Arthur D Little

Operations Management
Viewpoint

Inbound Supply Chain Development: being in charge beyond the first supplier interface

How to develop lean and agile supply chains

As manufacturing companies shift towards buying on a system level rather than component level, driven by outsourcing and low cost sourcing strategy, the inbound supply chain becomes somewhat of a "black box" with little transparency beyond the first tier supplier interface. These supply chains, often complex, stretching over several geographical and organizational boundaries, have made it increasingly challenging to respond rapidly to changes in market demand. Arthur D. Little's experience is that companies which take control and use a systematic approach for inbound supply chain development (SCD) can achieve high flexibility in supply chain and still reap the fruit of outsourcing and low cost country sourcing.

Inbound supply chains are often complex and impact market responsiveness

Outsourcing of upstream activities has continued in recent years and many companies are now buying on a higher system level rather than component level. Key drivers of this development have been the focus on core competences and the shift in center of gravity in sourcing from the traditional western countries towards low cost countries. Many companies today depend on an inbound supply chain that stretches over multiple continents and organizational boundaries, and are at the same time experiencing that the inbound supply chain has become somewhat of a "black box" with little control and transparency beyond the first tier supplier interface. Many of the companies involved in the inbound supply chain also have limited resources and competence to drive supply chain improvements.

The complexity in the supply chain impacts companies market responsiveness. The high market volatility in recent years has put significant stress on supply chains, and many companies struggle to adjust output when demand plummet and ramp up quickly enough when demand later bounce back.

Today, many companies are better prepared to respond to a sudden drop in demand with the foot on both the accelerator and brake, the flexibility of the supply chain however is still a key concern.

The companies which successfully take control and manage the inbound supply chain to meet the market volatility can:

- Increase market shares during ramp-up
- Preserve margins when demand drops (less overproduction)
- Get less firefighting costs to compensate for supply chain weaknesses
- Improved overall inventory turnover

Taking control and manage the supply chain is crucial

Flexible and robust supply chains that are able to react rapidly to changes in the market are necessary so that a company can effectively adapt to changing market conditions. In environments characterized by high outsourcing, methods like Supply Chain Development (SCD) are necessary to achieve flexibility and gain knowledge about bottlenecks and lead time drivers, and thereby an ability to control the supply chain.

Many companies that have successfully developed flexible and robust supply chains do not treat their inbound supply chain as a "black box", they rather have a setup with the following characteristics:

1. Setup is designed for overall supply chain performance rather than site performance
2. High transparency (upstream, downstream and vertically)
3. The right balance of agile and lean principles relevant to the business context

Supply Chain Development (SCD) is applicable when:

- The supply chain can be considered to be a crucial extension of the company's own production
  - Outsourcing has led to less control of the supply chain
  - Purchased items are more or less customer specific (not commodities)
  - There is also potential to develop deeper relationships between supplier and customer
- Customer requirements put pressure on shorter and stable lead times
- Demand is characterized by large, often variant specific, volume fluctuations
- Volumes are large, implying that even a small percentage increase in volumes represent significant capacity

SCD gives a company a thorough audit of the supply chain with focus on lead times and capacity constraints, an exercise relevant to most companies as experience has shown that even large global companies often have relatively limited knowledge of their supply chains and their capacity constraints.

The need for a systematic approach to SCD

There are several different ways to manage SCD. There are however certain requirements that need to be fulfilled in order to be successful in such work.

Successful SCD initiatives with the purpose to achieve agile and lean supply chain are based on a number of cornerstones:

1. Collaborative Win-Win attitude
2. Structured approach with flexible toolbox
3. Ambition driven target setting backed up by fact based analysis
4. Balance short term and long term actions

1. Collaborative Win-Win attitude

Your supply chains stretching over multiple companies can only become lean and agile if all parts of the supply chain are aligned with each other. The different companies cannot optimize their "local part" of the supply chain without understanding how their "part" fits into the larger picture.

This alignment does require a very high level of transparency, which can be difficult to achieve as all parties have a natural interest to keep business critical information confidential to the other parties.

The commercial aspect of SCD cannot and should not be neglected. A proven approach is to separate the SCD discussions from the commercial discussion. This requires an upfront understanding between the parties where and how improvements are shared.

Typical results of the SCD might move inventory across company boundaries and might in some cases add costs in one company to enable the other to reduce costs.

2. Structured approach with flexible toolbox

It is important to have a framework on which to found the SCD work, e.g. DMIAC (see figure 1). If your organization is currently using a framework for project work, the same framework can favorably be used also for a SCD project as your staff is familiar with the terminology and process. A framework helps to create a structured approach and to set appropriate activities and deliverables for each phase.

No matter which framework you choose as basis for the SCD project, there should be a startup phase, where the purpose and objectives of the SCD project are defined, the project plan is set, and most importantly, the company gets commitment from the suppliers in the selected supply chain.

Figure 1: Supply structure and physical flows

Source: Arthur D. Little analysis

The next phase should involve gathering enough data to ensure that the team has a complete view of the supply chain's current state.

3. Ambition driven target setting backed up by fact based analysis

Facts gathered through interviews and data analysis should be used as basis for fact based dialogue between the OEM and suppliers. In addition, the data can be used to illustrate reasonable ambitions, i.e. the lead time "Quartile Curve" (see figure 2), given current performance. Thus, data makes discussions fact-based, and spurs discussions for potential improvements.

It is very important that the entire team understands the current situation and its implications on flexibility. Once a thorough understanding of the current situation is cemented and all parties have agreed on the requirements put on the supply chain, we suggest moving on to visions and target setting.

Visioning and target setting are best done in workshop mode. To create, support, buy-in and encourage out-of-the-box thinking we recommend bringing best practice examples to show at the workshop. The examples are meant to start the creative process and may or may not be related to the industry on which the SCD is performed. The workshop should result in a defined wanted position for the entire supply chain, targets for the wanted position, and an action plan to get there.

It is also important to set follow-up principles. Follow-up may be driven by the OEM but as it is a joint effort. It is important not to forget that the progress of actions put on the OEM must also be monitored. Before the improvement work begins it is valuable to take time to anchor the wanted position and the required actions

Case example

In an SCD project our client needed to increase volume and mix flexibility of its supply chain without compromising capital efficiency and cost to secure on time delivery to its customers. After having reviewed the clients key flexibility challenges Arthur D. Little developed a structured approach to supplier development built around the DMAIC (Define, Measure, Analyze, Improve, and Control) framework that was piloted in one of the problem supply chains.

We used the framework to structure a set of tools, and created new templates and tools where lacking, e.g.

- Data gathering tools
- Analytical tools to analyze gathered data
- Workshop guidelines and presentations
- Tools for ambition setting and planning

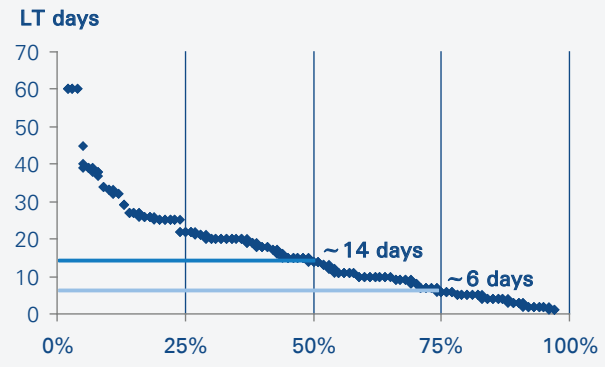
In the Analyze phase Value Stream Maps (a LEAN tool) of the selected supply chains were created. The facts gathered were used as the basis for very successful discussions during a two-day workshop at the first-tier supplier's premises.

The measure and analyze phase stretched over 4 weeks and resulted in a joint action plan comprising short term and long term actions with significant improvement performance.

- Service level from 94% to 99,5%
- Delivery lead time from 4 days to 1 day
- Throughput time from 81 days to 40 days

Figure 2: Supply chain throughput times

Supply chain throughput times



Example

- Average lead time is 14 days, but throughput times vary significantly
- In graph to the left throughput times for all articles ordered the past 6 months have been plotted according to descending lead time
- If throughput times can be stabilized around the 1st quartile (6 days) average throughput time is reduced by 60%

Comments

- Analyses can be made for lead times for all suppliers in a supply chain

Source: Arthur D. Little analysis

internally at all involved parties. The plan shall then be detailed further to become a project plan – then the implementation of proposed changes can begin.

4. Balance short term and long term actions

Changes may be both significant and long term, as well as easy and short term. Experience has shown us that successful SCD projects take time. Even if the implementation plan can be agreed upon in a relative short amount of time, the actual implementation of the desired changes will take time as they most certainly will require both your own organization and your suppliers' to rethink the way they run their supply chains in more than one way. It is also a question of fostering team work and continuous improvement.

To achieve the wanted result it is necessary that the spirit of cooperation and trust is kept between the companies in the supply chain. Information needs to be shared, both regarding progress on set targets and also in relation to customer preferences and supply chain constraints.

Arthur D. Little point of view

The success of a SCD project is entirely dependent on the willingness of both customer and supplier to work side by side to achieve a win-win situation. You need to find an efficient and effective way to work with the inbound supply chains to be able to respond rapidly enough to changes in the market demands. If the SCD effort should be on a meaningful scale it is necessary to have a structured approach for the process. For each stage in the process appropriate best practice methods & tools should be utilized. An important step is the collection of quantitative data in order to base decisions on facts.

Successful SCD projects take time, but it is important to balance short and long term actions. There are significant benefits, for companies which successfully take control and manage the inbound supply chain:

- Increased market shares during ramp-up
- Preserved margins when demand drops (less overproduction)
- Less firefighting costs to compensate for supply chain weaknesses
- Improved overall inventory turnover

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