

DE-RISK YOUR SUPPLY CHAIN

ROBUST RESILIENCE IN AN
AGE OF TURBULENCE



MANUFACTURING SOLUTIONS

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WHY NOW?

Organizational leaders across the globe have been dedicated to driving down inventories to reduce carrying costs and increase inventory turnover. We focused on core competencies and outsourcing. If we could find a way to move it out of our shop into a sub-supplier's shop, we did it. We saw what were assumed to be stable trading relationships with China, Mexico, and others, and we thought it was safe to become reliant on their suppliers. We saw a global managerial class come to the fore, heedless of borders and culture, and often educated at the same elite Western institutions of higher learning.

Whether you were sitting in Beijing, Bangalore, or Boston, you heard the same buzzwords spoken, watched similar processes being implemented, and saw the same ISO certifications hanging on the wall. It seemed, as someone once famously wrote, to be "the end of history." But of course, it was not, and the geopolitical landscape has continued to evolve. It is time to check our past assumptions against a new reality of renewed global competitors, the reemergence of borders, and the return of tariffs.

**"LET OUR ADVANCE WORRYING
BECOME ADVANCE THINKING
AND PLANNING."**

WINSTON CHURCHILL

CHANGES ARE COMING

We are in the midst of the second great realignment of the world's supply chains within our lifetimes. The first supply chain realignment came with the end of the cold war and NAFTA in the early '90s. It continued through the admittance of China to the WTO in 2001. We are living in a world created by this realignment today. However, consider the following:

- Europe is divided culturally along an East/West axis and financially North to South. With Brexit, the UK is leaving and taking with them the second most crucial capital market in the world.
- North American trade will soon be governed by USMCA instead of NAFTA. The implications of this will only become apparent in practice and implementation.
- Our relationship with China is problematic at best, signaling the return of regional competition to the global landscape.
- Global lock downs and contracting economies are driving record numbers of bankruptcies and business closures across the globe.
- Agile and flexible competitors are emerging to be aggressive players on the world stage, including places like Vietnam Cambodia, Thailand, Malaysia, Laos, and the Philippines.
- Technology and robotics are driving rapid advancements in automation and labor productivity.

These factors, and others too numerous to list here, will have consequences in terms of exchange rates, tariffs, and lead times. The risk of supply chain disruptions has never been higher in peacetime. These will impact everyone everywhere.





YOUR APPROACH IS LIKELY OUT OF DATE

Even the best-managed enterprises have designed their supply chains and the governing processes and systems around an assumption of relative stability. Yet in a world faced with the turbulence that exposes your company to a degree of risk, that is no longer valid. The level of disruption that we are currently experiencing means that your systems--which have been designed for stable times--are not likely sufficient in the current environment. New social and economic factors are in play around the globe, and your systems and processes will need to be robust and risk-tolerant to monitor and manage them.

YOU NEED TO FOCUS ON HIGH-IMPACT SUPPLY CHAINS

Supply chain disruptions can hurt your customers, impact your business continuity, and destroy your brand value through quality issues and late deliveries. The consequences of the past decades of emphasis on inventory turnover and carrying costs in support of lean methodologies are now returning in a boomerang fashion.

Without safety stock, disruptions are often felt immediately. When product deliveries are highly streamlined, and inventory goes from dock to stock, a single late or missed shipment results in empty shelves. What's more, if your customers have the same super lean, just-in-time methodology in place, then your failure to deliver becomes their failure to deliver, and that can result in a cascade of contractual penalties, ruined relationships, and lost opportunities.

EMPHASIZE STRATEGIC SOURCING

Becoming complacent with procurement is an easy pitfall for a business if they experience early success. We might think, “If the same vendor has served the company well for 20 years, why change now and waste resources reformatting that business relationship?” Another practical reality is that in times of stability, other priorities crowd out the necessity for re-examining your supply chain.

When considering these issues, the answer may not be in a vendor change. Nonetheless, organizations must be continuously evaluating market trends and potential risks among their core commodities. Being adaptive and innovative is what differentiates a strong procurement group from an average one. Resilience and robustness must be our new watchwords to give us the strength to allow us to prevail in times of turbulence and uncertainty.

A key goal of any organization’s procurement is to reduce the costs of its key commodities and to do so in a way that is sustainable. However, all potential risks and rewards need to be analyzed and scaled before you commit to a course of action.

Many organizations do not take risk into full consideration when they shift their focus to bottom-line savings and sole-source initiatives. Though this is often the fastest way to find competitive pricing and capable suppliers, the approach of “putting all your eggs in one basket” can backfire drastically, whether we are faced with a global disruption or something as simple as a single factory fire.

Why is this the case? In the short term, sole-sourcing can result in a decrease in external spend, sufficient product quality, and even ample amounts of inventory to satisfy demand. These are benefits being realized, but when any supply chain disruption happens--such as the COVID-19 pandemic, a natural disaster, a trade embargo, or an unexpected business closure--the supplier may be forced to shut down their operations indefinitely.

The effect is dramatically multiplied when several of these things happen simultaneously. That can reasonably describe the situation we are in right now. When faced with that kind of multifaceted crisis, the customer will not get any shipments for an extended period. Suddenly, the net benefits gained from sole-sourcing instantly are outweighed by the imminent risks about to damage the top and bottom line alike, not to mention the possible shredding of long-term customer relationships. These possible risks include having no inventory to satisfy current demand, higher product costs when trying to source elsewhere, and a potential spike in quality problems, affecting the customer’s brand perception.

Despite the benefits of sole-sourcing and cost savings, it is essential to evaluate the risks and their magnitude extensively before deciding on a sourcing strategy.

THE MAGIC NUMBER

When deciding to refrain from sole-sourcing, the big question now arises. How many vendors do we need? In reality, there is no magic number. Anyone can RFQ a product or service and build a sizable supplier base if the goal is quantity. However, what they should be doing is building their supply base in correspondence with industry trends and necessary diversification. This key methodology difference will make the supply chain much more resilient.

This is where the importance of “understanding the roots” comes into play within strategic sourcing. It is easy to fall into the trap of trying to meet current demand and focusing on short-term procurement. But ultimately, an organization will discover more areas of leverage, continuous improvement, and strategic pricing if they can assess their commodities as a whole and over a long time.

MAKE FIXING YOUR SUPPLY CHAIN A PRIORITY

With all of the changes we are experiencing globally, and with smart leaders being fully aware of the devastating impacts of supply chain disruptions, why are so many organizations behind the curve in addressing this issue? There are many reasons, and here are a few of them.

MISCONCEPTION	REALITY
Fixing supply chain issues is a problem for those in purchasing.	Supply chain issues are everyone's problem. There is no company if there is no product or service available.
We can't afford to do this right now.	The cost of preventative measures now is much lower than the cost of crisis cleanup later. There will be no magical time of having plenty of capital flowing and nothing better to do to take these measures.
There is no way to know when a disruption is coming, or how bad it will be.	There is no crystal ball for when disaster will strike. If we allow ourselves to be unprepared, we face possible company-ending hazards if we are not structured for resilience.
There is nothing we can do about this until it happens.	You can look ahead, minimize your risk, and seek out the resources you will need to survive the coming crisis, putting your organization head and shoulders above those who waited until their problems could no longer be ignore.

The most important reason, however, is a lack of organizational focus. We tend to spend time on the most immediate problems, but waiting for immediacy will, in the event of a supply chain disruption, generate catastrophic results. The most important and meaningful thing you can do for your organization is to ensure that everyone understands the importance of de-risking the supply chain and is held accountable for the results. Making it a priority means having a realistic budget, applying your best people, getting senior leadership engaged, and keeping them engaged. If your senior leadership makes it a priority, your odds of success increase dramatically.



"IN LESS THAN 70 HOURS, THREE ASTRONAUTS WILL BE LAUNCHED ON THE FLIGHT OF APOLLO 8 FROM THE CAPE KENNEDY SPACE CENTER ON A RESEARCH JOURNEY TO CIRCLE THE MOON. THIS WILL INVOLVE KNOWN RISKS OF GREAT MAGNITUDE AND PROBABLE RISKS WHICH HAVE NOT BEEN FORESEEN. APOLLO 8 HAS 5,600,000 PARTS AND 1.5 MILLION SYSTEMS, SUBSYSTEMS AND ASSEMBLIES. WITH 99.9 PERCENT RELIABILITY, WE COULD EXPECT 5,600 DEFECTS. HENCE THE STRIVING FOR PERFECTION AND THE USE OF REDUNDANCY WHICH CHARACTERIZE THE APOLLO PROGRAM."

JEROME F. LEDERER

A 5-STEP APPROACH TO CREATE A RESILIENT, FAULT-TOLERANT SUPPLY CHAIN

Success will require support and engagement from senior management and leaders in all functional areas of your organization. The team must be cross-functional, with team members representing all the major operative areas of your organization. Consider the following partial list of factors that will affect your success in de-risking your supply chain.

Currency fluctuations (Finance): Currency fluctuations will eventually result in changes in cost. Your finance team will help you to define the key parameters you will monitor to stay ahead of these changes and help to drive the solutions.

Reporting (IT/IS): Your IT/IS team will be critical both at the beginning in helping to gather data to identify current problems and will be there again at the end, helping to implement monitoring and control of the solutions.

Product design (Engineering): Can your custom components be designed out of your products? Will parts from new additional suppliers meet the design requirements? Your engineering team will provide critical inputs to the process.

Compliance (Supply Chain): Do new vendors comply with regulations on hazardous and restricted substances? Does your product contain conflict minerals?

Risk in your supply chain can be driven by currency fluctuations, regulatory changes, compliance issues, product design, local disruptions, natural disasters, labor unrest, geopolitical events, and a host of other challenges and issues. These problems will undoubtedly cross the functional boundaries within your organization, and so your assessment, solutions, and monitoring must cross those same functional boundaries to be effective. As you go through the five steps outlined below, be sure your entire organization is involved in the effort.



1. ASSESS

The first step is to understand your current state fully. In this stage of the process, you should evaluate the following:

Current Suppliers:

The first step in identifying risk is to evaluate supplier concentration and to do so critically. What proportion of your total spend is with any particular supplier? Are you sole-sourced on critical components? Are you sourcing custom components? As concentration and criticality increase, so too does risk. Evaluating suppliers on these criteria will enable you to identify the most considerable risks to your organization. This evaluation gives you the means to generate a segmentation of your supplier base based upon risk, allowing for focused effort downstream in the process.

Once you have identified the suppliers that pose the biggest risks to your organization, you will want to evaluate them using at a minimum the following parameters:

- **Financial:** Is the supplier financially stable? Some external indicators of financial risk include losing customers, lawsuits and or judgments, or loss of key personnel.
- **Operational:** Does the supplier have the capacity to meet needs? Can they produce your components at more than one location?
- **Geopolitical:** Where is the supplier located? In the current environment, factors such as trade wars and international politics must be considered.
- **Regulatory:** With a raft of regulatory changes in recent years, and the disruption caused by shifting trade alliances,

you will want to reevaluate your supplier base against new requirements to verify compliance.

Systems & Processes:

- **Reports and Dashboards:** Evaluate your current reporting and dashboards to determine whether your existing systems provide easy access to the critical information you will need to enable data-driven decision making.
- **Supplier Evaluation Processes:** Auditing your current suppliers should be a regular occurrence. You should have both an audit process and a risk adjusted cadence for auditing defined.
- **Supplier Selection Criteria:** Assess how you select new vendors. Do you have a process and guidelines? Are they always used?

After this assessment process, you will have developed a complete picture of your current state, including:

Supplier ratings by risk and spend

- A thorough understanding of existing processes and systems
- A full view of currently available data and reporting
- A risk register





“WITHOUT DATA, YOU’RE JUST ANOTHER PERSON WITH AN OPINION.”

W. EDWARDS DEMING

2. DESIGN

Once you have assessed your current state, you can then design the future state. Decisions on the number and location of suppliers, including regional diversification, reshoring, or moving production in-house, should be made to address the high-priority risks you identified in the assessment phase. The future state includes not only defining the characteristics of your ideal supplier base, but also the monitoring and reporting that will enable ongoing success. Your system and process should address the risks identified in the risk register. Typical activities in this stage are as follows:

- Define the data, reporting, and dashboards necessary to monitor suppliers
- Define the external data to be monitored (risk-sensing)
- Identify the decision-makers who require access to the data
- Develop new supplier selection criteria and processes
- Design supplier evaluation processes
- Design your ideal Monitor and Control infrastructure

Having designed the ideal future state, you should now conduct a gap assessment defining the differences between future and current states.

3. PLAN

In the previous steps, gaps between the current state and future state will have been identified. In the planning stage, your goal will be to define the steps to fill those gaps. You will likely have identified many gaps through the first stages of the process. Some of these will be small tasks that can be done quickly; some will be projects that require time and teams to implement. As always, prioritizing and proper planning will be necessary. Solutions should be rated on cost and complexity, to be sure that the steps generating the highest ROI (high-impact, low-complexity) are done first. Once selections have been made, assign your leaders to each step and hold them accountable for results.

4. IMPLEMENT

The implementation stage is when research and planning are turned into action. If you have made de-risking your supply chain a priority, your senior leadership will be involved. This effort should be high profile, with key leaders in your organization taking on prominent roles to drive your success.



**"REDUNDANCY IS AMBIGUOUS
BECAUSE IT SEEMS LIKE A WASTE
IF NOTHING UNUSUAL HAPPENS.
EXCEPT THAT SOMETHING
UNUSUAL HAPPENS-USUALLY."**

NASSIM NICHOLAS TALEB

5. MONITOR AND CONTROL

High levels of supply chain disruption will be a regular occurrence for several years. You will need a robust reporting mechanism to provide an early warning system. Maintain and regularly re-assess and reevaluate risk; maintain a risk register and contingency plans, review at regular intervals, update and take action accordingly.



Supplier Concentration: Through the process outlined above, you will have eliminated risky areas of supplier concentration where possible. But, as your product mix changes over time, you can end up with new concentrations of spend. Set warning levels for reporting. It also often occurs that second and third sources are identified, but then not used. If they are not used, they are not real, so it will also be essential to monitor the use of secondary sources to ensure they are at the appropriate level.

Operational Parameters: There is always risk in onboarding new suppliers. The risk of quality problems and delivery issues means that you will need to monitor new suppliers closely. However, your best suppliers are likely going through a similar process, evaluating their supply chains to eliminate their own risk. As you source, you are also taking on your sources' risk. The right approach is to apply the same monitoring to even your highest performing vendors. They are operating in the same high-risk environment you are, and are likely making changes. Past performance is no guarantee.

Currency fluctuations: Know where your spend is geographically, and monitor exchange rates and economic indicators that may impact these rates.

Tariff changes: The past few years have seen tremendous changes in tariffs. Some changes are temporary, some are permanent, but all are important. Your cost structure can change overnight as a result. Be prepared to adjust quickly.

Geopolitical events: Business and geopolitical events have never been more intertwined than today. In the past, stable trading regimes have allowed us to ignore geopolitics. Today, with nations using tariffs as negotiating tools and extensions of diplomacy, we can ignore this no longer. When evaluating supplier concentration, be sure to consider their geographic concentrations, and assess them against geopolitical risks. Ongoing successful risk management is built on a foundation of excellent processes, valuable reporting, and data-driven decision-making.

KEY TAKEAWAYS

1.

Your supply chain is a critical strategic component of your business. Therefore, a resilient supply chain will be critical to future success.

2.

“Just-in-Time” and lean manufacturing have reduced cost by reducing inventory, but have increased the likelihood of costly supply chain disruptions.

3.

Global interconnectedness has increased, exposing supply chains to new risks.

4.

Geopolitical risk has increased tremendously.

5.

You must be systematic in your approach – assess, design, plan, implement, monitor.

6.

Success will only come if you make it an organization-wide priority. You cannot be complacent.

7.

Once you see the problem, it is too late. Data and reporting that facilitate early warnings, and data-driven decision-making, are both necessary to make solid decisions today and to mitigate future risk.

“ONE THING THAT MAKES IT POSSIBLE TO BE AN OPTIMIST IS IF YOU HAVE A CONTINGENCY PLAN FOR WHEN ALL HELL BREAKS LOOSE.”

RANDY PAUSCH

DE-RISK YOUR SUPPLY CHAIN

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ABOUT US

Arkansas Economic Development Commission Manufacturing Solutions (AEDC-MS) was established in 1995 and is a program of the Arkansas Economic Development Commission. AEDC-MS is an affiliate of the National Institute of Standards and Technology (NIST) Manufacturing Extension Partnership (MEP).

ABOUT MEP

Since 1988, the NIST MEP has been committed to strengthening U.S. manufacturing, continually evolving to meet the changing needs of manufacturers. Through its services and partnerships, it has had a profound impact on the growth of well-paying jobs, the development of dynamic manufacturing communities, and the enhancement of American innovation and global competitiveness.

TRAINING & CONSULTING SOLUTIONS

Since 1995, Manufacturing Solutions' industry experts have used their many years of experience to offer solutions and deliver results in all areas of manufacturing. Manufacturing Solutions provides hands-on business and technical assistance to make Arkansas' industries more competitive. Manufacturing Solutions provides project assistance in Growth & Innovation, Operational Excellence, Leadership Development, Toyota Kata, Lean, Technology Solutions and Family Business Transition Services.



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**"THE HELP PROVIDED BY AEDC-MS
CAME AT A CRITICAL TIME IN OUR
COMPANY'S DEVELOPMENT. THEIR
INFLUENCE HAS BEEN SIGNIFICANT
AND CONTINUES EVEN TODAY AS WE
ARE DEALING WITH EXTRAORDINARY
GROWTH. WE ARE GRATEFUL THAT
THEY WERE THERE TO HELP US."**

**BECKY FOSTER
INTIMIDATOR, INC.**

INDUSTRY EXPERTS



Dan Curtis
Center Director



Phil Plyler



Bill Kraus



Keith Gammill



Candy Burris



Rudy Ortiz



Tim Hall

WHAT SETS US APART?

Industries Served

AEDC-MS staff has worked in assembly, fabrication, metal, food, chemical, pharmaceutical, plastic and fiberglass piping, plastic molding and extrusions, and many other industries.



Private Sector Experience

Industry professionals with a combined **200+ years of experience** in manufacturing.



Local Presence

AEDC-MS staff are regionally located throughout Arkansas to **better understand** and be available to meet **your needs**.



Professional Partnerships

Industry Professional Partnerships are a key element in the success of our programs. AEDC-MS **leverages our partnerships** to bring Arkansas Manufacturers the service and training specific to their needs and goals.





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