

Footprint Optimization

Building a data-driven footprint strategy

Applied Value Knowledge
Cost Efficiency

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By: Ryan Huff and Austin Mora

Introduction

In 2020, COVID-19 served as the latest reminder of the importance of an efficient and resilient supply chain. As coronavirus introduced unanticipated and widespread disruptions to countries around the world, supply chain organizations both large and small saw the impact of long lead times, rising costs, and material shortages.

In reaction to COVID-19, organizations have had to adapt their operations and are now asking themselves the crucial question that will define the next decade: “How does our supply chain need to change going forward?”

Identifying manufacturing footprint opportunities

With the lessons of the past year in mind, leading global manufacturers need to consider a structured approach to assessing supply chain alternatives. While labor cost competitiveness has frequently been at the forefront of footprint decisions, there has been a recent shift toward using a more holistic set of financial and strategic factors to evaluate total cost of ownership (TCO) and gauge the true business impact on the supply chain.

Financial factors	Strategic factors
<ul style="list-style-type: none"> • Labor wages • Material and component costs • Capital investments and tooling • Material and inventory constraints • Trade and logistics costs • Other non-labor costs (e.g. utilities) 	<ul style="list-style-type: none"> • Alignment with product strategy • Ability to meet customer needs (agility, proximity, etc.) • Availability of labor, facilities, etc. • Quality and innovation • Ease of doing business

However, few companies effectively consider how to weigh different financial and strategic factors, and most lack the data and tools to create a robust model and analyze site performance across all. Even worse, siloed operational information often prevents executives from comparing sites consistently across all dimensions. These analysis gaps lead to sub-optimization, reducing the benefit realized from footprint reconstitution. Keeping the focus on relevant data (financial, customer, operational, etc.) and shared goals can help organizations stay on track and reap the benefits of footprint revisions.

Pulling the Right Levers

When looking at footprint decisions, it is useful to start by considering the available mechanisms for efficiency improvements. There are four strategies companies turn to:

- › **Relocation** – moving existing operations to a new site
- › **Consolidation** – combining two or more existing sites into one
- › **Outsourcing** – contracting out to external manufacturing partners
- › **Automation** – installing robotic systems to support production

The past three decades of manufacturing have been characterized by **relocation** and **consolidation** as companies have sought to grow through mergers & acquisitions and market expansion. However, these trends have created substantial footprint complexity across industries by breeding operational inefficiencies. When executed with the proper controls and governance, relocation and consolidation can bring about major benefits within twelve to eighteen months. However, when undertaken improperly, they also create risk and complication.

Outsourcing has been recognized both as an improvement opportunity and a continued source of stress for executives. Conversations around “make vs. buy” opportunities may be sensitive, but they represent an important consideration in overall supply chain strategy. The first step in establishing a robust “make vs. buy” strategy is an in-depth review of the relevant strategic and financial factors including product strategy, quality and innovation, supply availability, cost efficiency, and required capital investment.

Finally, over the past decade, **automation** investment has penetrated many entrenched industries globally including automotive, industrial engineering, and consumer technology. The inflection point at which automation rather than labor cost competitiveness will affect footprint decisions remains unseen. However, the runway for labor cost competition is not infinite. As continued investment in automation capabilities drive down labor’s impact on production costs, manufacturers will find increased flexibility in manufacturing footprint strategy.

Figure 1 – Expected investment in “Smart Factory” technology 2020-2024



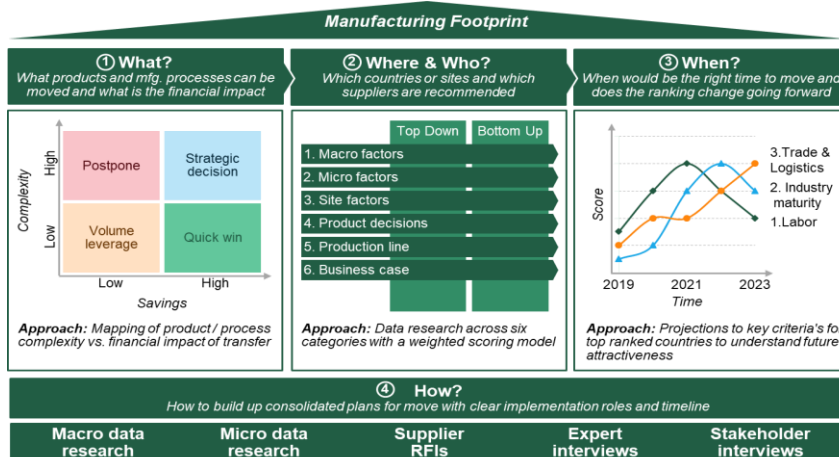
Source: Siemens Financial Services, “Industry 4.0: Rising to the challenge”

Driving footprint optimization

Executives should focus their attention on what steps are needed to put these concepts for footprint improvement into action. The key question for executives across industries remains the same: how will we get from initial analysis to final execution while ensuring our key objectives are realized? Companies should ask four key questions to help them create a durable strategy with an actionable roadmap:

- › **What** products and processes are having issues and **why**?
- › **Where** should our sites be located?
- › **When** should our sites be moved?
- › **How** should we execute to optimize resources and minimize disruptions?

Figure 2 – Manufacturing footprint optimization framework



What and Why

The first question is *what* to move. Which products or processes are not working well with the current footprint? Answering these questions in the right level of detail can be tricky, but managers can start by defining their most essential metrics – the key performance indicators that give a holistic picture of site performance. Examples of potential metrics include financial outputs like sales volumes, profit margins, and overhead costs alongside strategic considerations like proximity to customers, new market opportunities, and labor availability. Defining which metrics matter most for achieving short and long-term priorities is the foundation for a practical business case.

Where


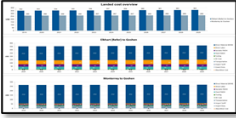

The next step is to assess relocation options. Sites should be thoroughly evaluated to provide a complete picture of the strategic and financial implications of various scenarios.

A multidimensional scorecard can help contrast factors beyond labor and manufacturing costs. Using a standardized scorecard supports a fact-based analysis that is consistent across sites and suppliers. To do this, companies should assess macro, micro, and site-specific factors across all alternatives using the latest available data to create a nuanced view of different options while also accounting for how factors could shift over time.

- › **Macro factors** deal with the widest lens of country attractiveness, issues like labor rates, labor market growth, infrastructure development, and trade and regulatory environment
- › **Micro factors** deal with things like supply chain availability and demand market characteristics
- › **Site factors** deal with the most tangible considerations, such as manufacturing capabilities, logistics network, site agility & flexibility, inventory strategy, and the total cost of ownership

Once sites have been run through a top-down location analysis, executives should also model different “what if” scenarios to understand how the move could impact different business elements.

Figure 3 – Creating a robust footprint scenario model

Overview of Manufacturing Footprint Simulation Model		
	Description	Illustration
1 Purpose	<p>The product cost model allows users to:</p> <ul style="list-style-type: none"> › Model landed cost of a product in different manufacturing locations (scenarios) › Simulate landed cost sensitivity based on macro-economic parameter developments, such as labor inflation and FX-rates 	
2 Model Input	<p>The model builds on the following:</p> <ul style="list-style-type: none"> › Product specific input (actual data) › Region / factory specific input (actual data or assumptions when necessary) › Parameter development (assumptions) 	
3 Usage	<ul style="list-style-type: none"> › Product and site-specific summary outputs – assumptions should differ across products and sites to create an accurate impact analysis › Allocation scenario analysis – the model should be flexible to support multiple scenarios based on varying assumptions 	

These analyses can be challenging, but including the correct criteria can guide accurate cost reduction opportunities. Relevant criteria for analysis may include multiple of the following:

- Relevant product SKUs, bills of material, and material cost inflation
- Labor cost baselines, minimum wage requirements, and labor inflation
- Manufacturing overhead rates
- Investments in CapEx and tooling
- Transportation costs, lead times, and trade duties & tariff impact
- FX rates and volatility

When and How

After considering what to move and where to relocate to, timing and execution are still critical factors. Executives can draw on six foundational steps to build a tactical roadmap for disciplined footprint transformation.

- 1 Initiative prioritization** – which opportunities will provide the most value and what kind of resources are needed to execute (cost vs. return)? What priority level should each initiative be given?
- 2 Roadmap development** – what is the ideal time horizon to achieve the target state? How many phases are needed to ensure successful execution across all initiatives?

- 3 **Workstream mapping** – what are the major deliverables and activities for each phase, how long will each phase take, and how do they fit into the big picture?
- 4 **Roles & responsibilities** – who are the responsible owners for each activity, and what mechanisms are in place to ensure alignment, coordination, and control?
- 5 **Action plans** – how many resources are needed for each activity and what is involved on a day-to-day level to complete the assigned task? How do we track progress toward our objectives?
- 6 **Change management** – how can we ensure organizational awareness, desire, knowledge, ability, and reinforcement around changes to the footprint?

Using a structured prioritization matrix can be helpful when thinking about sequencing initiatives into a phased approach. Developing the right templates and organized outputs to support project management can support consistent initiative tracking and execution of a new footprint strategy.

Conclusion

In the face of shifting supply chain dynamics, executives need to continually re-evaluate their supply chain strategy utilizing relevant data and analyses. Yet many companies still lack the right tools and information to do so.

In order to initiate the process of footprint reconstruction, organizations can start with the following steps:

1. Identify the **key metrics** and strategic factors to evaluate site performance
2. Conduct a **structured evaluation** of sites based on the latest available data
3. Identify **lowest performing sites** and the associated products and processes

Beginning with these realistic steps will lay the foundation for a robust approach to manufacturing footprint optimization based on structured evaluations and dynamic scenario modeling. With the right evaluations and execution plans, manufacturers can truly improve efficiency, flexibility, and service levels while reducing working capital requirements and driving a resilient supply chain that is up to the challenges of the coming decade.

For more information, please do not hesitate to reach out to:**Ryan Huff**

CEO and Partner

+1 (914) 907 0781

Ryan.huff@appliedvalue.com

New York**Austin Mora**

Project Manager

+1 (978) 760-8107

Austin.mora@appliedvalue.com

New York

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