Mastering operational flexibility

Three ways to manage manufacturing volatility and drive growth

By Raghav Narsalay, Aarohi Sen and Smriti Mathur
In today's volatile and uncertain environment, it is more important than ever for businesses to be flexible. But what does that mean in practice? There is little common agreement. Through conversations with nearly 250 senior executives across six industry groups in eight countries, Accenture has identified a dual imperative that drives flexibility: the ability to simultaneously meet changing customer demand while also controlling costs. We call this capability "operational flexibility."

In our research, comprising an online survey conducted in July and August 2015, we asked respondents questions about their companies' performance in the period between 2005 and 2015. We also analyzed company financial statements and reviewed literature dating back to 2005, to analyze how well companies had tackled this past decade of extreme volatility.

We found that only a few companies—around one in 10 of those we surveyed—were able to both lower costs and increase demand fulfillment between 2005 and 2015.

Why is it so difficult to achieve operational flexibility? And how did a handful of the companies surveyed overcome these difficulties and meet the dual imperative at the heart of operational flexibility?

Companies that did achieve operational flexibility—referred to as "Masters" in this report—lowered conversion costs (direct labor cost plus manufacturing overheads) by 11 percent on average between 2005 and 2015 (Figure 1); during the same decade, they also increased demand fulfillment by 32 percent on average.

Most of the rest of the companies improved demand fulfillment but were unable to rein in costs. Of these, 15 percent (the "Challengers") were above average when it came to cost control and demand improvement, but still saw conversion costs rise by 4 percent. Nearly two-thirds (the "Followers") failed to achieve above-average demand fulfillment while experiencing a 9 percent increase in conversion costs. The also-rans—"Laggards"—were unable to improve demand fulfillment and saw conversion costs rise by almost 15 percent on average.

![Figure 1: Not too flexible](source: Accenture Manufacturing Flexibility Survey 2015)
Barriers to operational flexibility

According to 61 percent of survey participants, the biggest barrier to achieving operational flexibility is problems within the production process itself. An executive from a large German chemicals company told us that the enterprise “struggles with non-standardization, as machine settings are difficult to change.” Other manufacturers pointed to trouble designing flexible work programs and noted that their workforces found it difficult to adjust to changing production schedules.

Sluggish production changeovers compromise the ability to service unexpected fluctuations in demand. A tenuous grasp on how the market is changing only serves to aggravate the problem. This lack of accurate and timely “market sensing”—coherent and consistent consumer information, from multiple channels worldwide—was the second-largest problem revealed by our research, cited by nearly one-third of executives.

A worst-case scenario is the one-two punch of both production rigidities and weak market sensing. For example, one carmaker we looked at built a dedicated manufacturing facility for a new vehicle model. But demand for the new product failed to take off, and within a few years the plant was operating at less than 10 percent of its optimal capacity, eventually operating only two or three days a week and with a mounting inventory pileup. It took nearly five years for the company to abandon its ill-conceived strategy.

61% of survey participants say the biggest barrier to achieving operational flexibility is problems within the production process itself.
Definitions

Conversion costs
Conversion costs are costs incurred to convert raw materials into finished products. These costs include direct labor costs and manufacturing overhead (such as factory rent and supplies, utilities, equipment maintenance and depreciation). For the purposes of our research, we consider conversion costs as a percentage of cost of goods sold (CoGS) to underscore their share in the total cost. Businesses must concentrate on lowering their conversion-cost share to make operations more cost efficient.

Demand fulfillment
Demand fulfillment is the demand that a business can fulfill as a percentage of its total potential market demand. Businesses need to consistently improve demand fulfillment to remain competitive.

Operational flexibility
Operational flexibility is the ability to improve demand fulfillment while simultaneously reducing conversion costs. It can be measured through the following ratio:

\[
\text{% Demand Fulfillment} \times \frac{\text{Conversion Cost as % of COGS}}{100}
\]
Achieving operational flexibility

Our research reveals that Masters achieve operational flexibility by applying three practices differently to other manufacturing organizations.

Masters capture insights directly from their customers

Masters anticipate demand patterns faster and more accurately than their peers by tracking their end-customers’ behaviors directly. They do not rely solely on channel partners, whose customer intelligence can often be biased, distorted and even outdated (Figure 2). They also focus on tracking broader industry trends, such as new patent filings and regulatory discussions, rather than raw material availability and prices.

Auto giant BMW generates deep end-customer insights through its Customer-Oriented Sales and Production Process (COSP), an online ordering system that enables customers to personalize their vehicle orders up to eight working days before assembly begins, with no impact on delivery deadlines. COSP, which records and processes nearly 120,000 modification requests a month, feeds directly into the manufacturing planning department. The system not only enables near real-time adjustments to production schedules, but also gives BMW more immediate and accurate insights into how customers’ preferences, needs and tastes are shifting.¹

Figure 2: The right way to capture market insights
Masters regularly track end-customers’ behaviors to anticipate demand changes. They also focus on tracking broader industry trends.

Q: How important are the following capabilities to achieve operational flexibility? (% of survey respondents saying "extremely important")

<table>
<thead>
<tr>
<th>Capability</th>
<th>Masters</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>End-customer tracking vs. direct-customer tracking</td>
<td>58%</td>
<td>42%</td>
</tr>
<tr>
<td>Broader industry tracking vs. raw materials tracking</td>
<td>50%</td>
<td>31%</td>
</tr>
</tbody>
</table>

Source: Accenture Manufacturing Flexibility Survey 2015
Note: Others comprise all remaining company categories of Challengers, Followers and Laggards for ease of representation.
Masters remodel their production lines to do more

Many companies react to volatility in demand by setting up a large number of small production lines. The assumption is that by doing so, they can better manage low volumes. Those who master operational flexibility, do the opposite. They establish larger production lines that can accommodate greater volumes and more stock keeping unit (SKU) variations, without significant changeover costs (Figure 3).

Our research showed that 62 percent of operationally flexible Masters expect to increase the size of their production lines in the coming decade. Another 58 percent believe that manufacturing more SKUs per line will be a very important capability.

Further, to operate these remodeled production lines, Masters put in place cross-trained machine operators as opposed to single-skill workers, a tactic that reduces changeover time.

To keep production volumes low and product designs flexible, electronics giant Philips produces different types of medical equipment all on a single production line at its plant in Chakan, India—reducing response times as well as labor costs.²

Figure 3: Reconfigured production lines
Masters use large production lines that manufacture more SKUs than the output of smaller, single-product lines.

Q: How important are these capabilities to achieve operational flexibility? (% of survey respondents saying "extremely important")

<table>
<thead>
<tr>
<th>Capability</th>
<th>Masters</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>More SKUs manufactured per line</td>
<td>58%</td>
<td>31%</td>
</tr>
<tr>
<td>Greater number of smaller production lines</td>
<td>19%</td>
<td>30%</td>
</tr>
</tbody>
</table>

Source: Accenture Manufacturing Flexibility Survey 2015
Note: Others comprise all remaining company categories of Challengers, Followers and Laggards for ease of representation.

62% of operationally flexible Masters expect to increase the size of their production lines in the coming decade.
Masters assign new metrics to measure flexibility

Traditional measures most organizations use to assess their efficiency or productivity—such as capacity utilization rates, yield rates and equipment effectiveness ratios—do little to meet the dual imperatives of operational flexibility. Operational flexibility requires a new set of metrics, including Web orders as a percentage of total orders, the ratio of new products released to products in production and regional sourcing as a percentage of total sourcing.

Employing robust metrics can show how responsive a company is to changes in the business environment (Figure 4). Indeed, analysis of our survey findings shows that companies that achieve operational flexibility are much more likely to use such metrics. It is worth noting that the current adoption of these metrics is higher for customer-facing functions, such as sales and supply chain management.

**Figure 4: New metrics**

Masters use metrics that track the flexibility of value chain activities.

Q: Which of the following metrics do you track on a regular basis?

<table>
<thead>
<tr>
<th>Metric</th>
<th>Masters</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web orders as a percentage of total orders</td>
<td>65%</td>
<td>40%</td>
</tr>
<tr>
<td>Ratio of new products released to products in production</td>
<td>65%</td>
<td>43%</td>
</tr>
<tr>
<td>Regional sourcing as a percent of total sourcing</td>
<td>58%</td>
<td>22%</td>
</tr>
<tr>
<td>Inventory days of cover by SKU*</td>
<td>58%</td>
<td>28%</td>
</tr>
<tr>
<td>Number of prototype iterations</td>
<td>54%</td>
<td>31%</td>
</tr>
<tr>
<td>Percentage of shared logistics assets</td>
<td>50%</td>
<td>24%</td>
</tr>
<tr>
<td>Actual MTBF/predicted MTBF**</td>
<td>46%</td>
<td>24%</td>
</tr>
<tr>
<td>Average changeover cost or time</td>
<td>46%</td>
<td>27%</td>
</tr>
<tr>
<td>Percent of active SKUs</td>
<td>46%</td>
<td>27%</td>
</tr>
</tbody>
</table>

Source: Accenture Manufacturing Flexibility Survey 2015

Note: Others comprise all remaining company categories of Challengers, Followers and Laggards for ease of representation

Note: * SKU – Stock Keeping Unit; ** – MTBF – Mean time between failures
The path to operational flexibility

In a dynamic and volatile world, operational flexibility is a strategic priority that manufacturing industries cannot afford to ignore. As the Masters from our survey illustrate, the following steps can help to overcome obstacles to manufacturing success:

Capture insights directly
Track end-customer behaviors directly to better anticipate changes in demand.

Prioritize value chain flexibility
Reengineer parts of your value chain that are most in need of flexibility; in particular, production and market sensing.

Employ new metrics
Measure the flexibility of your value chain activities to be more responsive to changes in the business environment.

Operational flexibility brings its own rewards—lower conversion costs, increased demand fulfillment and, ultimately, faster growth for the business even through times of uncertainty and volatility.
About the research

In July and August 2015 we conducted an online survey of 247 business executives in eight countries and six industry groups (Figures 5 and 6.) The survey targeted senior business executives with a high level of exposure to their company’s entire value network. We focused on large manufacturing businesses with annual revenues of at least US$1 billion (Figure 7).

Figure 5: Respondents by country

- United States: 38%
- Japan: 22%
- China: 16%
- India: 10%
- Germany: 6%
- United Kingdom: 5%
- Brazil: 2%
- Indonesia: 1%

Figure 6: Respondents by industry

- Consumer products: 22%
- Industrial products: 20%
- Chemicals and natural resources: 17%
- Automotive: 16%
- Electronics and high tech: 15%
- Oil and gas: 10%
We also undertook qualitative research which comprised:

- Discussions and brainstorming sessions with Accenture specialists to gather insights from their experiences with manufacturing clients.
- Extensive secondary research, including literature reviews, case studies and financial statement analysis of manufacturing companies for the period of 2005 to 2015.
- Identifying the key practices needed for companies to drive flexible growth using cross-tabulations and Pearson’s Chi-square tests to check whether the Masters in our study displayed statistically significant differences in behavior from the rest of the sample set. We set the significance level at 95 percent and arrived at nine metrics and five capabilities that differentiated Masters from the rest, shown in the table below.

### Figure 7: Respondents by revenue

<table>
<thead>
<tr>
<th>Revenue</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1-$5 billion</td>
<td>34%</td>
</tr>
<tr>
<td>$5-$10 billion</td>
<td>30%</td>
</tr>
<tr>
<td>$10-$50 billion</td>
<td>25%</td>
</tr>
<tr>
<td>$50-$100 billion</td>
<td>9%</td>
</tr>
<tr>
<td>Over $100 billion</td>
<td>2%</td>
</tr>
</tbody>
</table>

### WINNING CAPABILITIES

- Basic industry tracking versus raw materials tracking
- End-customer tracking versus direct-customer insight
- Greater number of multi-skilled/cross-trained operators
- Greater number of SKUs manufactured on single line
- Rapid fail-fast prototyping

### WINNING METRICS

- Actual MTBF/Predicted MTBF (Mean time between failures)
- Average changeover cost or time
- Inventory days of cover by SKU
- Number of prototype iterations
- Percent of shared logistics assets
- Percent of SKUs active
- Ratio of new products developed to production
- Regional sourcing (value) as a percent of total sourcing
- Web orders as a percent of total orders
References


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