



# Outsourcing and climbing a value chain

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.....A *value chain* is a core concept of manufacturing economics. Yet, business reporters often misuse the concept when discussing global outsourcing in electronic equipment manufacturing.

This confusion is, fortunately, correctable with one big insight: There are two distinct strategies for improving a firm's value chain. Once these strategies are clarified, it exposes the problems with today's policy debate about outsourcing.

## What is a value chain?

We begin with some key terminology: *value chain*, *supply chain*, *value added*, *gross margin*, and *climbing a value chain*. Understanding these terms is the fun part.

A *supply chain* describes the flow of intermediate parts on the way to assembling a final product—that is, all the steps from raw materials to the final goods. In contrast, a *value chain* puts a dollar value on each step in a supply chain. It might sound like a small difference, but it is huge for some strategic business issues, such as learning which plants have valuable operations.

In practice, when a smart accountant measures the value chain, he or she calculates *value added*—the difference between the market value of the inputs and the market value of the final goods after the plant ships them.

For example, a standard microprocessor plant will buy silicon ingots, chemicals, equipment, and labor services. Later, thousands of chips exit the plant for sale. The

value added of the plant is the difference in market value between the final products and the properly proportioned cost of materials, labor, chemicals, and capital services needed to produce that final output.

To be sure, value added is not easy to measure at a fine level of detail. The same example illustrates why. Integrated circuit manufacturing involves hundreds of steps, leaving silicon disks in partial states of etching. There is no market value for such intermediate goods. Fortunately, for most strategic issues these ambiguities usually do not get in the way.

Don't mistake value added with *gross margin*, which accountants show Wall Street analysts. A gross margin is supposed to be the difference between revenue and variable costs, leaving out costs associated with fixed assets, structures, and even some capital expenditures (depending on how it is calculated).

Conceptually speaking, value added is more useful than gross margin. Two plants can have the same gross margin, but the one with the lower capital expense has a higher value added. Which would you rather have in your firm?

Still, gross margins are often easier to attain. They do not differ with a value added calculation if they are calculated honestly—that is a big *if*—and are adjusted for fixed expenses. Then, both calculations will point in the same direction.

Firms aspire to increase their plants' value added, which is often called *climbing a value chain*. There are two strategies

for making such a climb. In each case, it is harder to do than it sounds.

## Process climbing

One strategy for climbing a value chain is familiar to most participants in the engineering services market. It involves taking control of more processes before and during the supply chain.

Broadly speaking, this is the difference between *contract manufacturing* (CM), *contract design and manufacturing* (CDM), and *original design and manufacturing* (ODM)—one way to climb the value chain is to move from CM to CDM to ODM. While there are many shades of gray between these, to illustrate the point let me starkly state the difference.

Firms in the CM business specialize in assembly. They receive the design from the client and take instructions about which components to use. The CM firm focuses on putting together the product efficiently. Firms in CDM business do the same things as firms in the CM business, plus they can help the client design their supply chain, assisting them with parts procurement and other engineering logistics. Firms in the ODM business go even further. They initiate designs, do the CDM, organize all aspects of supply, logistics, and so on. In this case, the client just brands the end product and distributes it.

For example, three large firms in these markets, Flextronics, Selectron, and Sanmina, began their existence doing CM services. Today, they all do plenty of CDM

services too. They also aspire to be in the ODM business in specific product areas. Their recent expansion across services is impressive because it is a high-risk business with little margin for error.

By the way, there is no mystery about why clients hire them. These firms are inexpensive, and they have a history of meeting their contractual obligations. They also are successful. In 2004, Flextronics pulled in \$16 billion with 92,000 employees worldwide, while Selectron pulled in \$11 billion with 42,000 employees. Samnina made \$12.2 billion with 35,500 employees. I could easily list another dozen firms who do this at a mildly smaller scale. Altogether, this business is huge.

### Product position climbing

There is another strategy for climbing a value chain, one that has to do with *altering a product line*.

Most new firms cannot unveil an entire product line instantaneously. As a result, many follow a well-known strategy for growth: start low and broaden later. That is, they may enter a market with the low-cost commodity product, compete on price, develop a brand reputation, and learn about distribution channels. Over time, they spread the product line into other product segments (or even other products) where a higher value added resides.

Historical events in the automobile market illustrate this notion. When Toyota and Honda first started exporting abroad in the 1960s, they started at the low end. They entered with a low-priced product in the non-luxury segment for small cars. As they developed a distribution network, they started producing higher quality autos with higher prices aimed at a wealthier clientele—sedans, station wagons, and eventually SUVs. Both of them even started new brands—Lexus and Acura—to give the luxury products a different status in the 1980s.

Now and again a firm pulls off a similar sort of product repositioning in consumer electronics. Sony, which started business in transistor radios and recording devices, was a pioneer at this and eventually found its way into a broad range of frontier con-

sumer electronics decades ago. In that era, Sony was followed closely by Hitachi, Toshiba, and many other Japanese firms. Along with the entry of the auto companies, this period was popularly known as the Japanese invasion.

Recently, many of the new firms have come from other countries. For example, both Samsung and Daewoo made it all the way from manufacturing low-end commodity electronics products to offering many products in many segments, high and low.

Broadly speaking, change in product positioning involves a large number of business decisions, such as smart reuse of assets, careful planning of rollouts, brand development, channel refinement, and marketing deals at retail outlets. This is tough to do well. The process is vulnerable to consumer fickleness and other related risks associated with volatile demand. To be sure, it is not an easy strategy to pull off and a lot of firms fail at it, especially in the consumer-oriented electronics business.

### Two strategies in balance

Sometimes climbing with one strategy determines what a firm does with the other. For example, a firm that is trying to climb by repositioning products can employ CDM services to their advantage. When the MP3 craze began developing half dozen years ago, many non-branded firms began offering MP3 players using CDM firms for part or all of their product line. They rebranded the final product and started distributing. They were trying to develop brand recognition and planned to expand later.

Unfortunately for most of these new firms, Apple did them one better. Apple also sourced most of its iPod hardware from firms offering CM services after it designed the product itself, using some frontier components. Then Apple arranged for iTunes. As a result, Apple positioned the iPod in a place that most of the other new MP3 firms could not imitate. Sometimes there can be tension between the two strategies for climbing. For example, most well established (and branded) electronics firms today contract for CDM services in

the “commodity” low end of electronics and undifferentiated sub-assembly, where the pricing pressure is severe. Yet, that is not the whole story. On the other side of these transactions are firms like Flextronics, Selectron, and Samnina.

Flextronics would like to be in ODM markets where the value added is higher, but it has had difficulty breaking into ODM services. Why? In brief, just because Flextronics knows about manufacturing does not mean its managers know much about what consumers want in, say, a new design for a cell phone design or a laser printer. Moreover, firms with large marketing departments who do know something about consumer buying habits—such as Sony, Nokia, Motorola, Ericsson, or Hewlett Packard—resist rebranding a high end design from Flextronics because the branded firms have their greatest value added in the luxury end of their product line.

It is a fascinating tension. The very firms who are resisting Flextronics’ initiatives in the ODM market are customers for Flextronics’ CDM services.

In other words, branded companies use the CDM firms for a variety of services because competitive pressures propel it. Yet, none of the branded firms wants to go too far with this type of sourcing because it potentially nurtures the migration of tomorrow’s high value added activity to today’s manufacturer of the low-value added product.

### Political realities

Up to a point, most consumers have a stake in watching other firms succeed in climbing the value chain. In the last decade such climbing made cell phone handsets cheaper and better. Same goes for laser printers, VCRs, televisions, radios, pagers, notebooks, routers, switches, storage devices, PDAs, medical scanners, and more electronics products than I have space to list.

But certain political realities must be considered too. Most firms that offer CDM services locate a lot of their activity in East Asia, which is a source of political soreness. Politicians like to complain about losing jobs to global markets and doing so

plays well in Peoria and anywhere else where manufacturing jobs were once abundant.

Yet, those complaints are echoes of the Japanese invasion, an era in which firms climbed through product repositioning. Today, we are in an era of climbing through processes. Most of these assembly jobs pay lousy wages. We have the wrong language for the policy concern of the present.

I think the question is still open. At what point does climbing become too much of a good thing?

I am not sure myself, and I would like to know. Wouldn't you? We all have nothing to lose but our worrisome value-chains.

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