

GLOBALIZATION IN MANUFACTURING INDUSTRIES

ISSUE 2



GLOBALIZING THE MANUFACTURING FOOTPRINT

Globalization of the manufacturing footprint has been an imperative for manufacturing firms for a long time. However, as the parameters driving footprint decisions are undergoing dynamic change, manufacturers need a fresh approach and new aspects need to be included in the consideration. This compels companies that already draw on a global manufacturing network to challenge past decisions, and drives companies with hitherto limited global scope in manufacturing to think more intensely about expansion. These challenging tasks are made even more difficult by rising economic uncertainty. Still, access to global markets and cost competitiveness depend on it.

Many manufacturing firms have spent the past decade either ramping up or extending their capacities in Eastern Europe and China. Many have made mistakes that drained cash or damaged quality. Sometimes, these problems even threatened the existence of the entire company. Numerous firms have given up or had to reverse their global expansions.

While most of the large players have already established their global presence, many small- and mid-sized companies are struggling to develop their international structures and achieve the desired operational performance on a global scale. Reducing in-house manufacturing costs is one challenge. But it is equally important to establish a strong presence in new markets and find new local suppliers while maintaining a reliable supply chain.

GLOBALIZATION REMAINS IMPORTANT AND BECOMES MORE COMPLEX

In an increasingly connected world, further globalization of manufacturing is key, but adding international operations and customers hasn't gotten any easier. Past recipes are no more valid, and uncertainty continues to rise.

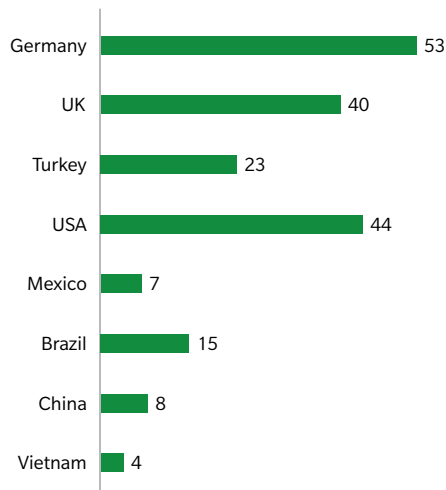
First, the landscape of cost-competitive countries has changed a lot in the past decade, and the cost champions have changed. According to numbers from Mercer's Total Remuneration Survey, Mexico is now cheaper than China, where wages have doubled since 2008. The UK is cheaper than the USA, and in low-cost Turkey, wages of production workers have soared by more than 20 percent in the last two years alone (*Exhibit 1*).

At the same time, energy costs have changed. Shale gas development has caused a drastic reduction in energy costs in the countries that have authorized drilling. In the USA, for example, natural gas prices have fallen by two-thirds since 2008. Energy-intensive companies responded by shifting their industrial investments.

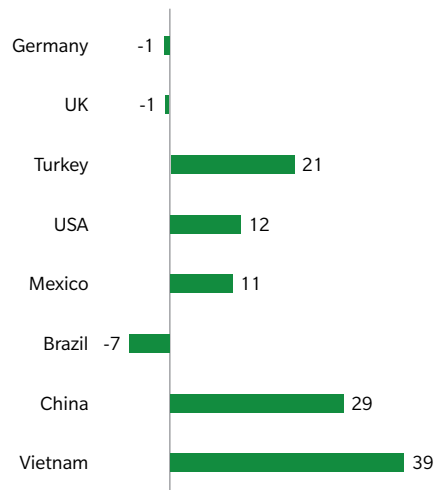
Another shift comes as a big chunk of manufacturing activity is increasingly taking place close to demand. Exceptions include labor-intensive products, such as shoes or textiles, which are manufactured where labor is cheap, and electronics, which have global manufacturing and demand footprints, but intensive R&D. Outside of those exceptions, more and more manufacturing needs to take place close to local markets in order to facilitate market-driven innovation or to reduce costs. Further, local content requirements in many markets are increasing and also driving local manufacturing.

EXHIBIT 1: COMPENSATION IN MANUFACTURING

ANNUAL SALARY OF PLANT WORKERS
IN THOUSANDS OF US\$, 2013



CHANGE OF PLANT WORKER SALARY
IN %, FROM 2011 TO 2013



Source: Mercer Total Remuneration Survey, Oliver Wyman analysis

New, advanced technology is also complicating the manufacturing industry. Digital manufacturing, advanced robotics, 3-D printing, and the Internet of Things are disruptive evolutions that will progressively reshape the manufacturing value chain. These technologies will allow components to be produced in small quantities, even in one-piece flow and in real time. These changes will also lead to totally flexible plants and global visibility on machine utilization and allocation options. Manufacturers can create new ways to collaborate with machines and industrial partners.

Against this background, manufacturing companies can no longer shape their footprints on simple labor cost arbitrage or based on a deterministic cost model.

The uncertainty in trends and the potential disruption in the value chain need to drive a precise and analytic approach with a specific emphasis on four elements.

- Consider scenarios of various trends – not to predict what will happen, but to evaluate the resilience of the manufacturing footprint to disruptive change.
- Investigate the ability of technology to disrupt the industry value chain.
- Challenge your own risk appetite, whether the company can take a risk to gain a competitive advantage or should find a low-risk option.
- Build flexibility into the system, to quickly respond to changes in demand, product mix, or changes in costs or regulations. An increased focus on flexibility will also require a fresh look at structural decisions on the level of necessary in-house manufacturing capacity (and therefore capital lock-up) vs. potential for outsourcing. Also, consider employing new tactics for workforce and production system flexibility.

41%

of respondents to the latest Oliver Wyman restructuring survey are planning investments to improve their manufacturing footprint.

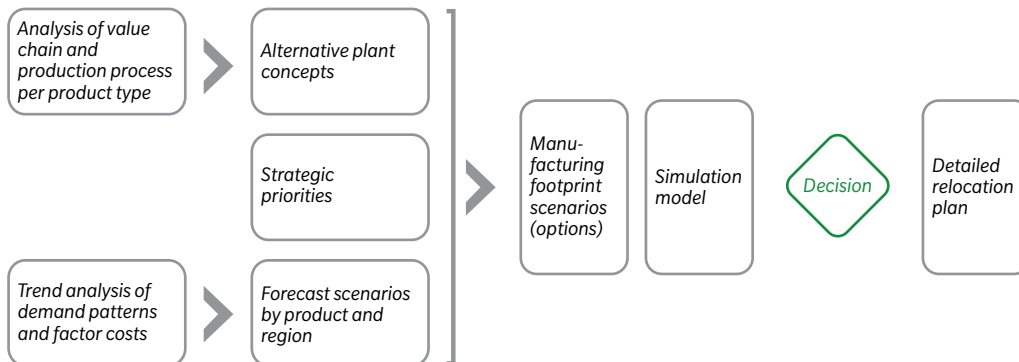
DOING THINGS RIGHT THE FIRST TIME IS CRUCIAL

Manufacturing concept rebuilding and footprint redesign is a fundamental challenge for most companies. Finding and deploying the resources and management to redesign the manufacturing model and widen the network is critical, and many small- and mid-sized suppliers have very limited experience with these types of tasks. In addition to the challenges of expansion, downsizing the existing plant network is often more difficult than expected. The restructuring or closure of long-standing plants and other facilities can cause significant risk to quality and delivery performance. This can seriously harm the company's performance and customer relationships.

So it is not surprising that there are many examples of firms that moved production back to their home markets. Key reasons for these moves often include insufficient preparation and poor selection of the processes and products that should be moved. Underestimating the cost of relocation, deteriorating quality, poor supplier support and efficiency in new plants, as well as rapidly increasing labor costs also contributed.

A sound and well-defined footprint redesign plan is crucial (*Exhibit 2*). The first step is to understand the company's value chain for each product type and the associated production processes. Two types of analysis should be performed. First understand the current processes and potential to improve without any change in production process: core and noncore steps, lean maturity, and potential to streamline support functions. Then consider whether new technology could fundamentally change some steps of the production process. To perform these analyses, organize intensive working sessions involving internal and external production experts and consider disruptive ideas such as micro-machines, advanced robotics, and additive manufacturing. Use the analysis to define one or two concepts for new plants.

EXHIBIT 2: GLOBAL FOOTPRINT OPTIMIZATION – OVERVIEW OF APPROACH



Source: Oliver Wyman analysis

The second step is to understand and model the key trends in the markets the company is targeting. These trends include changes in the overall economy as well as demand patterns in core markets, factor costs developments (energy, wages, constructions, and logistics), and competitor moves. The analysis should highlight conservative trends, as well as potential disruptive developments. This should challenge the company forecasts for each product family and region.

Based on these two sets of analyses, a scenario should be created. The strategic priorities for the future footprint should be used as guiding principles for the scenario design. These may include local demand for specific products, the opportunity to combine different products in a specific plant, the desired focus of plants on specific production processes and, of course, the potential cost savings. In addition, consider which functions should be relocated with production, such as supply chain, engineering, or marketing. Given all these aspects, there is usually not an obvious ideal future footprint.

In a third step, build an analytic simulation model to assess alternative options for the redesign. This should include investments and savings on labor and infrastructure costs but also the impact on administrative costs, production overhead and energy, logistics, and taxes. There will also be negative impacts that cannot be avoided, such as lower quality during the ramp-up of the new plants. In addition, investments for new capacity and higher inventories due to longer supply chains and safety stocks may hit the company's cash flow (*Exhibit 3*). All these effects should then be modelled for the various footprint options, including a sensitivity analysis for the main drivers. Only if the business case improves, even in the worst case scenario, should the company go ahead with the plan.

EXHIBIT 3: EBITDA IMPROVEMENTS AND COUNTER EFFECTS (CASE STUDY)

MOVEMENT OF PLASTIC PARTS PRODUCTION FROM GERMANY TO EASTERN EUROPE
INDEXED 100 = NET EBITDA IMPACT



Source: Oliver Wyman analysis

After selecting the favored future footprint, a detailed relocation concept and a cross-functional transfer team that is fully dedicated to managing the relocation concept needs to be installed. Particular attention should be paid to managing the interfaces to the various stakeholders at the new, as well as at the old, sites. Finally, documentation of all activities in a detailed action plan that is monitored on a regular basis is important. Measures to mitigate major risks should be included.

AVOIDING TYPICAL PITFALLS

In most cases when the results did not turn out as planned, the companies struggled with the same challenges and made similar mistakes. Qualified people were often not available or could not be trained fast enough for the planned ramp-up. In addition, motivation was often low at sites slated for closure or downsizing. This, combined with the loss of relevant know-how and production shortages, resulted in many manufacturing firms facing unexpected efficiency, quality, and delivery issues after the relocation. Other potential issues that often are overlooked include machines that cannot be relocated easily and high initial scrap rates due to a poor preparation of the transfer, which caused delays and high costs during the production ramp-up at the new sites.

To improve the footprint successfully and efficiently, it is essential for manufacturing companies to develop a long-term, holistic strategy. The important factors here include: Considering the strategic boundary conditions for the entire value chain, investing sufficient time and resources in planning, building a business case based on total cost calculation, and installing comprehensive process management. This will enable companies to identify, assess, choose, and implement the best options and minimize future risks.

ABOUT OLIVER WYMAN

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ABOUT THE ARTICLE SERIES

Globalization has opened up huge opportunities for the plant and mechanical engineering sector. But few companies have managed to transition fully from a home country-focused export business model to that of a global player. As the importance of emerging markets continues to increase, this transformation remains a key strategic challenge.

Oliver Wyman's Manufacturing Team has worked with a wide range of manufacturers to help them develop their global presence. To highlight key strategies, trends, and implications, Oliver Wyman is publishing a series of articles over the course of the year focused on major functional areas and their role in globalizing manufacturing companies, including purchasing, engineering/R&D, manufacturing, sales & service, and the organization as a whole.