

Strategic Cost Management¹

OVERVIEW

In the traditional organizational structure, the marketing function, the engineering/design function, and the manufacturing function are quasi-independent groups. In some cases, products are designed without much information on market demand or much understanding of the demands on manufacturing resources. Similarly, goods are often marketed with a view of making the sale that disregards the ability of manufacturing to meet promised delivery dates or design specification alterations. Finally, manufacturing scheduling and processes are often predicated on low cost or contribution margin throughput, not on providing customer satisfaction. In recent years, as manufacturers have learned to become "flatter" and more integrated across functional lines, engineering, manufacturing, and marketing have begun to work more closely together. Surprisingly enough, one of the ways in which this closer cooperation has manifested itself is in the area of cost planning.

In earlier times, mass production of identical products was the norm for much of manufacturing, and market analyses were focused on general, wide-appeal product characteristics. Cost was something to be controlled rather than managed. This was done in two primary ways. First and foremost, costs were kept low by keeping production volume high. That is, since it was normal to have very high fixed costs due to such things as a lengthy, complicated design process and expensive single-purpose equipment and processes, costs per unit would always be lower if more units were made with those fixed costs. Second, cost was controlled by making small changes in the efficiency of operations from year to year. Cost control signals were provided by budget variances, and managers concentrated on issues of productivity. Whatever the company did that could be described as cost management was largely a function of cost reduction over time in the manufacturing phase of a product's life. Those product

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lives tended to be rather long, allowing companies a "learning curve" for improvement in both the design and manufacture of the item.

Today, product lives tend to be much shorter and the variety of products and models is quite large. The general, single-product market (like Model T Fords) is a thing of the past. The dimension of time has become a critical attribute of competitive advantage. The first product of its kind with desirable features has a distinct market advantage, but only if the product has sufficient quality, good delivery, good responsiveness to customer needs, and, of course, the right price.

This has changed the nature of cost management. Rather than simply lowering costs, organizations are reawakening to the concept of spending money to make money. This general concept has been called strategic cost management. This note presents an overview of the principles of strategic cost management. It also examines two general cost-related concepts that support strategic cost management. Both have implications for how cost planning is done. The first concept is target costing. The basic idea here is that a manufacturer has to start with what the market wants and design and produce a product with the right characteristics for the market, including a cost that will yield an adequate profit at the price that will capture the target market-share.

The Concept of Strategic Cost Management

Managers are often quite concerned about costs, but the proper time for this concern is *before* the costs have been incurred, not after. Managers want cost data to help them manage costs. Of course, the temptation is for managers to use the data that comes out of the cost accounting system for this purpose. However, since unit costs from the cost accounting system are seldom appropriate views of cost from the perspective of taking actions, this use of cost accounting data must be applied with caution.

In the not too distant past, manufacturing companies operated in an environment where the single most powerful technique managers had for managing costs was increasing productivity by increasing production volume. For the vast majority of managers today, simply increasing production volume is

the route to disaster! What has changed? In the past, there were few really successful mass producers. Their market opportunities were great. If they could produce goods at substantially lower average costs, they could lower their prices. If they could lower their prices, they could increase their sales. Today, nearly every manufacturer understands how to mass produce goods. Thus, no one can effectively lower prices without frightening competitors into doing the same. Extra production means extra stuff you cannot sell.

Smart managers have begun to focus in on other issues in order to manage costs. Now the motto is "spend money to make money" -- that is, make sure that every dollar spent is a dollar that adds value to what the customer perceives. If it does not add value, do not spend it! In this note, we examine some of the latest thinking that companies are using to wisely manage costs.

Strategic Spending

Those organizations that recognize the potential benefits of non-volume management of costs are likely to move on to an evaluation of spending from the perspective of improving strategic competence. Recent work in the area of investment evaluation has come to recommend specifically that companies employ approaches or methodologies that emphasize the strategic value of investments -- how does the spending make the company a stronger competitor? Several methodologies incorporating strategic benefits into the investment decision process have been proposed in recent years. Regardless of the specific methodology, however, the common theme they share is an assessment of the relevance of the investment to implement the organization's strategy. This is the essence of Strategic Cost Management (SCM). The notion of strategic cost management specifically addresses the relationship between strategy and cost information. Strategic cost management involves a combination of three analytical streams: value chain analysis, strategic positioning analysis, and cost driver analysis. Value chain analysis and strategic positioning analysis, broadly speaking; determine the appropriate places and reasons to spend money in order to make money. Thus, in a very real sense, value chain analysis and

strategic positioning analysis direct management's attention to specific kinds of cost data in specific aspects of the organization's work. Meanwhile, cost driver analysis identifies the consumption of organizational resources by the particular actions that the organization employs to do its work. It helps managers determine the efficient ways to spend money in the places that add value.

Strategic Positioning

In what has become known as the "global economy," new product ideas are quickly copied, efficient processes are soon duplicated, low prices are often matched. The traditional dimensions of competition (innovation, price, product features, service) still yield a competitive advantage, but only to the few firms that can carry them off extremely well. Thus, for example, INTEL, the computer chip maker, has been successful by being able to be an innovator. It gets new, more powerful, faster computer chips out into the market consistently faster than its competition. As long as it is better than its rivals on innovation, it is likely to be successful. Thus, INTEL puts lots of energy and money into making sure that it continues to be a top innovator. That is its strategic position -- having more innovation strength than its competitors. For INTEL, strategic cost management means keeping its spending focused on being the best innovator.

Value Chain Analysis

Making new and different products does not guarantee success. INTEL has found this out in the last few years. You have to make new things that people want! For a business, knowing what people want requires an intimate knowledge of the value "system" -- the various value chains -- that the company participates in. A value chain is the series of activities and processes that convert completely raw materials into final consumable goods and services. In some sense, a value chain starts with a hole in the ground at one end (an oil well, an iron mine, a farm) and ends with a happy consumer at the other.

Value chain analysis consists of trying to find what kind of spending can be done at each point in the value chain that makes the output most desirable at later points in the value chain. That's where to spend money to make the most

money. The firm wants to occupy that point in the value chain where there is the largest opportunity to make money. If that point is outside of the firm's scope, then it should consider occupying that point and spending money there. It is not a very new or complex idea. Strategic cost management is the process of finding out how to get the most "bang for the buck."

A deep investigation of strategic positioning and value chain analysis is beyond the scope of this note. However, the concepts are important. The following example should illustrate something of how the two ideas work in cost management.

An organization we are familiar with has been quite successful in finding ways to add value to a product in order to escape the price trap of commodity markets. One of the products they make is used as a plastic packaging material. This producer sold the material to a company that produced plastic bags which were sold, in turn, to a medical supplies producer. Ultimately, the bags were used to package supplies of expensive medical fluids, including blood. The plastics manufacturer was strategically positioned as a product differentiator. That is, the company was determined to put its resources into making its products superior to competitors' on highly valued critical dimensions. By developing different process parameters for the material, they were able to reduce the degree to which chemicals from the packaging material migrated into the package contents. This yielded a final product (i.e., the bag's contents) of improved purity and a longer "shelf life." Since blood and drugs must stay pure, and since that purity is very valuable, this new packaging material made the final packaged product more valuable to the consumers (hospitals, etc.). Thus, for a few extra cents per pound, this manufacturer was able to raise the value of its customer's product significantly by reducing operating and distribution costs for customers two and three links down the value chain. At a time when the commodity product was selling at \$.33 per pound, their material sold for \$.77!

This analysis and the resulting actions represent a clear case of strategic cost management -- spending money to make money. The dimensions of added downstream value under the company's strategy were determined and exploited.

Cost Driver Analysis

Recall that just about all of the difficulties in cost accounting are related to figuring out how much overhead goes with each of the various products a company makes. In choosing an overhead allocation approach, accounting systems designers are usually concerned with two major criteria: finding something that is easy to measure and relatively predictable and finding something that is associated with the consumption of overhead resources. This second criterion is essentially the requirement that overhead should be allocated on the basis of something that causes it.

In strategic cost management, we are still interested in finding the variables in the business that are causes of resource consumption. However, the game is a bit different. In cost accounting, we are restricted to focusing on variables that can be measured fairly easily and with some degree of reliability. Remember, these allocation bases are going to be used to calculate verifiable, auditable, recorded costs of inventory and COGS. When we are *managing* costs, however, all we care about is gaining enough knowledge to allow us to make good decisions and to let us take appropriate actions.

Most manufacturing and service organizations today are quite complex in the way resources are consumed. That is to say, they have complicated **cost structures**. As a result, most cost accounting systems cannot hope to capture all of the relevant causes of costs. This implies that, in the final analysis, the costs they produce are "fair," but incorrect. In strategic cost management, we do not have to worry about fairness. We are more interested in being approximately right than in being precise but wrong!

In cost driver analysis, the goal is to understand how the way the business is set up creates a cost structure. The cost structure is the way costs rise and fall

over time. Furthermore, a company can do an efficient job under its costs structure or an inefficient job.

Certainly, for a manufacturing firm, much of the variation in total costs is related to production volume. The more you make, the more you have to spend. That is why traditional cost accounting systems often use measures like direct labor hours (DLH) to allocate overhead. DLH goes up when more goods are produced and goes down when less goods are produced. Beyond production volume, however, there are other variables that affect total costs in the short term. These things might include how capable and dedicated the work force is, how error-free production is, how well the plant is laid out and how efficiently parts and materials are handled, how integrated the value chain linkages are (including with suppliers and customers), and how well the product is designed to be easy to make. In essence, these things all have to do with efficiency in the use of material, capital, and labor. Such cost drivers are called **executional cost drivers**.

In strategic cost management, there is a major effort to make sure all of the executional cost drivers are running at their best. Thus, strategic cost management analysis might suggest that a company put additional money into product design, plant layout analysis and change, quality management training, and so on.

No matter how efficient a company is in executing its cost structure, if the cost structure itself is a poor one for the company's purpose, the final result will be poor. You may be the fastest bicyclist in the world, but any old, fat guy in an Buick can go faster. Thus, strategic cost management also requires paying attention to long-term cost drivers -- the design of the cost structure, itself. Traditionally, manufacturers have put a good deal of effort into decisions related to the scale of their investments in plants, marketing, and product development. They have also been relatively careful in their thinking about how many links they want to occupy in the value chain or how many different market channels they want to participate in. These two kinds of decisions involve the **structural cost drivers** of scale and scope.

There are other structural cost drivers that have become more recognized in recent years. One of them is experience. The more a company has done something, the more it "knows" how to do it. Another structural cost driver is technology: the bicycle versus the Buick. A manufacturer will do best when the technology it uses is an appropriate match to its strategic position and its value chain location. Finally, a manufacturer's cost structure is greatly affected by how many different kinds of things it tries to do -- its complexity. This includes the variety of products and services it offers, the variety of markets and consumers it tries to satisfy, and the variety of technologies it tries to master.

The Strategic Cost Management Method

Strategic cost management is a very different pursuit from cost accounting. Cost accounting is an *ex post* attempt to match resource consumption with goods produced. Cost management is a *before-the-fact* attempt to make sure that resources are consumed wisely in the pursuit of profit. That is, it is an attempt to make sure that money is only spent to make more money.

While cost accounting provides data about costs *after* production is complete or services have been rendered, strategic cost management applies throughout the entire cycle of management activity. Thus, cost management figures into making strategies, communicating strategies, implementing strategies, and monitoring both the execution of the strategies and the success resulting from those strategies.

Strategic cost management is *not* simply about keeping costs as low as possible. It is about spending money wisely. In turn spending wisely is the result of answering a series of important questions about an organization or project:

1. What is the organization's strategic advantage?
2. Where will the advantage lie in the future? Is the organization's strategic position shifting?
3. What stages in the value chain are occupied by the organization? At which points do values increase most in relationship to costs?

4. What are the value drivers at these high return value creation points?
5. How does the firm's cost drivers align with the value drivers? Which cost driver effects need to be reduced because they do not add sufficient value? Which need to be enhanced? Which need to be made more efficient in order to begin creating more value?
6. What structural changes and what executional changes are necessary?

When an organization can answer these questions satisfactorily, it can be said to practice strategic cost management.

The Concept of Target Costing

When a manufacturer knows that the profit-making ability of a product is going to be limited to only a few years, there is a great motivation for that manufacturer to be able to produce that product at a "mature cost" on its very first run. That is, there is really no time to learn to make the product economically by trial and error. It must be done right from the start. Target costing is a way of identifying what that mature cost needs to be if the manufacturer is to realize sufficient profit on the product, given that the desired level of market share is defined by a specific price and a specific set of product attributes.

A **target cost** is simply the cost left over after a desired margin is subtracted from the planned market price. Therefore, it follows from an analysis stream including market research and profit planning. The target cost is then an input into what in practice is a set of iterative cycles of design engineering, cost estimating, and analyses of cost-avoiding opportunities. In general, all aspects of the production process, broadly defined, are fair game for cost avoidance. For example, the pursuit of target cost may even lead to a new design for the purchasing process. A good example is the new Littoral ship (LCS) program by Lockheed Martin. The US Navy defined the price they wanted given the modest features and Lockheed Martin then needed to develop the manufacturing

process to insure that costs were in line with a profit margin necessary to justify the investment needed in the program.

Before we look at how target costing can be done, it is appropriate to note that target costing is not a replacement for cost reduction once production begins. One Japanese researcher claims that most assembly manufacturers using target costing in Japan believe that costs can still be reduced about five percent after production starts via continuous improvement activities. This aspect of cost reduction, however, is more properly discussed under the heading of life-cycle costs.

An important underlying philosophy in target costing is that overall costs of a product during its life can be reduced by moving expenditures up from the production phase to the planning and development phase. Target costing would not make sense if it was not economical to try to cut costs overall by spending a little more up front.

Target costing itself is also probably best regarded as a philosophy or perhaps a way of managing rather than a methodology. Many firms which can be said to use target costing have their own unique set of procedures. However, there are some strong themes that run through these various approaches.

First, the manufacturers define a product as a collection of features, functions, and attributes and determine a price at which that product can be sold at a desired volume. They begin with concepts for products that meet customers needs. Then they define a level of market share that they desire. Market analysis helps determine a price that will yield the market share, given the various attributes of the product. Often, strategic considerations will help determine the mix of attributes that the manufacturer will seek in the product.

Second, the company establishes a target level of return on each product sold. Often, target levels of return on sales are used, but other approaches can be used as well.

Third, a target cost is computed by subtracting the desired target profit from the expected total product revenues (i.e., target price times target volume).

This **target cost** represents the acceptable estimated cost of manufacture for the product. Now the issue becomes, can the thing be built for that cost?

Obviously, the fourth step is off to the drawing boards. If the product can be built using existing parts, existing technology, and existing processes, then the first design uses these inputs and estimating a cost is fairly straightforward. Often, however, not all of the necessary inputs are currently "on the shelf." Even more likely, the estimated cost based on existing capabilities is well above the target. Thus begins a cycle of examining the design for opportunities to produce the same functional results at lower costs, attempting to design parts or processes in those areas of opportunity, and re-estimating the cost of the new design.

This latter process is often called **value engineering**, and it carries with it things learned from Just-In-Time production, Total Quality Management, and other advanced management techniques. Do not let the term engineering here fool you, however. Although it relies on a large knowledge base, it is still more of an art than a science. As appropriate, value engineering will incorporate scientific analyses, review of emergent technologies, physical experimentation, and cross-comparisons with other manufacturing approaches.

The iterative process continues until the product group is satisfied that either the target cost can be met or that additional cycles of analysis and design would yield cost savings which would be too small to justify the cost of the analysis, or more importantly, the time it would consume to do them. Once the final cost estimate is accepted, the decision to go or not may officially take place. However, unofficial assessments have been taking place all along. If production begins, the final estimate is often tightened a bit and used as a target for cost reduction in the early phases of manufacture. In a sense, the cost reduction process begins anew, but this time with a product designed to be built for less.

The Scope of Target Costs and Target Costing

Generally, target costing involves, to some degree, all members of a product team. The team is interdisciplinary, with people from such functional

areas as marketing, design engineering, manufacturing engineering, incoming and outgoing logistics, manufacturing, accounting, and others. All of the costs related to the product in each of their home departments/functions are considered to be fair game in the target cost analysis. That is, target cost analysis would include costs related to distribution channels or cost savings in raw materials movement to be attained through alterations of plant layout.

One way in which sub-targets can be set or estimated is worth mentioning at this point. If the product is, for example, an gasoline-powered outboard engine for boating, customers are interested in the amount of thrust the engine can develop. Thrust is dependent on both the horsepower of the motor and the way that horsepower is transmitted into forward motion. The product team may decide that propeller design is an area of product design where overall costs can be lowered. Propeller thrust may be related to area and pitch. If this line of reasoning applies, the following analysis could be done.

First, a graph can be prepared relating thrust to pitch x area measurements for existing propellers. This data would include observations for other manufacturers. Let us assume that **Figure 1** is such a chart. The line on the chart represents the "efficient frontier," the points where the most thrust comes from the various pitch x area combinations. Point A on that line represents the point on the efficient frontier where the desired level of thrust can be found. It also defines, by extension, the pitch x area measurement that would be desirable for the product.

Figure 2 represents the relationship between pitch x area measurements and cost of manufacture for known propellers. Again, the line represents the efficient cost frontier, the lowest known costs for the different pitch x area combinations. Mapping the point A from Figure 1 onto this line yields a good estimate of the lowest cost the company can expect for a practical, high-efficiency design for this one component of the outboard engine. This kind of process might be carried out for all major components of the product.

Figure 1
Propeller Thrust based on PxA

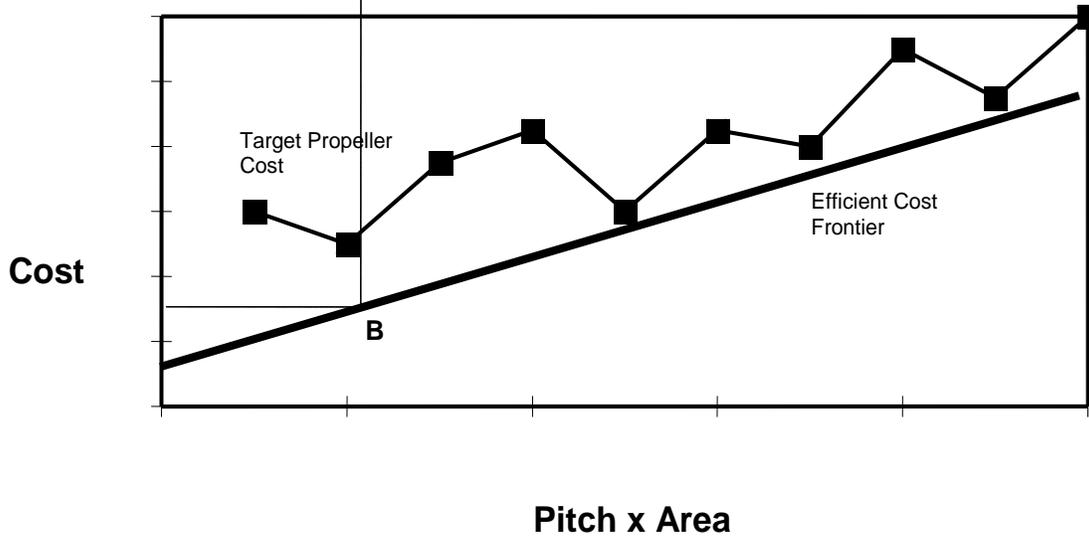
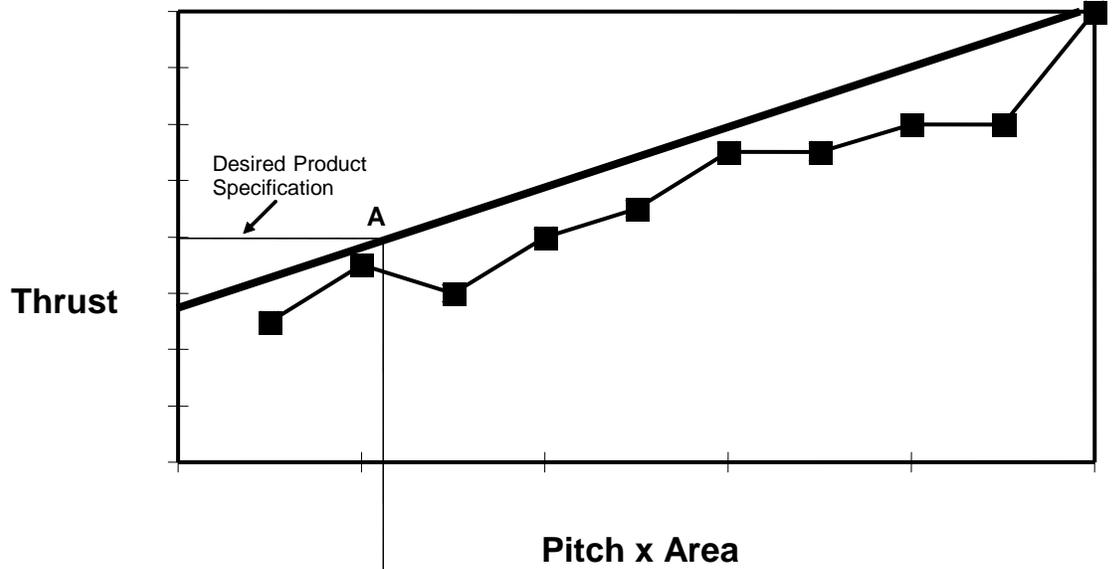


Figure 2
Propeller cost based on PxA

It is important to recognize that target costing is a way of viewing the management of costs through careful planning as opposed to trial and error. Although there are emerging patterns of practice within target costing, it is not a well specified set of procedures and rules. At least it is not so yet. Both experience and consulting firms will probably lead to a growing codification of practice in the future.

Life Cycle Costs

There is a strong belief that as much as 90% of a product's costs *during its entire market life* are determined or committed during the development of the product. This market life, called the **product life cycle**, includes all of the time from the point where the product is proposed until the point where its sales are discontinued. **Life cycle costs** are the total costs associated with designing, making, and selling the product during its life cycle.

In a world of time-based competition and shorter life cycles, it has become imperative for manufacturers to be able to make decisions about products that are globally appropriate, not just cost-saving for a single department at a particular time. Also, it is important that the changing nature of the product's market be understood before such global decisions can be met.

Some companies employ a notion they call break-even time to describe one aspect of life cycle costs. Break-even time is how many months (days, etc.) it is from conception of the product until revenues equal costs to date. This measure encourages getting products out fast, but only in a way that they can command high prices. That is, does putting extra cost into the design phase to get the right product out yield a price advantage in the market place?

If such an advantage does exist, then it may be worthwhile to design products with several generations of models built in, each generation having a different target cost. Let us say that we are developing a microchip that does video graphics processing. It represents a leap in technology. Since personal computers rely more and more on highly graphical software, it has a ready market. However, it is clear that if we get our product into the market soon enough to coincide with the next generation of Windows, we can capture a very

large market share of new personal computers. Also, with no competition, we can charge premium prices. Later, however, clones will come along. At that point we need to protect our market share by drastically and continuously cutting our prices.

Under this scenario, we see that it is worth it to produce the product at a higher cost at first if that means a substantial time lead on the competition. Almost immediately, however, the product needs to be redesigned to be built more efficiently, probably through several generations. Thus, the length of the product's life depends on the ability to compete on different dimensions. These dimensions may imply different costs.

Three-Letter Acronyms

The organization has to be able to provide the "package" of product or service attributes that the market demands. Markets react to more than simple price. In order to strengthen their ability to respond to demand, modern manufacturers and service providers alike have come to adopt a wide range of operational "philosophies." These include JIT (just-in-time inventory management), TQM (total quality management), SPC (statistical process control), MRP (material requirements planning), MRP2 (manufacturing resources planning), CIM (computer-integrated manufacturing), and TBC (time-based competition). Each of these "three-letter cures" has been used as a source of competitive advantage by a long list of companies. Each has also become a quagmire of excessive costs and reduced performance in other companies.

Many of these management philosophies and their accompanying methodologies make claims about increased strategic focus and increased operating efficiency. It is beyond the scope of this course to delve very far into any of these claims, but you should be aware that the cost advantages of such broad management approaches only manifest themselves when the associated costs are planned. That is, part of using JIT, for example, is taking advantage of the possibilities for cost reduction that are associated with it. If we do not lay off, redeploy, or retrain the workers whose job it was to track raw materials and

customer jobs under the old system, we will not gain all of the potential cost savings which JIT can bring us.

Conclusion

The organization has to be able to provide the "package" of product or service attributes that the market demands. Markets react to more than simple price. In order to strengthen their ability to respond to demand, modern manufacturers and service providers alike have come to adopt a wide range of strategies.

You should be aware that the cost advantages of such broad management approaches only manifest themselves when the associated costs are planned. That is, a critical part of strategy deployment is taking advantage of the possibilities for cost reduction that are associated with that strategy. If we do not lay off, redeploy, or retrain the workers whose job it was to track raw materials and customer jobs under the old system, we will not gain all of the potential cost savings.

Effective cost planning and cost management critically depend on the idea "spend money to make money." In this note, we have focused on the aspect of that equation where the company knows of specific kinds of product/service attributes that customers want -- the "make money" part. The planning emphasis here is on how to spend money wisely to create those product/service attributes.