in line. When companies realize from the outset that working with partners will not be easy, though, they can use intermediaries to prevent supply chains from breaking down. The use of a middleman has become more popular as American and European companies have outsourced manufacturing to developing countries, where legal contracts are often harder to enforce.

When Western companies link up with Asian manufacturers or component suppliers, each party has misgivings about the other's interests. The importers are convinced that the vendors won't deliver on time, can't produce consistent quality, and will give greater priority to companies that will pay higher prices. They also fear that the contractors will reduce their costs by bribing government officials or using child labor. As Nike found, those dubious practices give importers, rather than their suppliers, bad reputations. For their part, suppliers fear that importers might reject products. Since importers enter into contracts six to nine months in advance of delivery, vendors doubt companies' ability to predict consumer demand accurately. They worry that demand for products will be lower than anticipated and that importers will reject consignments, pretending that the quality wasn't up to snuff.

Under those circumstances, the presence of an intermediary can help align the incentives of the two parties. For instance, the Hong Kong-based supply chain intermediary Li & Fung has become adept at marrying the interests of manufacturers and suppliers. The com-

pany, which has created a network of factories in Asia, enforces a code of ethics that precludes its network from providing unhygienic work conditions, for example, or paying below the minimum wage. Li & Fung monitors its suppliers to ensure that they adhere to the quality and ethical standards that Western importers demand. It employs a chief compliance officer, who reports directly to the company's chairperson. Li & Fung accounts for roughly half the volumes of all its suppliers every year. If a vendor reneges on its promises, it stands to lose a great deal of business from Li & Fung. At the same time, Li & Fung keeps multinational companies honest. If they make frivolous demands of suppliers or refuse to take delivery of products at contracted prices, Li & Fung will deny them access to its network in the future. Thus, Li & Fung is able to align incentives because of the repeat business it offers importers and suppliers.

Just as Li & Fung's reputation reduces the need for formal contracts, so can the relationships between individuals in companies. Klaus Obermeyer, the founder of the fashion skiwear manufacturer Sport Obermeyer, formed a joint venture with the Hong Kong-based supplier Raymond Tse in 1985 to source raw materials, cut and sew garments, and coordinate shipping. Over the last 19 years, Klaus Obermeyer has left most production and investment decisions to Tse. He values his relationship with Tse and, given their history working together, believes that Tse will not make decisions that aren't in both companies' interests. The desire to preserve their relationship has been a sufficient incentive for Obermeyer and Tse to act only in ways that are mutually beneficial.

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Companies should explore contract-based solutions before they turn to other approaches, because contracts are quick and easy to implement. They should bear in mind, though, that advances in technology have reduced the cost of information-based solutions. For instance, some organizations have made real-time sales data available throughout supply chains—and that was unimaginable five years ago. In fact, we recommend information-based solutions ahead of trust-based ones. Companies can adopt the latter only if they are able to identify trustworthy intermediaries, and that is often difficult.

Before we conclude, we must mention two

caveats. First, a solution that resolves incentive misalignment for one company might exacerbate the problem for another. Executives should therefore coordinate the interests of all the companies in a supply chain at the same time. Second, companies must align the incentives of all the key decision makers in their supply chains. Although it is difficult for one company to change the incentives of executives in other organizations, it can point out possible misalignments to partners. Consider the following example: A Boston-based start-up placed kiosks for dispensing its products in retail stores. It offered incentives to retailers but failed to ensure that the retailers passed on those incentives to store managers. Since the store managers could decide where to place the kiosks but weren't motivated to display them prominently, the start-up found kiosks in corners where few consumers would notice them. By flagging the issue for the retailers, the start-up was able to tackle the problem before it got to be too late.

Companies should periodically study their supply chains, because even top-performing networks find that changes in technology or business conditions may alter the alignment of incentives. Firms can take three steps to facilitate discussions about misalignments. First, executives should conduct incentive audits whenever they adopt new technologies or enter new markets. Such audits verify that the incentives offered to key individuals and stakeholders are consistent with the behavior that companies expect of their partners. Second, companies should educate managers about their supply chain partners. Only then will manufacturers better understand distributors, for instance, or will retailers realize the constraints manufacturers face. Third, since executives are often uncomfortable discussing how incentives influence their decisions, it's useful to depersonalize the situation by getting managers to examine case studies from other industries. It's critical to get the conversation started—in most supply chains, having companies admit that incentive problems even exist is more than half the battle.

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### [The Achilles' Heel of Supply Chain Management](#)

Ananth Raman, Nicole DeHoratius, and Zeynep Ton  
*Harvard Business Review*  
May 2001  
Product no. F0105C

### [Turning the Supply Chain into a Revenue Chain](#)

Gérard P. Cachon and Martin A. Larivière  
*Harvard Business Review*  
March 2001  
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