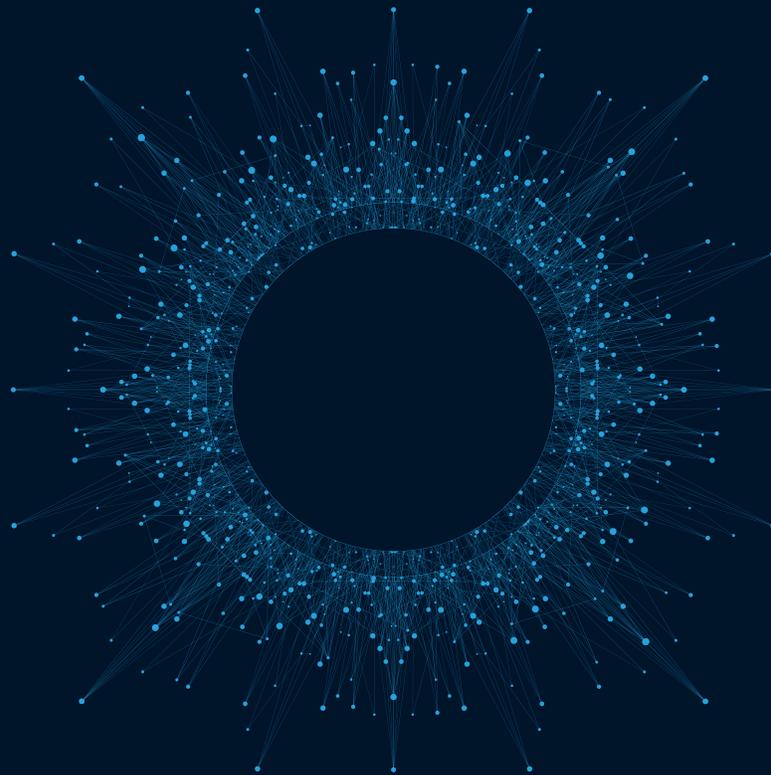


Pharmaceuticals & Medical Products Practice

Rethinking manufacturing and distribution networks in medtech

Changes in the medtech market have left many companies struggling with their operational footprints. A network redesign can help them save costs, increase flexibility, and create a competitive edge.

by Mohammad Behnam, Arnav Dey, Tony Gambell, and Raj Rajendran



Under pressure from a rising cost base and increasingly demanding service expectations, many medtech companies are looking to reduce operating expenditure and increase their flexibility. Through our work with industry leaders over the past few years, we have found that redesigning manufacturing and distribution networks can be a powerful way to achieve these aims. A few leading companies have saved 10 to 15 percent of their manufacturing and supply-chain costs while reducing delivery lead times by 20 to 30 percent. At the same time, they have built more flexibility into their networks by forming relationships with contract manufacturing organizations (CMOs), third-party logistics providers (3PLs), and other partners—relationships that better equip them to handle fluctuations in demand and mitigate supply risks. What is more, their optimized footprints have positioned them well to grow in emerging as well as legacy markets.

However, most medtech companies still struggle with their manufacturing and distribution networks, for a variety of reasons. For some, a growth strategy focused on M&A has resulted in a fragmented network with high costs. Others are aware their footprints are no longer fit for purpose but fear that network redesign would be enormously complex, take too long to deliver impact, or fail to yield adequate returns on the management time and effort involved. Yet we believe that network optimization is rapidly becoming a necessity if medtech companies want to stay competitive in today's markets, for four reasons.

First, medtech companies are lagging other sectors—including highly regulated industries, such as pharmaceuticals—in developing manufacturing capabilities in emerging markets. Second, as patterns of demand shift, companies need to consider where their future growth is likely to come from and adjust their networks accordingly. Third, CMOs and 3PLs are now mature enough for integration into operations and ecosystems, enabling medtech companies to migrate away from legacy operating models that are slow and awkward to scale and adapt. Finally, network optimization need not be as costly, slow, or difficult as companies

fear. We have seen leading medtech companies find ways to derisk their transformations and capture value at speed while also creating a competitive edge (see sidebar, “How one medtech company transformed its operational footprint”).

Incorporating best-cost locations into operational footprints

Historically, the largest markets for medical devices have been in Europe and North America, and companies have located their production facilities accordingly. Most medtech companies continue to manufacture in these markets to stay close to customers or meet regulatory requirements. Some companies that have moved manufacturing to emerging countries have found that the benefits of lower labor costs and proximity to fast-growing markets have been outweighed by quality issues and logistics disruptions or have eroded over time. However, many leading companies are rethinking their approach in the light of two industry trends.

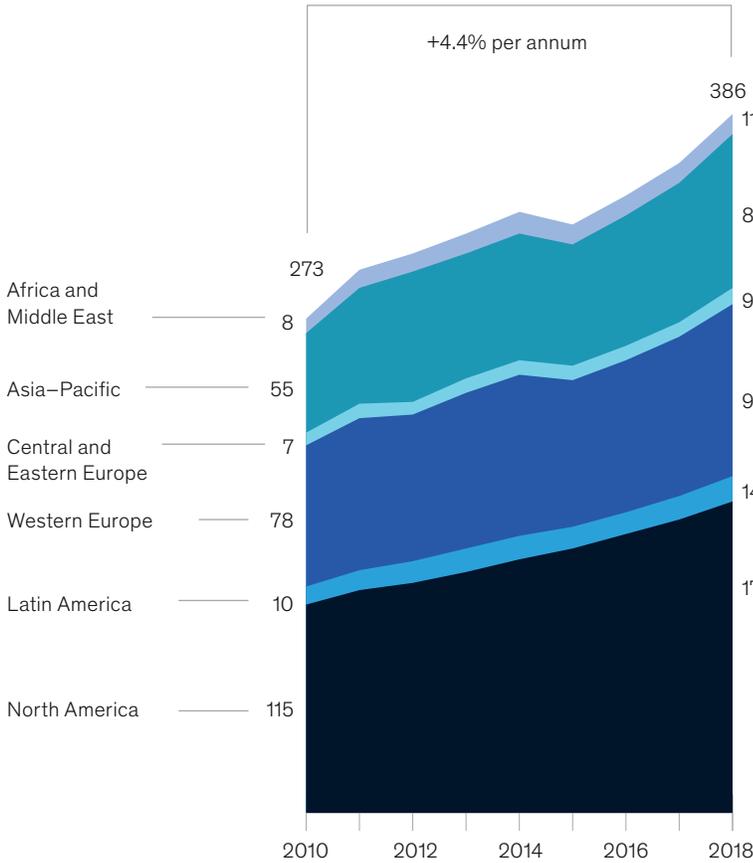
First, industry leaders are beginning to build their networks around best-cost locations, taking into account not only labor costs but also the costs associated with quality issues and distance from key markets. Countries such as Costa Rica and Malaysia have emerged as viable manufacturing hubs that meet quality and talent requirements, with governments offering wide ranges of incentives making them even more attractive to multinationals.

Second, some emerging economies are rapidly becoming sizable markets for medtech products (Exhibit 1), yet these markets are often challenging to serve from Europe or North America. Local regulations may include country-of-origin stipulations requiring local manufacture, while the logistics costs of importing products and transporting them over long distances may be prohibitive. As a result of these and other factors, more and more medtech companies are setting up production facilities in emerging markets. However, the industry as a whole still lags other regulated sectors, such as pharmaceuticals, in the share of overall product volumes manufactured in emerging markets. We believe that locations in emerging

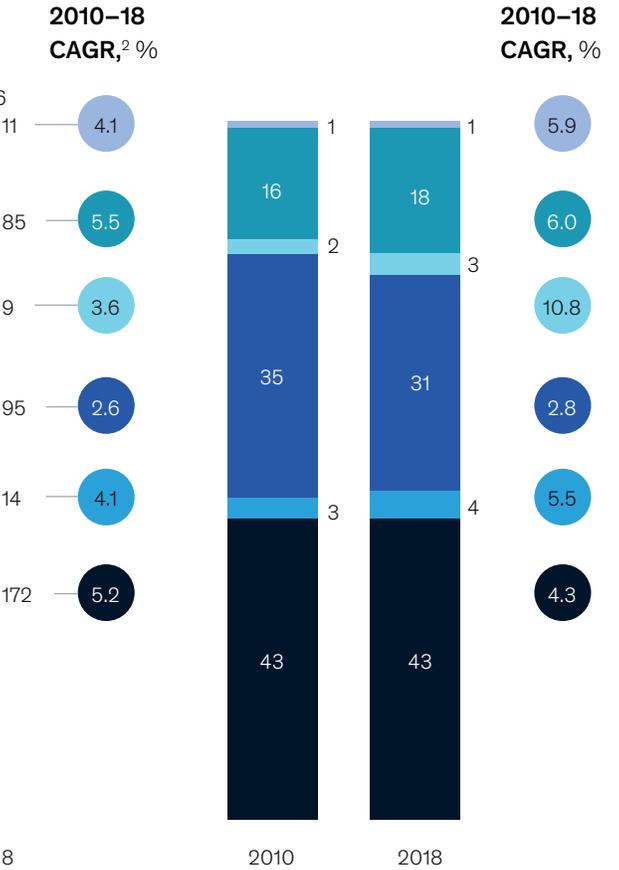
Exhibit 1

As medtech spending grew globally, medtech manufacturing grew fastest outside traditional centers.

Spending on medical devices, total revenue by region,¹ \$ billion



Medical-device manufacturing, share of global sales by region, %



¹75 countries covered by Fitch Solutions.

²Compound annual growth rate.

Source: Fitch Solutions; McKinsey analysis

markets will play increasingly critical roles in the operational footprints of medtech companies over the next five years.

Engaging contract manufacturing organizations and third-party logistics providers in supply ecosystems

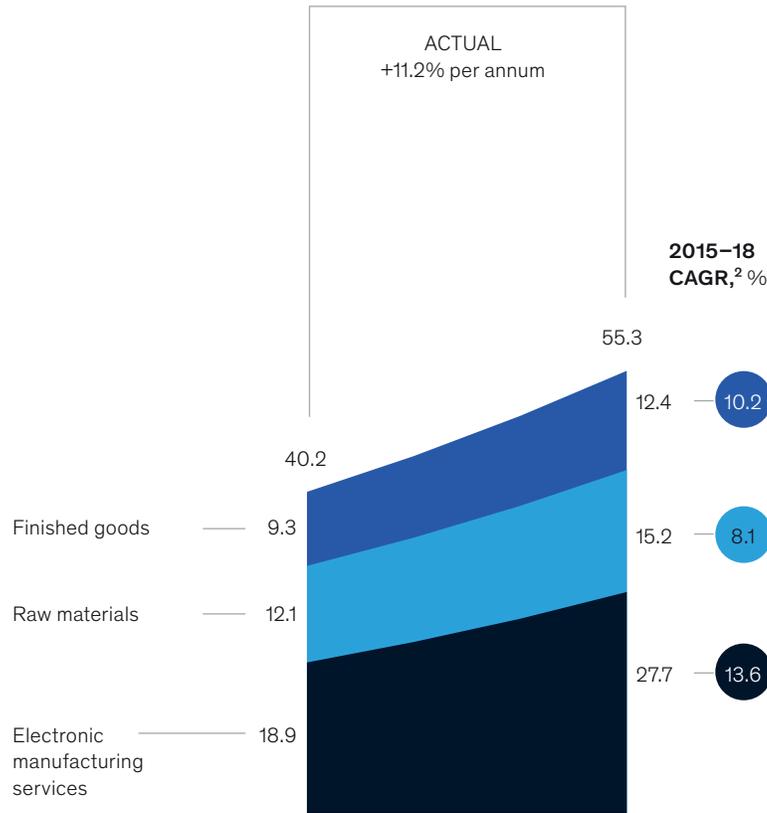
With the right approach, CMOs and 3PLs can play key roles in accelerating network transformations.

Recognizing the strides CMOs have made in improving quality and costs, leading companies are increasingly willing to enlist their support, and the use of CMOs is growing rapidly. In fact, over the next four years, CMOs in medtech are projected to grow roughly twice as fast as the medtech industry as a whole (Exhibit 2).

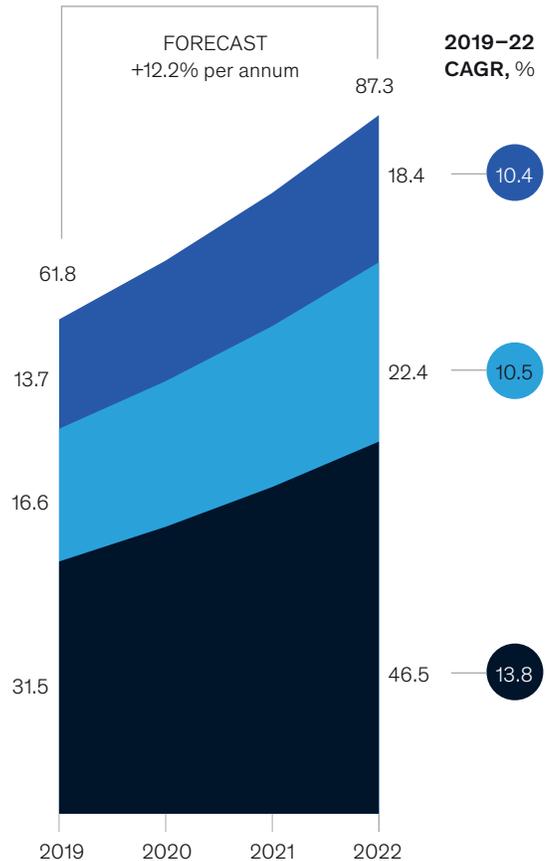
This growth is accelerating the evolution of a supplier ecosystem for some of the key production

Medtech companies' use of contract manufacturing organizations is expected to continue growing.

Global CMO¹ market 2015–18, total CMO revenue by product type, \$ billion



Forecast global CMO market 2019–22, total CMO revenue by product type, \$ billion



Note: Figures may not sum to listed totals, because of rounding.

¹Contract manufacturing organization.

²Compound annual growth rate.

Source: *Global medical device manufacturing outsourcing market 2016–2020*, TechNavio, 2016, technavio.com; *Global medical device manufacturing outsourcing market 2018–2022*, TechNavio, June 2018, technavio.com; McKinsey analysis

processes used in the medtech industry. In orthopedics, for example, a number of third parties offer casting services; similarly, electronic-component manufacturing and subassembly for in vitro diagnostics are available from multiple third-party sources. Our analysis suggests that outsourcing opportunities are also multiplying in

other major end markets, such as surgical tools, intravenous pumps, and neurostimulation.

Adopting an outsourcing approach based on core competencies rather than on labor-cost arbitrage can allow a medtech company to focus on core activities and help it develop the flexibility to

respond more rapidly to shifts in demand. Such an approach can also accelerate the network-transformation process. In our experience, companies that use CMOs effectively can realize the value of a network transformation between nine and 18 months earlier than their peers.

Similarly, the use of 3PLs can speed up transformations as well as help unlock productivity benefits in warehousing. Many medtech companies lack sophisticated digital systems and tools for warehouse management and still rely on manually intensive, paper-based processes. That is hardly surprising in a sector in which distribution has seldom been a source of competitive advantage. But it does mean that medtech companies have the opportunity to leapfrog several generations of technological and lean improvements by partnering with the right logistics-service providers.

Despite all the benefits of outsourcing, though, companies face risks if they underestimate the challenges. They could lose intellectual property; suffer regulatory, quality, and delivery issues; and end up with higher, not lower, costs. Success rests on having the right talent, processes, and performance-management mechanisms to manage an ecosystem of third-party partners.

Making network optimization more manageable in five steps

Optimizing a manufacturing and distribution network can be a daunting prospect given the investment, complexity, and extent of change management it involves. However, the process need not be that difficult. Our experience shows that adopting a well-structured, fact-based approach can help medtech companies avoid some of the

How one medtech company transformed its operational footprint

As the result of a series of acquisitions, one medtech company's network of operations had become highly fragmented across regions and business units. The company had more than 15 manufacturing locations, all operating below optimal efficiency and scale. Similarly, distribution was handled from more than 80 locations, leaving the company with a huge number of handoffs in the supply chain and making planning enormously complex. The company's cost structure was also much higher than its competitors', and its service levels were lower as a consequence of poor planning and missed deliveries.

The company decided to start with a clean sheet and design its ideal operational

footprint from scratch. It began by mapping its current footprint and identifying the main pain points. It found that global production volumes were poorly matched with consumption levels, with the effect that products often had to go through three or four distribution touchpoints before reaching customers, compared with two at top-performing peers. This translated into longer delivery lead times and higher costs from repeated handling.

The company created five or six possible footprints that addressed these issues and assessed the financial impact, risks, and strategic implications of each option in a series of workshops. It then chose an option and worked to optimize the new

network design. The final design consolidated manufacturing in six at-scale plants and distribution in 20 centers, all sited strategically both to maintain the company's presence in established markets and to establish a foothold in regions likely to drive future growth.

The network consolidation was designed to save around \$100 million a year in manufacturing costs and more than \$20 million a year in distribution. Through a careful sequencing of product transfers, the company set out a path to capture the majority of savings within three years. In addition, the new footprint allowed for dual sourcing of some high-revenue products, giving the company more flexibility and helping mitigate risk.

pitfalls and improve their chances of success. We have identified five steps that are central to such an approach.

1. Align on your business objectives

Although the operations team tends to lead network-redesign efforts, the entire executive committee must sponsor them. Leaders must agree on what the company is seeking to achieve by optimizing its network, whether it is improving service levels, adjusting the cost structure, reducing working-capital requirements, gaining access to new markets, accelerating product launches, or some other goal. With such a broad range of possible outcomes, leaders can easily have different objectives in mind. Seeking alignment at the outset prevents wasted effort and mismatched expectations.

2. Optimize your existing footprint first

Starting by addressing the existing footprint is critical for two reasons.

First, network optimization requires significant investments of time and capital. If you introduce lean initiatives in locations that you expect to keep in your future footprint, you can generate short-term savings to offset the capital needed for the broader network-optimization program.

Second, tackling your existing footprint first can help you guard against flawed decision making. For example, a plant in a high-cost location with a large workforce and poor productivity may appear to be an ideal candidate for a move to a low-cost location. However, it is possible that improving productivity at the existing location would deliver most of the projected savings, thus reducing the projected benefits of relocation to a level that no longer justifies the effort or investment. Optimizing before—and in some cases, instead of—moving operations should be the rule.

3. Define your target footprint using a hypothesis-based approach

Designing your future operating model requires two main steps. First, classify your activities as core or noncore and decide whether to outsource noncore activities, basing your decision on a high-

level understanding of the supply markets for these activities. Second, identify the locations that will perform your core activities.

It is sometimes tempting for companies to treat location selection as a mathematical problem resolvable through calculations of costs and lead times. However, that is not an approach we recommend. It can deliver a network design that is theoretically optimal but prohibitively expensive and risky to implement. Moreover, it tends to ignore qualitative considerations, such as political stability and workforce attrition, that can play an important part in design decisions.

Smart companies take a hypothesis-driven approach. They use their knowledge of the industry landscape to draw up a long list of five to seven feasible footprints and then conduct a high-level analysis to narrow the options down to a short list of two or three. To arrive at the final footprint design, they model these two or three scenarios in detail and evaluate the results. In our experience, companies that follow this approach achieve implementable results more quickly than with other methods.

4. Develop a sound fact base and use it to challenge sacred cows

A strong fact base is critical in making the right decisions on a new network design. The fact base should cover projected demand, service levels, costs, modes of transport, lead times, and any other relevant factors. The information needed may not be available in a readily accessible format, so companies should be sure to allocate enough time for data gathering, especially before making material decisions that shape their future footprints.

In building the fact base, it is important to challenge parameters that may never have gone through pressure testing. One medtech company that had always offered its customers next-day delivery discovered on closer analysis that most customers did not use the products until four or five days later. Acting on this insight, the team decided to change its delivery standard from overnight to three days—a step that allowed the company to rethink its whole operating footprint. For instance, it consolidated its

dozen or so US distribution sites to four and worked with its logistics partner to shift from overnight delivery to ground shipment for most customers. Through these and other initiatives, it was able to reduce its warehousing and distribution costs by 15 to 20 percent.

5. Plan your transition, including your talent needs and change story, rigorously

Your transition plan is almost as critical as your design for your future network. A poorly planned transition can create uncertainties over your footprint, operating model, and organization structure that can linger for months, if not years, undermining effective operations and eroding your competitive position.

Organizations that execute network transitions well typically follow three steps. First, they break down what may appear to be an overwhelming transition into a sequence of manageable network moves. Second, they quantify the financial impact and risk of each move and develop a prioritized execution plan. Finally, they approach each move as a focused sprint to minimize transition pains and execution risks.

During the planning stage, smart companies also identify the talent they need to execute the transformation: project managers, tech-transfer specialists, plant-design engineers, data scientists,

and so on. They appreciate that existing operations teams are unlikely to have the resources or capacity to execute a successful transformation. For example, a regular tech-transfer team focused on new-product introductions is unlikely to have the capacity to perform the time-consuming validations required to move manufacturing volumes from one plant to another. So the business case must include the cost of recruiting and managing the new talent required. A company also needs to develop a clear vision of how it will integrate transformation-focused talent into its future organization and translate this vision into a change story that connects strategic business objectives to the network-redesign and talent-engagement plan.

A well-executed network transformation can represent a tremendous source of value for medtech companies. Our experience indicates that they can realize cost savings of up to 15 percent within three years while also improving delivery lead times. However, network transformation is not just a cost-reduction effort. It also gives companies an opportunity to rethink their operating model strategically and create a competitive edge for the future. A few industry leaders are already some way down this path; those that do not swiftly follow risk getting left behind.

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