

Gillum Strategy Partners



V I E W P O I N T

Footprint Optimization

Determining the optimal locations for a company's facilities is a critical process with tremendous impact on both cost structure and ability to serve customers. Footprint analysis answers three key questions:

- Where should my production locations be?
- Which functions should be performed in which locations?
- How should products flow to my customers?

By having a well thought-out and documented footprint vision on record, companies can position themselves for strategic advantage in the marketplace.

Gillum Strategy Partners ("GSP") has helped a number of large industrial clients evaluate and optimize their worldwide production and distribution footprints. This paper summarizes the best practices that GSP consultants have identified as well as some of their experiences with these clients.

Footprint Optimization Defined

Footprint optimization is the process of evaluating the mission, number, location, and capacity of a company's production and distribution locations to maximize efficiency and minimize costs. Essentially, this means reviewing and adjusting the design of a company's entire production and distribution network to answer the question, "Are you optimized now and will you be going forward?"

A company's footprint includes all facilities that touch its products, including production facilities and distribution centers, regardless of

ownership. Company-owned sites, joint ventures, outsourced production or warehousing locations should all be included in footprint analysis and optimization. This paper uses several terms when discussing the physical structures in a company's footprint including "production locations" or "facilities"; all are meant to encompass the definition noted above.

Footprint analysis is ideally performed on a regular basis – recommended annually – to capture changes in business conditions such as customer lead times, factor costs or supply chain dynamics. Additional prompts for addressing footprint optimization include mergers & acquisitions, changes in demand patterns, availability of outsourcing facilities, shifts in the competitive environment, the introduction of new products and services, and changing corporate strategy.

Why Perform Footprint Analysis?

For many companies, the fixed and variable costs associated with their production locations represent a significant portion of the total cost structure and fixed asset base. Labor, shipping, duty, occupancy, energy, overhead, depreciation and other costs all factor into the ideal number of facilities and their locations. Beyond cost reductions, companies can also achieve other goals relating to efficiency including shorter product cycle times, improved service, reduced order fulfillment lead times, higher on-time delivery performance, greater forecast accuracy and readiness for disaster recovery. Consequently, frequent reviews are needed to justify the current footprint and plan for future changes. Managers may tend to view

footprints as “fixed”, but changes often pay for themselves within a short time period. GSP has observed paybacks in as short as one year from structural changes to clients’ footprints.

The process of footprint analysis also provides discipline to keep the business forward-looking by continually answering key questions such as:

- How will the geographic location of your customers change over the next 3-5 years?
- Will you continue to ship direct to customers from factories or utilize internal or external distribution centers?
- How will expected changes in product mix impact your production needs?

The long lead times associated with footprint changes dictate that companies perform frequent reviews. Engineering, construction, human resources and many other functions must initiate activities to add or close facilities months, if not years, in advance of the desired implementation date. GSP clients typically have lead times of 18-24 months to construct a new production location, but some have also seen this grow to 36 months for highly complex facilities. Consequently, managers can ill afford to wait until they need more capacity to begin planning for footprint changes. Leading businesses always have an expansion (or consolidation) plan ready to go should market developments necessitate a change.

The lure of low cost labor in China and other overseas markets also drives footprint analysis in order to sort through the tradeoffs

involved in potentially moving production abroad. Risks, including the loss of an experienced workforce, higher logistics costs, supplier changes, availability of labor and materials, access to power supplies, adherence to local laws and trade quotas as well as political risks must be weighed against labor savings, tax incentives and other potential benefits.

Key Questions

Managers conducting footprint analysis should ask the following:

- Have all relevant cost drivers affecting optimization been identified?
- Are there opportunities to consolidate and decrease cost while providing the same level of customer service?
- Do we know the geographic reach of our production locations – i.e. the point at which transportation costs outweigh the benefits of production location scale?
- Do we have a disaster recovery plan should one of our facilities or lines go down?
- Have we identified the future steps needed to modify our footprint as our business changes?
- Do we understand how our fixed and variable costs relate to our footprint?
- Do we understand all our footprint options under different market scenarios?
- Do we know the trigger points that will signal a needed change to our footprint?

Optimizing your footprint requires answering all of the above – and then taking action where needed. GSP experience suggests that the following approach will lead to sustainable results.

Five Steps For Footprint Optimization

1. Understand current cost structure
2. Pool and forecast demand by product line and geography
3. Determine five-year vision and potential footprint scenarios
4. Create model and evaluate scenarios
5. Develop implementation plan

1. Understand Current Cost Structure

The first step in footprint analysis is to gather a thorough set of actual current data for all costs that can be impacted by a change in footprint. Typically, this encompasses everything on a production location's profit and loss ("P&L") statement including raw materials, labor, freight, supplies, inventory, facilities, transportation, customs and duties, engineering, selling and administration. Annual P&L statements for each existing production location should be created using consistent accounting methodologies.

In addition to cost data, key operating metrics such as square footage, labor hours and production volume are required to compare costs between facilities on a per unit basis such as hourly labor rates. Weight – and sometimes cubic volume – of products will be needed for modeling transportation costs.

Labor and logistics are the two factor costs most sensitive to location; therefore, detailed supporting data is required to properly evaluate both areas. Shipping and duty costs typically require a separate analysis beyond the data captured in the P&L in order to determine accurate per pound costs between the relevant demand pools (countries, states, ZIP codes, etc.).

2. Pool and Forecast Demand by Geography and Product Line

In order to properly model prospective footprint scenarios, projected volume data must be aggregated into geographic pools at the appropriate level of detail. For example, a domestic company seeking to determine optimal U.S. distribution center locations may require ZIP code level demand data while an international business choosing among China, Mexico and Europe can likely make accurate footprint decisions using data aggregated at the country or state level.

Demand forecast must also be available by product because a key decision in footprint optimization is determining which products should be made in which facilities. Scale advantages from consolidating production of a particular product into one factory may be offset by logistics costs depending on where the demand for that product lies.

3. Determine Five-Year Vision and Potential Footprint Scenarios

Creating a footprint vision requires a solid understanding of how your business will look in the future. Using the company's current approach as a starting point, the most likely

scenarios for future go-to-market strategy, channels, demand patterns and production strategy should be identified so that potential footprint scenarios can be designed. If it exists, the company's five-year business plan should serve as the basis of the most likely scenario. In addition, other scenarios should be developed by reviewing each of the above business model components in light of current trends and expected changes to the business. What new product introductions are coming and how will they impact demand and distribution channels? Which business units are growing most rapidly? How are customer demographics and lead time expectations changing? Are there any impending acquisitions that will change our footprint or supply chain?

A handful of potential footprint scenarios should then be developed that can address the possible changes identified in the five-year vision. The scenarios should consider a range of alternatives for location, number of facilities, production location mission (assembly vs. full production, one product line vs. multiple product lines), geographic reach and "make vs. buy" preference. In addition, each scenario should address potential risks and limitations associated with various business, political and macro environments. This is particularly important when assessing expansion plans abroad.

Outsourcing must be considered as an alternative in footprint scenarios for some or all of the value-added steps throughout a product's supply chain. GSP has seen a number of clients outsource production of select product lines due to insufficient

capacity or the inability to achieve scale. The result has been measurable improvements in product availability with lower production costs.

4. Create Model and Evaluate Scenarios

The footprint analysis is dependent on a robust financial model that simulates current state volumes and costs and allows testing of different variables and changes in demand pools. The model utilizes the cost and demand data gathered in steps 1 and 2 and will be used to compare new footprint scenarios to the current state. Managers with a large number of variables or those seeking highly precise analytics should incorporate linear optimization into the model.

Alternatives for how products flow throughout the network must be identified and incorporated into the model as the product flow will impact the mission of each facility. Is inventory stored at production facilities or at distribution centers? How much of the business is make-to-order vs. make-to-stock? Do some customer orders ship from the production location and others from the distribution center?

The various footprint scenarios identified can then be compared to the current state in the financial model. Assumptions should be varied in each footprint scenario for the factor costs that face the greatest risk of change such as transportation or energy costs. The optimal footprint under today's factor costs may not be the same given a different set of assumptions.

5. Develop Implementation Plan

The payoff of footprint optimization is a facilities network design supported by sound analysis, but managers cannot stop there. Implementing that vision requires a plan to move, build, or close down facilities as needed even if the company is not yet ready to “pull the trigger” on footprint changes. All companies should have a footprint implementation plan in place to shorten the lead time once it is determined that changes are necessary.

When consolidating facilities, managers should take care to include the following key elements in the plant shutdown plan:

- Building sufficient safety stock of finished goods and raw materials
- Determining in which order the production lines will be moved
- Establishing new local suppliers, if necessary
- Workforce outplacement and severance
- Key risk factors and a mitigation plan

Best Practices

No matter what tactical approach a business takes to footprint analysis, Gillum Strategy Partners has identified five best practices that should serve as guiding principles throughout the process.

1. Perform footprint analysis annually and always have a plan ready

Companies should not view their production

footprints as fixed, with changes made only every 5 or 10 years. Technology advances have improved communications and shortened delivery times, thereby broadening the alternatives for where companies can locate production and inventory.

2. Align your footprint with your long-range vision

Lead times of 18 to 36 months for major footprint changes require managers to plan ahead and anticipate changes in the business model and customer base. In five years, will you need to be closer to your customer than you are today? Will low-cost manufacturing be more or less important than today?

3. Envision other possible scenarios and their impact on your vision

Your primary footprint plan should support your long-range vision for the business, but what if the vision changes? Have backup plans in place to address issues such as:

- Changes in your anticipated growth rate
- Rising factor costs such as energy / oil
- Acquisitions
- Changes in market share
- Disruptive competitor actions

4. Understand factor cost drivers and how they impact your optimal footprint

Modeling multiple footprint scenarios allows managers to identify the factor costs that are most sensitive to change. Duty costs may rise substantially if production is moved outside

the country where most of your demand lies. Transportation may be cost prohibitive from overseas locations if production weight / volumes or customer lead times will not allow for ocean or air freight.

5. Consider disaster recovery implications

While it is tempting to operate with the fewest possible number of locations, managers should consider the advantages of location diversification when developing footprint scenarios. If you lose a production line or an entire facility, what disaster recovery plans are in place? How quickly can you respond if demand shifts to another part of the world?

A documented footprint vision and plan of record that is continually refined is essential for responding to market changes. Through footprint optimization, companies can position themselves for competitive advantage. ■

Gillum Strategy Partners is a boutique strategic consulting firm providing services to top tier clients in a broad base of industries, including technology, manufacturing and services. GSP's areas of expertise include operational improvement, go-to-market strategies, marketing effectiveness, channel and alliance management, growth strategies and sales productivity. We emphasize pragmatic solutions with measurable results and often work with our clients through implementation.

Address:

455 North Cityfront Plaza Drive
Suite 3100
Chicago, Illinois 60611

Contact:

Brad Gillum
Managing Partner
312.961.1441
brad.gillum@gillumstrategy.com