

Chapters *To Go*



The New Science of Retailing: How Analytics Are Transforming the Supply Chain and Improving Performance

by Marshall Fisher and Ananth Raman
Harvard Business Press. (c) 2010. Copying Prohibited.

Reprinted for YI LIN, CVS Caremark

yi.lin@cvscaremark.com

Reprinted with permission as a subscription benefit of **Books24x7**,
<http://www.books24x7.com/>

All rights reserved. Reproduction and/or distribution in whole or in part in electronic, paper or other forms without written permission is prohibited.



Chapter Five: Goal Alignment—Reducing Perverse Incentive Misalignment

Overview

You can study the latest retailing methods. You can buy the best IT. But if you haven't aligned the incentives of everyone within your company and supply chain, you will not succeed at rocket science retailing. ^[1]

Consider the impact of incentives within a single retail department: distribution. Distribution and logistics departments' staffers are commonly evaluated on how efficiently they move merchandise through the supply chain. When we worked with a fashion apparel retailer, its distribution manager shared with us a video that he'd created on ways to improve distribution efficiency. It showed that warehouse workers could pick orders more quickly if all stores ordered the same size-mix—regardless of how many smalls, mediums, and larges each really needed. Armed with his video, the distribution chief aimed to persuade store managers to standardize the chain's size-mix even though a basic understanding of the retailer's locations (and the demographics of each) made it obvious that the stores needed individual assortments. We asked the distribution manager about the incongruity: might his efforts result in lost sales because of stockouts or excess merchandise that had to be marked down? He responded that he was evaluated on the distribution center's performance, not on what happened at the stores. That was the store managers' problem.

Perverse incentives can also thwart the smooth operation of the supply chain. In the mid-1990s, we worked with several retailers that were importing or considering importing from India. They grumbled about the long lead times, suggesting that they'd import if they could get goods faster. At the time, many Indian exporters belonged to the *unorganized sector*, a term used in the country to denote small firms that lack the scale to invest in formal systems for supply chain management. We also happened to be doing work at the time with some of them and saw an opportunity to alert them to the benefits of reducing their lead times.

Imagine our surprise when the exporters told us that they not only knew the benefits but also understood how to implement such systems. Long lead times, we realized, sprang not from the exporters' *lack of knowledge* but from the absence of proper *incentives*. They were unwilling to reduce their lead times, not unable to. Carrying fabric and yarn inventory was expensive for them, so they didn't want to do it. The fix—as summarized in a report to the Indian finance minister that a group of us wrote—was to find ways to reduce the cost of working capital to the Indian exporters. This would enable them to carry the inventory that could accelerate production, making their lead times comparable to those of exporters in competing countries like China.

Retailers often have trouble implementing rocket science practices not because their managers and supply chain partners don't know what's right but because bad incentives cause them to behave in ways that undermine the greater good. In these circumstances, the key to improving performance lies in changing the incentives—that is, the metrics and rewards—in the company or supply chain.

^[1]The term rocket science retailing is discussed in the Introduction and is used equivalently in this book with scientific retailing. See also Marshall L. Fisher, Ananth Raman, and Anna Sheen McClelland, "Rocket Science Retailing Is Almost Here: Are You Ready?" *Harvard Business Review*, July–August 2000, 115–124, for a discussion of this concept.

How Misaligned Incentives Affect Inventory Levels, Fill Rates, Sales, and Profit in a Supply Chain

To understand how misaligned incentives can affect inventory levels, fill rates, sales, and profit in a supply chain, consider the following fictional example.

A recent college graduate, Anna Sheen, has returned to her home-town of Hamptonshire to start a newspaper called the *Hamptonshire Express*. ^[2] She publishes and sells it on her own. The marginal cost of printing a copy of the *Express* is 20¢, while each one sells for \$1. Anna throws out unsold copies; day-old news, as the saying goes, isn't worth the paper that it's printed on. Daily demand follows the normal distribution, with a mean of 500 papers and a standard deviation of 100. How many newspapers should Anna stock each day?

Table 5-1 shows the optimal stocking values and the resulting fill rates, sales, and profits. ^[3] Notice that the stocking quantity exceeds the mean daily demand. Anna's gains from selling a newspaper (80¢ per copy) far exceed the cost of overstocking a newspaper (20¢). Hence, she errs on the side of overstocking and obtains high fill rates.

After several years of doing all the work herself, Anna decides to start selling her papers through an agent, Ralph. Their agreement requires Anna to transfer papers to Ralph at 80¢ each. Ralph then sells them for \$1 each and handles any

unsold newspapers. Demand doesn't change.

Ralph's optimal stocking quantity, as shown in [table 5-1](#), is less than 500 because Ralph's gains from selling an additional copy of a newspaper (20¢) are less than the cost he incurs from having an unsold one (80¢). Consequently, Ralph stocks less than 500 units, resulting in lower fill rates, sales, and profits for the supply chain as a whole.

Notice what hasn't changed between the two scenarios: printing costs, retail demand, and retail price. The lower fill rates, sales, and profits result from the fact that Anna is selling through Ralph. You can trace the loss, in other words, to Ralph's incentives' differing from Anna's.

Table 5-1: Comparison of Anna's and Ralph's stocking and selling

	Anna's stocking and selling	Ralph's stocking and selling
Stocking quantity	584	416
Fill rate (% of consumer demand satisfied)	98%	81%
Daily expected sales	488 copies	404 copies
Daily expected profit	\$331.40	\$282.00

The video rental industry offers a real-world example of this incentive problem. Until the mid-1990s, studios such as Disney sold copies of their videos to retailers like Blockbuster for about \$60 each. The retailer, in turn, would rent each videotape for around \$3 per rental. Clearly, given the investment (\$60) and the rental revenue (\$3 per rental), a retail outlet would break even after twenty rentals and would stock, at most, one copy of a movie for every twenty consumers willing to rent it. But this setup left many consumers unhappy because they often had to wait for a long time for "hot" new titles. Retailers and studios also recognized that they were losing revenues from the low levels of inventory in the supply chain. "Out-of-stocks were the single biggest problem in our industry," one video industry executive said.

The marginal cost of producing and stocking an additional tape at a retail store was only \$3. So from the perspective of the supply chain as a whole, the break-even volume was one rental. Consequently, everyone should have been willing to stock as much as a videotape for every consumer willing to rent that movie. Changing incentives (how the retailers and the studios got paid) was central to addressing this issue in the supply chain.

Starting in the mid-1990s, many studios and retailers entered into revenue-sharing agreements. Under these deals, studios would sell copies of videotapes to retailers for roughly \$3 but also were entitled to a share (usually about 50 percent) of rental revenue.

The impact of these changes was immediate and dramatic. Inventory levels and fill rates shot up and so did sales and customer satisfaction. Not surprisingly, video retailers now offer to waive the rental fee if the new release sought by a customer is not in stock.

^[2]For further details, see V. G. Narayanan and Ananth Raman, "Hamptonshire Express," Case 1-698-053 (Boston: Harvard Business School, 2002).

^[3]Optimal stocking values can be derived from the *newsvendor model*. A derivation of the newsvendor model can be found in most textbooks on inventory theory—e.g., Steven Nahmias, *Production and Operations Analysis*, 5th ed. (Boston: McGraw-Hill Irwin, 2005).

Some Principles for Aligning Incentives in Operations

The examples in this chapter draw substantially on what's called principal-agent theory. ^[4] It is in our judgment extremely useful to think of most incentive problems from the perspective of a principal who is trying to influence an agent's (i.e., another individual's or organization's) behavior. The principal-agent approach, although relatively new to operations and supply chain management, has been applied for many years in businesses such as insurance and financial services and, more recently, in the design of employment contracts and stock options for CEOs. ^[5] Like most theoretical approaches, principal-agent theory makes some assumptions that do not always translate well to practice. Consequently, in identifying the principles for incentive alignment, we'll draw on our experiences, too.

Principle 1: Incentives Exist to Influence Behavior

To design appropriate incentives, you must first identify the behavior that you want to induce. Principal-agent theory relies

on the notion of a rational self-interested “principal” who delegates decision-making authority to an “agent” and seeks to influence the agent’s behavior through incentives. The principal *does not* dictate particular decisions or actions but shapes the incentives in such a way that the *agent, while maximizing his welfare, will, to the extent possible, also maximize the principal’s welfare*.

Hence, in designing incentives, a principal needs to consider how the incentives will influence the agent’s behavior. And in doing that, she also must take into account conduct that she would not like to induce. This problem has arisen in basing incentives for teachers on how well their students perform on standardized tests. Proponents of such incentives argue that they motivate teachers to work harder. Opponents point out that the practice could cause teachers to “teach to the test.” In other words, teachers might shift their focus to drilling students only on basic skills such as reading, spelling, and arithmetic and ignore creative thinking and reasoning.

This idea—that incentive designers should consider the behavior that they would (and would not) like to induce—may seem obvious, but managers often forget it. When we were advising one retailer on incentive design, it was obvious that the executives did not have a shared understanding of what they wanted their store managers to do. Some of them wanted the managers to focus on controlling expenses by tightly monitoring labor costs and shoplifting, while others wanted them to focus on increasing sales. Not surprisingly, they couldn’t agree on an incentive plan until they’d agreed on goals for the store managers.

Principle 2: Incentive Design Requires Deep Understanding of Operations

Failure to deeply understand operations affects not only incentive design but the design of other tasks, too. Witness the attempts by a large discounter to get its suppliers to introduce *shelf-ready packaging* in its stores. Shelf-ready packaging (also called *retail-ready packaging*) refers to products shipped in containers that store staff can place directly onto the display shelves with minimal unpacking. Done right, shelf-ready packaging simplifies store operations and leads to more efficient replenishment, higher on-shelf availability, and higher sales and profits for the retailer and the manufacturer.

We recently had the opportunity to evaluate some shelf-ready packaging firsthand when we spent half a day shelving bottled drinks at a store operated by a large retailer. The supposedly shelf-ready packaging didn’t work. It was too flimsy to support the dozen or so bottled drinks placed on it. We couldn’t carry the drinks to the shelves in the packages. Instead, we—like the staffers at the store—ended up removing the bottles, placing the packaging on the shelf, and then replacing the bottles in the package. We believe the problem stemmed from the packaging designers’ ignorance of store operations; they’d never actually taken the time to see how the packaging worked—or failed to work—in a store. Had they been more familiar, they would have created packages that could have withstood the weight of bottled drinks. “The drinks manufacturer would have made life much easier in the store and improved on-shelf availability by spending an extra ten cents per case to get better corrugated paper,” an executive at another consumer goods manufacturer told us. “We would make the same mistake too,” he remarked about his own company.

Principle 3: “Hidden Action” and “Hidden Information” Drive Incentive Misalignment

Principal-agent theory identifies two underlying causes for incentive mis-alignment. Incentive problems arise either when the actions of an agent cannot be observed (hidden action) or when the agent has information not known by the principal (hidden information). The term *hidden* can be misleading in the previous sentence. By *hidden*, we mean the action or information is uncontractible—that is, the action or information is not observable, verifiable, or enforceable. We describe each of these three terms below. The reader should note that for an action or information to be contractible, it has to be observable, verifiable, *and* enforceable.

If the agent’s actions and information could be “unhidden,” then the principal could write a contract that covered the actions and information. In the *Hamptonshire Express* example above, had Ralph’s stocking quantity been contractible, Anna could have contracted with Ralph to stock 584 newspapers, and eliminated the need to provide Ralph with incentives for stocking newspapers. We assumed in the example that Ralph’s stocking quantity was uncontractible because in practice a retailer’s stocking quantities are usually uncontractible with the manufacturer because of a practice called *diversion*, where a retailer can divert a portion of its purchase from a manufacturer to another retailer instead of stocking the purchased quantity in its distribution centers and stores. In other words, the retailer’s stocking quantity can differ from its purchase quantity. As a consequence of diversion being possible, the retailer’s stocking quantity is rendered uncontractible.

Observability. We start by describing contexts where an agent’s actions are unobservable to the principal. Subsequently, we also explain how the agent’s information can be hard for the principal to observe.

Manufacturers often can't directly observe retailers' efforts to sell their products versus those of their competitors. Take Norwalk Furniture, a maker of custom upholstered goods. It tried to sell its custom pieces through retailers that also sold noncustom ones. Its experiment failed, and executives at Norwalk blamed the retailers' lack of effort, not any problems with its furniture. Its executives concluded that stores were pushing mass production pieces, for which they had inventory on hand, harder. As the adage goes, "A loaded retailer is a loyal retailer."

In this example, Norwalk is the principal, and the retailers are the agents. Hidden action exists because the principal cannot directly monitor whether the agent does what it wants, short of sending spies into stores.

Ensuring adequate sales effort matters most when retailers carry substitutable products from multiple manufacturers. Manufacturers worry that a retailer will push the product on which it earns the best margins; this concern is especially acute if a retailer offers a private label line, like Sam's Choice at Wal-Mart or Kirkland at Costco. Imagine how closely appliance makers such as Whirlpool and Maytag monitor sales of the private label Kenmore brand at Sears.

Manufacturers have taken steps to "unhide" this information through "mystery shoppers," for example. Mystery shoppers could visit a store and, unbeknownst even to the store employees, observe whether sales-people at the store were pushing one brand over another. Sophisticated mystery-shopping companies use advanced technology to track the results of such mystery-shopping audits.

In some cases, it is not the agent's action but the agent's information that is unobservable to the principal. An example from outside of retailing—insurers—offers the clearest illustration of the problem. Imagine that an insurer is planning to sell coverage for heart attacks. It will offer the coverage to all consumers, but not all of them will purchase it. Individual customers know more about their health and histories than the insurer does—do they smoke? Have high blood pressure? Do heart problems run in the family? Thus the ones most likely to have heart attacks (that is, the least potentially profitable ones) are most likely to buy coverage. The insurer, in this situation, suffers from *adverse selection*, leading to a higher incidence of heart attacks in its customer base than in the overall population.

Verifiability. In some cases, actions are observable but not verifiable. In fashion supply chains, for example, experienced buyers or merchandisers at a retail firm can often agree on the quality of a garment. But it is hard to write a contract requiring a designer to develop a product with a certain quality level. Quality, in this case, though observable, isn't measurable and would not be verifiable by a neutral third party such as a court of law. Incentives usually cannot be based on unverifiable actions.

Enforceability. Usually, courts, through contract law, enforce contracts. The law sometimes prevents firms from contracting on certain variables. In many supply chains, for example, manufacturers cannot tell retailers to charge a specific retail price. This renders retail selling price uncontractible.

In developing countries or fragmented industries, contract enforcement can be difficult. In situations in which the legal enforcement mechanism is weak, a firm with a track record of sticking to its agreements can use its reputation as a signal of its intentions. In other words, its reputation can be used to generate trust among channel members.

[4] Ideas for this section are taken from V. G. Narayanan and Ananth Raman, "Aligning Incentives for Supply Chain Efficiency," Note 600-110 (Boston: Harvard Business School, April 10, 2000).

[5] See, for example, Michael C. Jensen and Kevin J. Murphy, "CEO Incentives—It's Not How Much You Pay, But How," *Harvard Business Review*, May–June 1990.

Solving Incentive Problems

The solutions that we've seen for these problems fall into three categories: contract-based, information-based, and reputation-based. Let's take each one in turn.

Given the principles we just discussed, incentive problems are overcome often by un hiding (i.e., by making contractible) previously hidden action or information. Very effective ways to unhide action or information rely on information technology or on converting episodic interactions into repeat relationships. Equally important, incentives are also aligned by writing better contracts between principals and agents. We start by discussing a contract-based solution, where incentives were aligned by writing a new and better contract. Following that, we discuss an example where costing and information systems were used to reveal hidden information, and ultimately, we examine a situation where relationships were used to align incentives.

Contract-Based Solutions

Here, a retailer might write a new contract that uses existing metrics to reward the desired behavior. At Bryn Mawr Stereo, a chain of twelve consumer electronics stores in suburban Philadelphia, store managers had incentives for generating sales and controlling shoplifting, or, as it's euphemistically known in the industry, *shrink*.^[6] The chain rewarded its managers by paying them a percentage of their location's sales. (The percentage ranged from 0.2 percent to 5 percent, depending on the level of sales generated.) In addition, it penalized them for shrink, cutting their compensation by the amount of shrink at their stores. A manager who had \$500 in shrink in a particular month would see her pay fall by the same amount. In the mid-1990s, Bryn Mawr was acquired by Tweeter, a similar chain, headquartered in the Boston area. Tweeter chose not to change the name, personnel, or assortment at Bryn Mawr stores, but it changed the store manager incentives dramatically. Unlike at Bryn Mawr, Tweeter paid managers a percentage (up to 20 percent, based on profitability) of "store operating income." Since each dollar of shrink reduced store operating income by a dollar, Tweeter, in effect, cut store managers' pay by a maximum of twenty cents for every dollar of shrink. So the shrink penalty was lower at Tweeter than it had been at Bryn Mawr.

Take a guess at how store manager behavior changed as a consequence of the change in incentives. Before the acquisition, store managers obsessed over shrink, even to the point of suppressing sales. In the words of a Tweeter executive, Bryn Mawr stores exhibited a "sales prevention environment." Managers kept small impulse purchases like batteries and tapes and frequently stolen items like the Sony Walkman locked up. They also paid more attention to receiving and logging shipments than to serving customers. They'd typically leave the retail floor, putting less experienced sales assistants in charge of counseling customers and making sales, so they could go to the back room to receive merchandise. Sometimes, they'd even close their store if an assistant was not available. The atmosphere at the stores, according to the Tweeter executive, was defensive, with Bryn Mawr treating sales-people like clerks, not like what they really were: the sources of its profits.

After the Tweeter acquisition, behavior changed promptly. Managers became more entrepreneurial, focusing on generating sales, not on deterring shoplifting. Figure 5-1 compares monthly sales before and after the acquisition at each Bryn Mawr store. The figure shows sales before the acquisition in the darker bars and sales after the acquisition in the lighter bars. Notice that most stores showed increases in sales, sometimes dramatic ones.

Juxtapose mentally the picture on sales with figure 5-2, which shows the change in shrink before and after the acquisition. The darker bars show shrink before the acquisition, and the lighter bars show shrink after the acquisition. Notice that every store showed substantial increases in shrink, which is measured in negative dollars. (Notice, too, that some stores before the acquisition had more inventory than expected. Thus they had "positive" shrink values. One retail executive even remarked to us tongue in cheek that he would have expected Bryn Mawr store managers to grab small electronic devices (e.g., the Sony Walkman) from a shopper and put them in the store's inventory. A more likely cause of the positive shrink was that erroneous excess inventory shipped from the warehouse was not acknowledged by the store. We controlled statistically for variation in such conditions as the level of inventory and the economic growth in the region. We found that the change in incentives contributed to a 9.94 percent increase in sales and an additional \$8,834 in shrink. After subtracting the additional theft losses, the stores derived an additional profit equivalent to 2.5 percent of sales.

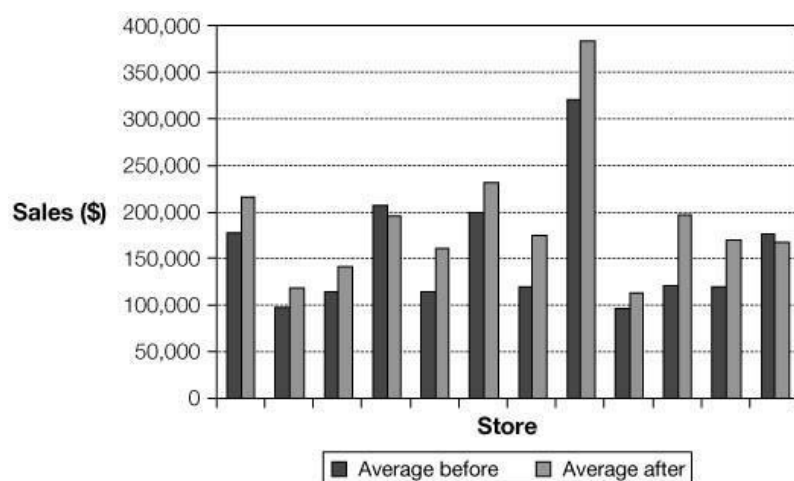


FIGURE 5-1: Average monthly sales at Bryn Mawr stores before and after the acquisition by Tweeter

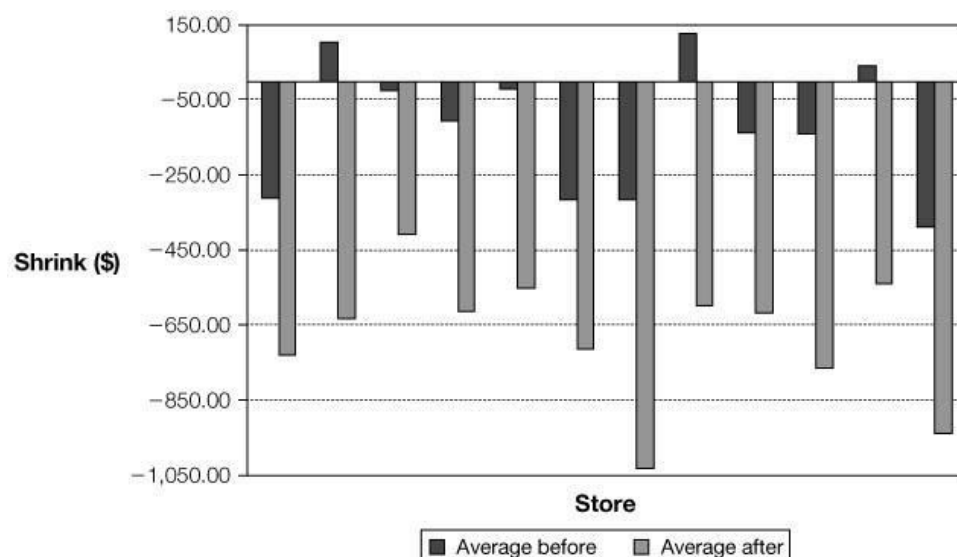


FIGURE 5-2: Average monthly shrink at Bryn Mawr stores before and after the acquisition by Tweeter

The natural experiment offered by the Bryn Mawr–Tweeter transition shows the big impact that a retailer can have on its sales and profits by addressing bad incentives. It also highlights the importance of getting the balance among different components of incentives right. Tweeter achieved the change in performance at Bryn Mawr primarily by changing the relative importance of sales and shrink in store manager compensation. At first glance, you might think that Tweeter should have rewarded managers who controlled shrink and increased sales. But Tweeter’s experience suggests that an employee who has to accomplish conflicting tasks within a limited time will respond to obvious rewards, even if doing so means sacrificing sales and profit.

Tweeter executives told us that they noticed the excessive attention to shrink and insufficient effort to increasing sales even in their first visits to Bryn Mawr’s stores. Oddly, Bryn Mawr’s executives—all of whom were experienced and capable—did not see this opportunity, even though they could’ve just as easily seized it. The change in store manager conduct and the resulting rise in sales occurred within a year of the change in incentives, and Tweeter achieved those results without substantial store manager turnover. All but one of the store managers remained, post acquisition.

Information-Based Solutions

If hidden actions and information are sources of incentive misalignment, then the solution is un hiding them and writing new contracts based on the revelations. Recent advances in information technology have eased both the tracking and the assessment of previously hidden information.

In the early 1990s, for example, consumer goods manufacturers like Campbell Soup and Barilla, a pasta maker, found that orders from distributors fluctuated wildly from week to week. ^[7] These manufacturers typically offered periodic discounts on their products to distributors. Not surprisingly, distributors wanted to “buy forward” during these promotions. On top of this, the manufacturers’ salespeople—who were rewarded for increases in sales to the distributors—encouraged the practice. Barilla and Campbell Soup found that they could reduce demand fluctuation considerably by changing both their discounting practices and the ways in which they evaluated and compensated their sales staffs. Both companies altered promotions so that distributors and salespeople received commissions based not on distributors’ purchases (which encouraged buying forward) but on distributors’ sales. Campbell’s and Barilla eliminated the incentives to buy forward and instead compensated salespeople and distributors based on the amount of product that moved to retailers.

At times, actions in the supply chain aren’t hidden, but the incentive misalignment stems from the unforeseen *consequences* of otherwise sensible actions. To understand this distinction, consider the relationship between Owens and Minor (O&M), a distributor of medical supplies, and the hospitals that it provisioned. ^[8] As in the relationships between most hospitals and their medical supplies distributors, O&M and its customers entered into “cost-plus” contracts. Under these contracts, O&M charged a hospital a price that was a set percentage, usually 7–9 percent, over its cost of purchasing a good. That percentage applied across the board and didn’t vary based on the cost of handling a particular item or on the services demanded by the hospital relating to that item. Distributors like O&M thus wanted to ship small high-value items, such as cardiovascular sutures, that yielded fat margins. Prices for these items were high, and they cost relatively little to handle and ship because of their puny size. A distributor operating at 7 percent margins would have

received \$56 for handling an \$800 box of sutures but only \$2.10 for a \$30 box of diapers even though the latter was more expensive to handle, store, and transport. Needless to say, distributors wanted to supply more sutures than diapers.

But hospitals, which weren't locked into a single supplier, preferred to buy items such as sutures directly from manufacturers. They chose to buy bulky, inexpensive products, such as diapers, from distributors. They also tried to squeeze as many additional services, like expedited deliveries, as possible from their distributors. Distributors, for their part, tried to avoid providing such services for fear of eroding their margins.

These cost-plus contracts resulted in unhappiness all around. Many distributors were hurting financially in the mid-1990s. They faced constant pressure to reduce personnel costs since that was one of the few ways in which they could improve profitability. From 1984 through 1994, O&M managed to cut its staff costs from 12.5 percent to 6.8 percent of sales. But these improvements stalled out, and labor costs started rising again in 1995.

Hospitals weren't happy, either. Distributors didn't offer the services that they wanted. Many of them thus set up costly internal departments to handle logistics functions that would've been better performed by distributors.

Aiming to improve the situation, O&M executives decided to identify their company's cost drivers and break down company profitability by customer. Not surprisingly, the amount of add-on services received by a customer largely determined whether a relationship produced profits. Lots of additional services meant lower profits. Other relevant factors were the numbers of purchase orders per month, lines per purchase order, and deliveries per week, as well as the method of ordering and the inventory carrying cost. As often emerges in this sort of analysis, many customers turned out to be unprofitable.

O&M executives realized that to return their firm to profitability, they needed to alter the adversarial relationship that they'd stumbled into with their customers. They thus developed a concept that they termed *activity-based pricing*. Under it, they developed a menu of services and a specific fee for each service. A hospital that wanted expedited delivery would pay a higher price.

In response to the changes, a few hospitals dropped O&M, but the majority liked the new approach. It let them obtain services that they craved. Within six years of its launch, activity-based pricing accounted for \$1.35 billion of O&M's roughly \$4.2 billion in annual sales.

Trust-or Reputation-Based Solutions

Trust- or reputation-based solutions reduce incentive misalignment by exploiting the fact that information that is hidden in one-time dealings often gets revealed by repeated interactions. Over the course of relationships, companies want to preserve their reputations for good conduct.

Reputation- or trust-based solutions matter mightily in developing countries, where legal contracts are hard to enforce. Think about the apparel industry. Manufacturers in the developing world often worry that customers in the developed world might renege on their orders or seek to reject shipments on frivolous grounds if they see lower-than-predicted demand for a product. Similarly, developed-world firms often fret over the possibility of a developing-world supplier engaging in unethical practices, such as using child labor, or dropping an order previously committed to when offered a better price by another customer.

Companies thus have used reputation- and trust-based solutions in two ways. Some firms, including Sport Obermeyer, a skiwear manufacturer in Aspen, Colorado, have developed long-term relationships with a single supplier. In other cases, intermediaries like Hong Kong-based Li & Fung, which works with many manufacturers and buyers to coordinate their supply chains, track everyone's conduct. ^[9] Li & Fung sees itself as a coordinator of the supply chain; the company typically takes orders from customers (for example, branded manufacturers in the United States) and identifies factories that can produce the required product and suppliers that can provide raw materials at the required price, time, and quality. Li & Fung then monitors everyone in the supply chain—the customer, the factory, and each supplier—to ensure that they perform their assigned tasks at the promised time. In the process of coordinating the supply chain and having repeated interactions with many firms in the supply chain, Li & Fung also aligns incentives by tracking each firm's reputation and rewarding good behavior. A given manufacturer and customer might deal with each other only once, but Li & Fung will do business with each of them repeatedly. The manufacturer and buyer may not worry about the cost to their reputations from burning each other, but they will care about their reputations with Li & Fung.

There are, of course, industries in which businesspeople behave as if they'll never see each other again but, in fact, have repeated interactions. Take the automotive industry. There, companies like Toyota and Honda have earned reputations among suppliers for fair, though tough and demanding behavior, while competitors like Ford and General Motors have built

ones for unreasonableness. An article by Jeffrey Liker of the University of Michigan and Thomas Choi of the University of Arizona quotes executives at suppliers who describe Ford and General Motors as “extremely confrontational” and having “unleashed a reign of terror.”^[10] One of them said, “You can’t trust anyone in [GM and Ford].” And the CEO of an industrial fasteners supplier noted, “[American] automakers have us work on drawings, ask other suppliers to bid on them, and give the job to the lowest bidder. Honda never does that.”

Why do smart executives at the Big Three—some of whom we trained in our classes—fail to recognize that adversarial relationships with suppliers undermine innovation at their firms? And why is this sort of conduct also common at other otherwise well-run companies?

We believe that the answer lies in the failure to recognize the value of reputation in repeated interactions. Accounting systems track measurable costs relating to production and transportation but, by their nature, cannot track the intangible cost of damaging a firm’s reputation for fair play. Thus incentive systems—which must rely on the information tracked in the accounting systems—motivate buyers to behave as if they have a one-time relationship with their suppliers, when in reality they are playing in a repeated game.

^[6]Details of the analysis reported in this section can be found in Nicole DeHoratius and Ananth Raman, “Store Manager Incentive Design and Retail Performance: An Exploratory Investigation,” *Manufacturing & Service Operations Management* 9, no. 4 (2007). *Shrink* refers to inventory reductions usually associated with theft or merchandise lost from the store.

^[7]Zeynep Ton and James L. McKenney, “Campbell Soup Company: A Leader in Continuous Replenishment Innovations,” Case 608-141 (Boston: Harvard Business School, 2008); and Janice H. Hammond, “Barilla SpA (A-D),” Case 694-046 (Boston: Harvard Business School, 2007).

^[8]V. G. Narayanan and Lisa Brem, “Owens and Minor, Inc. (A),” Case 100-055 (Boston: Harvard Business School, 2008).

^[9]Victor Fung and Joan Magretta, “Fast, Global, and Entrepreneurial: Supply Chain Management, Hong Kong Style: An Interview with Victor Fung,” *Harvard Business Review*, May 1998.

^[10]See Jeffrey Liker and Thomas Choi, “Building Deep Supplier Relations,” *Harvard Business Review*, December 2004.

Conclusion—Some Guiding Principles

Equations, algorithms, and accounting systems don’t solve incentive problems. You need insight into people’s roles and motivations, whether they are sales associates or CEOs. Managers who tackle these problems have to understand multiple functional areas, including marketing, manufacturing, logistics, and finance.

Accept the Premise That Misaligned Incentives Can Compromise Supply Chain Performance

Alcoholics Anonymous famously counsels people that the first step in solving a drinking problem is acknowledging that you have one. So it is, too, with misaligned incentives in the supply chain. Managers are at times surprised to hear that their supply chains are underperforming because of bad incentives.

But once they accept that premise, they quickly see the sources of the problem within their supply chains. In fact, they usually start jumping to potential solutions right away. But we usually caution managers to hold off on implementing a solution until they have identified the root cause of the misalignment in the following step.

Trace Goal Incongruence to Hidden Action or Hidden Information

Identifying the root of the misalignment enables a discussion of whether the action or information can be unhidden or whether the agent making the decision can be induced to act in the principal’s interest through appropriate incentives even if the action or information remains hidden.

In our work with companies, we ask managers to identify decisions that would have turned out differently if the decision maker had the whole supply chain’s interests, instead of just his or her own, in mind.

We also ask them to identify the behavior that they would like to induce among the agents. Sometimes, an executive team doesn’t have a shared understanding of the desired conduct. In these situations, we ask them to zero in on that first. This is a vital step—how can you design incentives if you are unclear on the behavior that you would like to induce with the

incentives?

We then ask why these decision makers acted as they did. Some folks blame improper training. Others point to inadequate tools for decision support. But in many cases, people agree that the problem can be traced to mismatched goals—the theme of this chapter.

Overcoming Goal Incongruence

To line up everyone's goals, you employ the contract-based, information-based, or trust- and reputation-based solutions that we explored earlier in this chapter.

When we began consulting on these kinds of problems, we used to suggest that companies first try contract-based solutions because they're often easy to implement. But the longer we do this, the more convinced we are that information-based and trust-based solutions often work better. Advances in computer technology have eased the implementation headaches and reduced the cost of information-based solutions. These days, thanks to the Internet and mobile telephony, you can quite easily make sales data available throughout the supply chain and thus can ensure that everyone is operating with the same goals and metrics in mind.

Sometimes, managers find trust-based solutions more appealing because they feel less awkward talking with supply chain partners about working more cooperatively than telling them that they intend to monitor them more closely.

Two questions often arise when managers try to implement these solutions. One is which firm in the supply chain should initiate the move toward better goal alignment. Clearly, a dominant firm such as Wal-Mart or Toyota can force others to follow its lead. But exceptions exist. In the late 1980s, Kanthal, a midsize Swedish supplier of heating wires, said that it would charge a penalty every time General Electric changed specifications without warning. GE agreed to the change, and incentives fell into alignment as a result. ^[11]

The second question is how to nudge a supply chain partner to restructure its internal incentives. A few years ago, one of our former students launched a start-up in the Boston area that placed kiosks, for dispensing its products, in retail outlets not owned by the start-up. Our student and his staff understood the importance of motivating retailers to place the kiosks and offered them suitable incentives for getting them to do so. A retail chain, for example, might be offered a contracted amount for each kiosk placed in a store. Unfortunately, store managers, not their bosses at headquarters, decided *whereexactly* to put the kiosks within their locations. Our former student had failed to specify kiosk location in the contract, and store managers did not derive additional income from placing the kiosk in a more attractive spot. The start-up, of course, wanted them in high-traffic areas, but often the managers—who had no motivation to provide prime locations—located them in low-traffic areas. “We found our kiosks near the men’s room,” our student lamented. Unfortunately, it was too late by the time he recognized the mistake. The start-up would have liked to rewrite its contract with retailers to include an explicit reward for store managers but ran out of cash and closed before it could do so.

As our student learned, rocket science retailing won't work without appropriate incentives for everyone involved in the manufacture, distribution, and sale of a good. Cutting-edge decision tools and technologies depend on people for their implementation. And people are stubborn and myopic. They pick the path that's easiest and most profitable for them—not out of spite but simply because we all have a blinkered view of the world. Given the opportunity, they'll try to advance their self-interest. A rocket science retailer thus must ensure that their interests line up with the greater good of the supply chain. Well-designed incentives are a necessary condition for rocket science retailing to work.

^[11]V. G. Narayanan and Ananth Raman, “Aligning Incentives in Supply Chains,” *Harvard Business Review*, November 2004.