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The Right Way to Mix and Match Your Customers

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[OPERATIONS]

The Right Way to Mix and Match Your Customers

Finding complementary patterns of demand across your customer base can help smooth out costly spikes and slumps.

BY WILLIAM SCHMIDT, NIKOLAY OSADCHIY, AND JING WU

"The costs of demand variability can put you out of business." That blunt assessment, recently offered to us by the director of sales and operations planning at a *Fortune* 500 company, reflects what managers already know: Peaks in demand can drive high overtime costs, stockouts, and lost sales, while slowdowns leave capacity idle and increase excess inventory. The impact on customer service levels — not to mention the bottom line — can be significant. But how can companies best manage this variability, especially when deciding which potential new customers to target?

Consider a manufacturing company that is expanding its capacity to produce an additional 20 units each month and is pursuing two potential new customers for that increased output. Both prospects have an average demand of 20 units per month, but prospect A's demand is stable, while prospect B's is highly variable. Prospect A strikes executives as an ideal customer, because it has stable demand that exactly matches the company's proposed capacity expansion. But a closer look at the aggregate demand patterns of the manufacturer's entire customer base reveals that B is superior: It needs more product when other customers in the company's portfolio need less and thus smooths out overall demand. (See "Looking at Demand Across a Customer Portfolio.")

This simplified example reflects a more integrated way to analyze customers — one that considers not only the absolute increase in sales or the variability of the new customer's demand, but also the aggregate variability of the entire portfolio, with the new customer included. We recently analyzed this issue using a large database of supply chain network relationships.[1] Our findings show that a portfolio approach can help companies effectively manage their aggregate demand variability. The portfolio approach works upstream as well, helping companies understand how their demand affects the aggregate demand variability of their suppliers. Companies can work with their suppliers to take steps to reduce variability by changing order schedules, adjusting inventory levels, or taking other measures.

To be clear, many companies already do this, but in an informal, ad hoc way. As our research shows, a more systematic approach can generate correspondingly larger benefits.

The Portfolio Approach in Action

The concept of portfolios is widely used in other contexts. In product management and marketing, the value of a new product is determined with respect to the business's existing products, and companies account for the new product's complementarities and similarities with existing offerings.[2] In finance, investment portfolio theory is used to price assets and manage investments. According to the well-known capital asset pricing model, the price of a security is determined by its covariability with the return on the market portfolio.[3] Thus, the value of a security is determined not in isolation but in relationship with all other existing securities.

To see the effect of a portfolio approach in an operations setting, we analyzed relationships among thousands of organizations that form a supply network. We assigned companies to a layer in the network based on their proximity to end consumers. The supply network can be quite deep in our data, reaching

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a maximum of nine layers. Downstream layers of the network (generally, retailers or manufacturers of consumer products) serve end consumers, while upstream layers (generally, component or raw material manufacturers) provide inputs.

Within each layer of the network, we found that intracompany variability increases as one moves upstream — a phenomenon known as the bullwhip effect.[4] In other words, the orders that a business places with its suppliers are, on average, more variable than the sales that it fulfills with its customers.

Critically, however, the bullwhip effect applies only to serial supply chains — that is, scenarios where a single company is dealing with a single supplier, which is an oversimplification of how supply chains actually work. Looking at aggregate demand, however, variability is actually dampened as one moves upstream in a supply chain. That may seem counterintuitive: If individual orders are more variable moving up the chain, why would aggregate orders be less variable? Because upstream suppliers serve a portfolio of customers whose individual demand patterns can naturally smooth each other out.

Companies Already Applying This Approach Informally

To shed more light on this, we analyzed three strategies in which businesses can alter their customer portfolios: adding a new customer, divesting a customer, or swapping out a current customer for another. For the sample of companies we analyzed, all three measures led to material reductions in demand variability, consistently ranging between 3 and 16 percentage points, using a variety of measurement approaches. (The biggest benefits, not surprisingly, are realized by companies that have more excess capacity.)

Notably, this reduction is significantly greater than what a company could generate through random demand pooling. The clear implication is that companies can select and prune customers based on their contributions to its aggregate demand variability. Yet even if some companies already use the portfolio approach, it may be opportunistic and without a formal framework to inform their decisions.

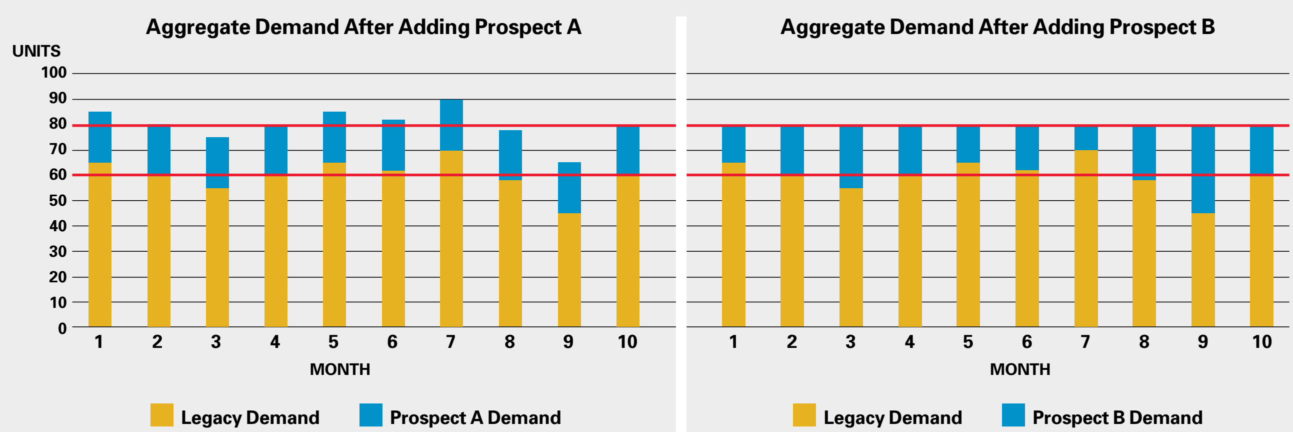
To supplement our quantitative analysis, we interviewed executives at more than 20 companies in the U.S. and China to better understand how they respond to demand variability. Most indicated that they provide incentives to customers, but this is often limited to when they have available capacity. An executive at a large North American build-to-order manufacturer of materials handling equipment stated, "We do not offer explicit price discounts, but we do offer earlier committed delivery dates to customers that place orders for products on lines with projected available capacity." The global sales director of China for a chemical raw materials business revealed, "When the production capacity is not tight, the company will encourage a lot of orders charged at the unit price that is a little cheaper."

Rethinking Customer Value in the Aggregate

As these comments illustrate, companies disproportionately feel the pain of demand variability when it takes the form of underutilized capacity, and they are willing to offer financial and operational incentives to alleviate it. However, few companies seem to complain about periods in which they have too much demand. The fact that companies seem more aware of the disadvantages of low demand but not the disadvantages of

LOOKING AT DEMAND ACROSS A CUSTOMER PORTFOLIO

By looking at their entire portfolio of customers, companies can make more informed decisions about which new prospects are more attractive and how they would affect overall demand variability.



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high demand implies that they may not fully appreciate how these issues are interdependent.

Applying this approach in a more systematic way to smooth demand variation requires that companies think differently about their customers, assessing them by how they fit into the overall portfolio rather than measuring the value of each on a stand-alone basis. In that way, our analysis points to several key — and counterintuitive — takeaways:

- It can be advantageous to seek out new customers that exhibit variable demand, as long as it does not have a strong, positive correlation with aggregate demand from the company's existing customer base.
- Absolute sales are not sufficient to assess customer value. Pricing and contract negotiations should factor in how a customer's order stream smooths out or amplifies the company's aggregate demand. Companies should identify and retain customers that provide hidden value through asynchronous demand, and respond appropriately to customers that amplify the company's peak demand.
- Scaled pricing schemes should account for the timing of an order and not merely the size of an order.
- Creative operational agreements, including flexible fulfillment windows and delay-tolerant delivery agreements, can nudge customers to modify the timing of their demand and unlock greater value for both the company and the customer.

Companies can take this portfolio view further by periodically reanalyzing and potentially rebalancing the company's customer portfolio to evaluate how each customer contributes to the whole portfolio. This is particularly important when companies undertake strategic initiatives, such as making major changes to product lines or entering and exiting markets.

Applying the Portfolio Approach to Upstream Suppliers

In addition to assessing their own customers, companies must also acknowledge that they are part of a portfolio for each of their suppliers, making a portfolio approach relevant upstream as well as downstream. Companies need to have candid conversations with their suppliers about how their own orders potentially exacerbate demand variability — and how that could be mitigated in a way that unlocks value for both parties. This kind of collaborative dialogue can lead to interesting opportunities.

For example, many companies have suppliers that occasionally struggle with service levels and on-time delivery performance. In those situations, a conversation about the supplier's customer portfolio is particularly relevant and can turn a charged conversation about a recent service failure into a productive, solution-oriented conversation.

More specifically, a company could potentially alleviate demand variation for the supplier by shifting the timing of orders. An honest discussion can determine the value of doing so, along with establishing a means of sharing that value between the company and the supplier. Service and fulfillment levels are also up for discussion. For a small company dealing with a large supplier, these conversations can shift the power dynamic and give the buyer more negotiating clout; it can potentially become a more valuable customer (and reduce its own costs in the process) by allowing its orders to vary.

UNLIKE MORE VISIBLE problems that command executive attention, demand variation — ever present in the background — can be a hidden drain on a company's profitability. Variation is often masked by reporting that is based on averages or sums: average capacity utilization, average daily sales, total quarterly production, and similar metrics. As a result, a company may be hitting its top-line revenue targets but falling short in terms of profitability.

Thinking of customers and suppliers as arranged in a serial supply "chain" is an outdated concept and can blind companies to significant opportunities to smooth out variability in demand. Instead, executives should think of their customers as elements in a portfolio, and assess changes to that portfolio in terms of the impact on aggregate demand. At the same time, companies should understand how they represent part of a supplier's portfolio of customers, and explore ways to alter their demand to help the supplier manage demand. In both downstream and upstream applications of this approach, companies can unlock significant value.

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