HP cuts risk with portfolio approach

Using this system, Hewlett-Packard slashed electricity costs and will now apply it to memory products.

BY COREY BILLINGTON

Risk management: The art of reducing uncertainty where possible and increasing the number of options for dealing with surprises that can't be forestalled by other means. During the late 1980s and all through the 90s, manufacturers such as HP were focusing major attention on reducing risk throughout their business, starting with the aspects of their business that were most closely under their control: their own operations. In the electronics business, demand variability is often coupled with other forms of uncertainty such as demand distortion, poor visibility, and steep devaluation curves.

By the later part of the 90s, HP had pretty much gathered all the low-hanging fruits of supply chain improvement—by improving the processes that were under their control—and began to look at what to do with uncertainties that couldn't be directly reduced or controlled. Among these factors were procurement-related uncertainties such as price fluctuations, component availability, and demand uncertainty.

Rather than attempt to address these procurement issues through some sort of simple process optimization, HP's procurement groups used the same strategy used by financial investors, namely, to use a "portfolio" approach that allowed them to diversify and spread the risk over a number of options.

In fact, HP had already used a similar approach to broaden its labor alternatives. Throughout the 90s, HP had transitioned from an FTE-only labor force to embrace a mix of FTEs, part-time contractors, consultants, and temps. By using a diversified mix of labor resources, HP increased its flexibility to match supply (labor) with demand, and reduced labor costs by 13%.

In this case, HP developed a new contracting and procurement process to support a portfolio approach that emphasized diversification of sources for parts. For example, rather than having one or two

sources with long-term structured contracts, HP might have a portfolio consisting of various options, one of which is a long-term structured contract to meet 90% of expected demand, and then a short-term contract with slightly higher unit prices but guaranteed availability, to cover uncertainties in demand variability.

This method is somewhat different from HP's usual procurement approach, which is mostly to ensure that the supplier bears the risk of demand variability. Past deals with suppliers aren't necessarily connected to future deals, especially across supply chain lines for different products. By comparison, the portfolio approach allows HP to consolidate its buying strategies.

HP has used the portfolio approach successfully when negotiating for electricity at its San Diego facility, and is actively applying similar approaches to other commodities such as memory. The table above shows a price comparison for sourcing electrical power using today's approach (short-term buying with no contractual agreement, market rates) vs. a portfolio approach.

In this particular case, the portfolio approach shows a clear advantage. Under a free-market approach, not only was HP paying more for the same electricity, but it faced a variable and unknown future price over which it had no control. Using a portfolio approach, HP can contain the base costs and reduce the variability in prices as well.

A risk portfolio management strategy addresses three important procurement issues: short-term discounting, long-term assurance of supply and price stability, and least-cost infrastructure. Analytical tools support this process, and specific strategies such as online auctioning are implemented using systemic IT tools.

Portfolio results

	Market Index	Portfolio Approach
Quarterly cost	$555K	$352K
Standard deviation of cost	$49K	$2K

SOURCE: HEWLETT-PACKARD

Portfolios consist of various options: long- vs. short-term, spot and other possibilities.

The portfolio procurement process includes the following stages:

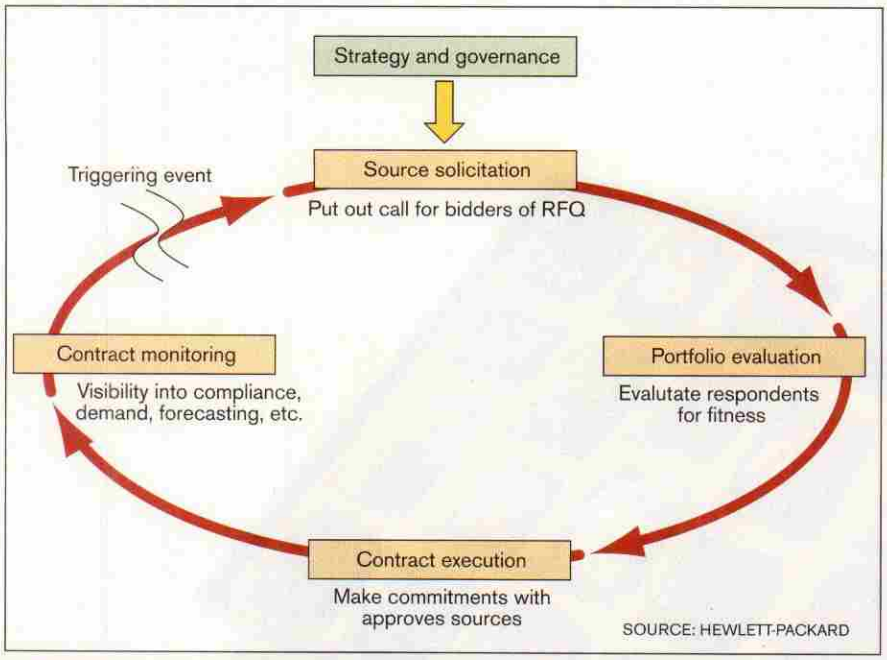
• **Strategy and Governance.** This is where the planners establish risk/return priorities, similar to a financial portfolio where the investor specifies the acceptable level of risk for an expected return. This in turn influences what kind of sourcing portfolio to create, and determines the mix of sourcing that would be most appropriate. For example, suppose we are creating a component sourcing portfolio for a new product. For the bulk of the parts, we want to use structured contracts that include specific volume and price commitments, but we also want to include some short-term sourcing with assured supply to cover demand variability. A portfolio that is optimized for ±20% demand uncertainty would have a different mix of sourcing than a portfolio that is optimized for ±50% demand uncertainty.

• **Source Solicitation.** In this stage, potential sources are invited to submit bids for the sourcing. This can be done by procurement groups who contact potential suppliers directly, or through announcements, online forums such as auctions, and other public venues.

• **Portfolio Evaluation.** After collecting a sufficient number of bids, the next task is to evaluate each of these potential sources against the original parameters set forth for the portfolio during the Strategy stage. The question is, what minimum price to take (if selling) or what maximum price to pay as a buyer. When evaluating portfolio alternatives, it is important to consider the total sourcing

Sourcing types and risk

Sourcing Type	Description	Who Bears Risk?
Long-term structured contract	The buyer commits to buying a specified number of units over a specified period of time, for a fixed price.	Buyer, because buyer is obligated to purchase the units even if they don't need them.
Unstructured contract	Buyer provides a forecast and expects the supplier to supply an uncertain quantity without changing the price. There is usually a commitment to giving the supplier a fixed percentage of the business for that particular component.	Supplier, because buyer is not committed to purchasing levels but still expects same price and service.
Spot market	Buyer solicits bids for a specified number of units, to see what prices are offered. This type of sourcing is useful to fill shortfalls, and would not be used as the main sourcing strategy for most types of components. HP uses two types of online solicitation: a public exchange, which is implemented as an online auction house, and a private exchange, where existing suppliers can order parts directly from each other, such as the HP logo. This system serves a dual purpose. Not only can suppliers and contract manufacturers (CMs) obtain parts directly, but HP can monitor the flow of goods through the supply chain and spot shortfalls quickly.	Buyer assumes risk when purchasing on an open market.



Suppliers usually bear the risk of demand variability. In this scheme, supply chains are analyzed to see who is in the best position to carry risk.

cost, not just the materials price. The expected NPV of the total sourcing cost and the standard deviation of same consists of three contributing cost streams: inventory-related costs, price performance (expected price and standard deviation), and availability (or the cost of expected and maximum shortages).

• **Contract Execution.** If a source looks good, a contract or agreement is created. Note that not all sourcing options use standard contracts. There are different types of contracts that define who assumes which portion of the risk, as shown in the table on the previous page.

• **Contract Monitoring.** Once the portfolio is created and put into action, the sources need to be monitored for compliance and also for value. If at any point the portfolio fails to deliver expected value (a "trigger action"), the procurement team must re-evaluate the portfolio and make adjustments as needed. This includes the use of automated tools that scan the market for current pricing, to ensure that the portfolio reflects current market conditions.

Who assumes the risk in these sourcing arrangments? Portfolios use options and complementary deal strategies to spread the risk around to the partner who is most willing and able to bear that risk. In the case of procurement, the risk is of a supply/demand mismatch, which results in either shortages or overstock. Demand is normally anticipated through forecasts, so a lot depends on the accuracy of the forecast. However, the risk of forecast errors must be borne by one party or another, or both. Therefore, we need a business process to evaluate which partner is actually able to bear the risk best in a given situation. Often, the risk is distributed between the partners within certain carefully specified parameters (maximum and minimum volume or pricing agreements, for example).

HP uses various types of sourcing arrangements to distribute risk.

A contract can contain a mix of structured and unstructured elements, using three basic types of controls: price controls, volume controls, and service levels. Usually there is a tradeoff between one or another of these.

• Price controls include flexible price contracts with floors and ceilings on prices, discounted market price agreements, fixed payments (as in a structured contract), fixed prices for specified time periods, and even flexible currency exchange rate agreements between partners from different countries. For example, if the two currencies stay within a specified range, one partner or the other will benefit while the other loses. However, if the currency exchange rate disproportionately favors one currency over the other, then the winner agrees to share the gains with the loser.

• Volume controls can specify minimum and maximum quantities, among other things. Another form of volume control is constraints on how much a forecast can be adjusted from one month to the next. For example, the buyer might be allowed to adjust next month's forecast up or down by 10%, and to adjust the forecast for 2 periods away by ±25%.

• Service level controls can include service level commitments with incentives and penalties. Sometimes the buyer can negotiate higher service level commitments in return for other concessions, such as a price premium of some sort.

Because of the Internet and the ubiquitous nature of information, procurement will move from being a contracting and negotiation function to being a contracting, negotiation, and trading function. The measurement and control of risk will become an increasingly tangible part of the procurement professional's job in the future. Procurement professionals can draw upon standard tools and the knowledge of risk management experts to aid in this transition to a more advanced way of doing business. ■

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