WHY CHANGE?

An Engineer's Mindset to Repair Your LCD Display Supply Chain

KEITH MITNIK

Solving Your Supply Chain Problems Starts With Assessing Your Risks & Needs

Nobody in manufacturing changes their supply chain for fun. Sourcing components is a complicated process. With a product development cycle of eighteen months or more and millions of dollars of sales at risk, your top priorities are stability and reliability from your suppliers. You change because you have a problem and you need to solve it.

The engineer's mindset is all about solving problems in the most efficient and effective way. How do you do that? It starts with analyzing the root of the problem to find the exact point of failure. You break down complex issues to the simplest possible variables and then create solutions that can prevent the problem from happening again.

In the twenty-two years I've been in the LCD display business, I've learned that there are five problems that can show up in your supply chain and only five: obsolescence, delivery, quality, performance, and cost. And these hold true not just for displays but any type of commodity. In this e-book, we'll cover these five problems, as well as why assessing your needs and risks is the first step to solving them.

CHAPTER 1

ASSESS YOUR RISKS AND NEEDS

Let me tell you about one of my first client experiences. When my business partner Joe and I started Phoenix Display, we had zero customers. We decided up front that we'd like more than zero. So as we started marketing our company, I approached Mary, a manufacturing buyer I already knew. I happened to already be familiar with everything about her needs: what part she was buying, her volumes, even down to how much she was paying per unit. In my head, I knew this conversation would be easy.

I targeted costs as the strongest deciding factor. I ran the math in my head and figured saving 10 percent would make Mary a hero to her company. So I called Mary and said, "Hey, I'm familiar with your company and your product. I can definitely help you out." I then offered to save her 10 percent on her displays.

"Thanks," she said. "I'll think about it."

Crickets.

Two weeks later, I called to check in with her. She said, "Yeah, we really just don't have time to work on this."

Okay. I thought maybe I should sweeten the deal. So I came back with 15 percent savings.

She said, "Thanks. I'll let you know."

Again, nothing.

I kept repeating this process until we got to 30 percent. Instead of saying yes, Mary replied, "Engineering is really busy. We don't have time to design-in your part."

"You don't have to!" I assured her. "We're going to do the design work for you. All you have to do is test it."

"Well," she said, "I'll get back to you."

Of course, nothing ever came of it. I couldn't help but think that Mary wasn't very smart. Not only that, but she wasn't working in the best interest of her company. After all, we could offer her company massive savings.

Years later, after I fully understood the impact of the five supply chain problems, I finally realized I was the one who wasn't very smart. Mary didn't actually have a problem with the price she was paying for displays. Sure, it was higher than what I was offering, but it wasn't a problem.

Sure, maybe I could have made her a hero by saving her 30 percent on those components. But what if she paid me 30 percent less and I didn't deliver? What if that 30 percent cost savings also meant 30 percent lower quality? What if switching suppliers lowered the capabilities of her product, or God forbid, they wound up going line-down because the displays didn't arrive on time?

If a company's production line is shut down due to a lack of components, that company is no longer worried about costs. They'll happily pay double the price for a component in order to keep the manufacturing line moving and maintain their customer commitments. Sure, Mary could have saved some significant dollars, but if something were to go wrong, Mary wouldn't be a hero—she'd be updating her résumé. I had a lot to learn before I could really help customers like Mary.

THE ULTIMATE RISK: LINE-DOWN

Whether you're looking at problems with your current vendor or vetting someone new, the worst-case scenario is for your manufacturing line to go down. When you're facing supply chain issues, you're always weighing one risk against another, and the risk of being forced to shut down your production line due to a component issue (going line-down) is one of the scariest.

Electronic products require many different components, from intricate custom elements to simple connectors. If one of those components is missing, the end product can't ship. Some of those components—like nuts and bolts or a standard AA battery—can be categorized as basic commodities. If they don't show up from your current vendor, you can easily find them somewhere else.

That's not the case for more complex and customized parts like a memory chip, a printed circuit board, custom batteries, or a display. Those components are designed specifically for your product (or if you're dealing in small volumes from a large vendor's standard products, you've designed your product around the component).

Finding and qualifying a replacement for a complex component takes somewhere between six and eighteen months. It's not a fast or

easy process. And if you don't have enough inventory to cover the time that it takes to design, prototype, qualify, and mass produce a replacement in time, your assembly line will have to sit and wait for it.

This puts you in a position where you have assembly workers standing around with nothing to do. You're missing customer commitments. You're missing revenue, and you may be hurting your reputation in the industry. You're allowing your competitors a prime opportunity to court your end customers. It's very, very damaging on multiple levels.

Our specific mission statement is to never let our customers go line-down. That has implications for every one of the five problems. It means meeting deadlines for design, development, and prototypes. Then in order to fulfill that mission for all of mass production, we had to thoroughly understand the five problems and get creative with many different ways to solve each of them for each and every display project that we have.

THE FIVE SUPPLY CHAIN PROBLEMS

I don't consider it my job to sell things. My job is to solve problems. And in order to solve a problem, you have to first identify the problem and then simplify it. So over the years, we've simplified everything that could go wrong in your supply chain. Every risk or obstacle that can crop up will wind up in one of these five categories: obsolescence, delivery, quality, performance, or cost. There's also one thing that can go right—designing a new product—so we include that as a sixth category.

5 PROBLEMS WITH LCD DISPLAYS

OBSOLESCENCE

- Difficult to plan for
- Causes significant delays in production
- Additional costs for product redesign
- Potential to drive end product to become obsolete

DELIVERY

- Number 1 most costly problem
- Easily shuts down assembly lines
- Reduces operational efficiency
- Missed revenue
- Missed customer commitments

QUALITY

- Damages customer relationships
- Diminishes your reputation
- Increases product manufacturing costs
- Costly product recalls or field returns

PERFORMANCE

- What is the application of the product?
- What are the necessary functions?
- The more specific performance required, the more custom the solution is
- Common problems include sunlight readability, contrast, temperature and mechanical integration

COST

Factors in Display price:

- Including functions that are needed
- Removing Functions that are not
- Optimizing display size
- Optimized LCD display integration
- Volumes

A cheaper display does not always lead to a lower cost product

...AND ONE OPPORTUNITY

NEW PRODUCT DESIGN

Problems in these areas don't always show up as an immediate crisis. They could appear first as nagging, minor hassles that escalate over time. Just like when a personal relationship isn't in crisis yet, but there are yellow flags or warning signs that things are headed in an unhealthy direction—you're bickering more, talking less, or one of you is spending a lot of late nights at the office. There are warning signs in your supplier relationships, too. We'll take a look at those warning signs and what you can do to remedy the situation before it goes downhill.

One caveat to be aware of is that identifying a problem doesn't always mean it can be solved. For instance, a customer might have a cost problem like a budget that only allocates five dollars per display, yet they've designed in twenty dollars' worth of features and aren't willing to change the specifications. In romantic relationship terms, that's like demanding a partner who has lots of experience raising kids but does not have any kids of their own. Sometimes unrealistic expectations need to be managed. The way to sort out expectations like this is to separate out wants versus needs with your vendor.

With that in mind, let's take a high-level view of the different ways the five problems can occur, warning signs that your supplier may have issues in these areas, and how the right supplier can work with you to mitigate these risks.

OBSOLESCENCE

Several different situations can render a component obsolete. Perhaps the supplier has simply decided not to make it anymore due to a drop in demand below a certain level. Or they might change the design in a way that's not compatible with your product. Maybe a subcomponent within the product becomes unavailable, making the component you regularly purchase either different or no longer available.

Manufacture any product long enough, and changes like this are inevitable. The question is whether you're getting the information and help you need to deal with it up front. If you don't find out a product is obsolete until the time of order, then you're already in scramble mode. You won't have enough time to make a change before you need that part.

The key to managing that risk is clear communication and a strong relationship with your supplier. If you were dealing with a stocking distributor, they'd just pick out a similar SKU number, hand it to you, and hope for the best. A supplier who prioritizes

your needs will start solving the problem in advance—when they see a component is becoming obsolete, they can hand you a potential solution at the same time they notify you of the change. The right supplier will offer you many different options to cope with the challenges of obsolescence (we'll discuss those options in more depth in Chapter 2).

DELIVERY

One of the most obvious places you'll see problems brewing is in delivery. You may not get responses as you expect. You might not receive delivery confirmations. There could be increasing variability in delivery times or missed commitments in terms of the delivery date.

When you have a good relationship with your supplier, you can call them about your concerns with delivery, and they will know exactly who you are and what you're building. They will be responsive to your situation and work with you to head off a crisis. Suppliers who have mind share at their factory can push your order ahead and get it filled quicker if need be. They might be able to ship by air instead of by ocean. If you're in a bind because you ordered a thousand pieces

but you're dying for a hundred right away, they might be able to ship a partial order and get that hundred to you right away.

They should also address any potential systemic problems to head off future issues: Do the lead times need to increase? Should they create a stocking program for an entire product or for a certain subcomponent? The right supplier should be flexible, resilient, and proactive.

QUALITY

Quality issues can start to crop up as an increase in out-of-the-box failures or field failures. Quality expectations are an important part of your alignment with the right supplier. On one end of the spectrum, consumer products have different quality standards because they need to sell for lower prices, have a shorter life span, and don't see the extreme product use conditions. On the other end, the aerospace industry requires incredibly high precision and a zero-failure rate. And at Phoenix Display, we're in the middle—we build for industrial products that need to take a beating and have a long service life, but it's not necessary to build in the costs associated with the aerospace level of certifications.

A lot of people use the terms “performance” and “quality” interchangeably, but they’re different. Quality refers to how well a part conforms to its design specifications. It’s intended to work within certain tolerances, under certain conditions, for a certain lifespan. When it fails to fulfill those expectations, you have a quality problem. A supplier needs to watch for quality problems, do failure analyses, and create plans to correct and contain future errors.

By contrast, performance refers to the initial setting of the design specification for the product. So in the case of a display, that might mean brightness. If you’re using a display outside and it’s not bright enough to see, you might consider that a quality issue. But if that display was actually specified to operate only indoors at a lower brightness level, then the part is meeting the specifications. The quality is not the issue, but the performance is lacking.

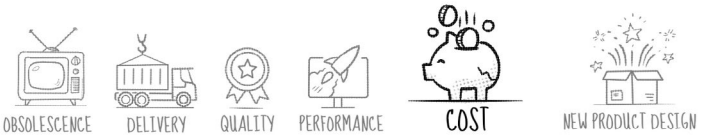
In this example, if the end customer wants to use the product outside, we need to change the design to optimize outdoor performance. So that’s the difference—performance is how well the design reflects the customer’s needs, and quality is how well the product fulfills the design specifications.

PERFORMANCE

If your customers are complaining about your product's design or you start losing market share to competitors based on functions and features, it's a yellow flag that your performance is falling behind.

Performance has a couple of different aspects. First, you want to make sure your design contains all the functions and features your end user needs and none that they don't. The flip side is that a great supplier can make your product more competitive by improving the way it serves your end customer. Suppliers who work with you on design and performance can contribute to your competitive advantage in the market.

COST



When it comes to cost, you may not see warning flags in advance. If your supplier makes unexpected cost increases, that could become an issue, but cost is not usually the number one pain point that leads to changing suppliers.

However, you could be paying too much from the beginning and you might not know it. If you see price reductions in subcomponents across the board, it could be a bad sign if your custom component isn't following suit. Ultimately, it's hard to know if your costs are right without comparing quotes from different suppliers serving your industry.

Another area you could look into is whether your component is integrated with your product as well as possible, because an overdesigned or poorly integrated product is going to increase your system-wide costs.

NEW PRODUCT DESIGN

When you're building an entirely new product, it can be a great opportunity to form new vendor relationships from scratch, especially if your technology needs or volumes are evolving. That starts with understanding your own vision and needs.

When you're new to the dating scene, you have a lot to learn about yourself, but you probably have a vision for what type of person you're looking for. You know what makes you happy, and that gives you an idea of what a successful relationship would look like. From there, you can draw conclusions about what type of partner might meet those needs.

In order to understand what you need from a vendor, you start by understanding the needs of your end customer. What problem are you trying to solve for them? You'll need to look at how they will interface with the product and what environment they'll use it in. From there, we can have discussions that will draw out all the different specifications you may need.

When should you start talking to suppliers about planning a new design? There's too early and there's too late. (That's the answer for everything.) It's too early before you have a framework for what the end product might look like.

For example, let's say you're designing a new doorbell system with an LCD display. What does the display actually do? How will the customer interact with it? How is that display going to make the doorbell more appealing in your marketing? If you haven't answered these questions yet, you won't have productive conversations with suppliers.

Once you've settled on who the customer is and how they will use the product, then you can start working with potential suppliers to find out your options to make that display as useful and cost effective as possible. They can help you determine variables like whether the display should be monochrome or color, how big to make it, whether you'll display images or just numbers, what kind of images they might be, and so forth.

Contacting suppliers too late in the process will impinge on the timing of your launch. If you're buying a standard product, you might need only a couple of weeks for it to be delivered. For customized solutions, though, it's often useful to have up to five weeks for just the development time during which the design can be optimized. From there, it typically takes about five weeks to produce a prototype order. You'll want to build that into your launch timeline to make sure everything is ready when you need it.

FINDING ALIGNMENT

If you're like most manufacturers, this kind of communication and collaboration may sound unrealistic. As I mentioned in the Introduction, when you're a smaller fish in a big pond, you can't always get the kind of dedicated attention we're talking about here. That's why finding the right alignment with your supplier is so important. Good alignment opens up so many possibilities for your supplier to partner with you, improve your operations, and even improve your product.

Joe and I learned the importance of alignment—and correct vetting—firsthand. At the time Joe and I left Three-Five, Inc., I had the bright idea to start my own company. I had an eleven-month-old son and a pregnant wife, and I didn't expect to make a dime for two years. I sold that attractive offer to Joe, and he liked the idea of working for ourselves and doing things differently. However, he pointed out that he also had three children and that money was in fact really helpful when it came to feeding them.

As soon as we formed the company on paper, we planned a trip to China to interview different manufacturing partners and find the right one to work with. Joe intended to look for a "real" job, but we made a deal: if he didn't get an offer by the time we flew to China, he'd join me. As any good story goes, he got the job offer while we were sitting on the airplane in San Francisco, waiting to push

back from the gate. Perfect timing. But Joe is a man of his word, so he stuck with me on the trip.

The first factory we visited was a group we had a previous relationship with. We met the general manager and about seven other senior executives in the large main conference room and we all started off very excited to work together. We made our introductions, and Joe and I gave the standard opening pre- sentation about Phoenix Display. They gave their presentation about their history and factory capabilities. Then after the boring formality of the old-school presentation slide show deck, their vetting process then looked like this:

"When did you start your company?" "Last week," we replied.

"How many people are in your company?" "You're looking at it," we told them.

That's where the meeting stopped. They told us to go back to America and work with their existing distributors to buy from them. I felt defeated. It had taken so much work just to get to this point, and these guys were basically telling us that our business wasn't viable to them.

But Joe realized they hadn't asked the most important questions. He knew that they weren't vetting us properly as potential partners. He instinctively walked up to the whiteboard, paused for a while, and then said, "How

much LCD display business do you actually have in America right now?"

"Half a million dollars," they replied.

Joe wrote it up there on the whiteboard in big bold numbers: $500,000. "Guys," he explained, "that's just one customer for us. You aren't actually doing business in America yet." He laid out all of our existing relationships, our process, and our plan to only work exclusively with the right type of clients.

This fostered so much more conversation about our history, our passion, our connections, and our business plan. The amazing part is that these same factory executives who just showed us the door made a complete turnaround. They were so convinced about the value of partnering with us that they even wanted their US distributors to buy from us instead of the other way around. Sixteen years later, we still have a great relationship with the general manager of that factory. And it all came out of asking the right questions.

We took that same lesson into every aspect of our business, and we apply it pretty much every day. Because we only pursue business relationships with customers who are the right fit, we actually solve a lot of problems for manufacturers who don't ever become clients by asking the right questions and helping them get on the right path. We learned through experience that sometimes

it's much more efficient to help a contact stay with their current supplier rather than working with us, and the right questions will help identify scenarios in which that's the case.

I'll give you an example. We had a new potential client that builds a very successful piece of fitness equipment reach out to us. They wanted to reduce costs. We vetted them, they vetted us, and after that, we appeared to be the correct supply chain for them. The next phase included a lot of design work on their product. Then we moved to tooling. After a few iterations over about six months, we got our display perfect and obtained our qualification on their end product.

Now that we were in the supply chain game for this end product, their incumbent supplier felt the pressure that they might lose the business to us. To counteract that, they simply reduced their price to meet ours. In the end, since the incumbent was already fully integrated into their manufacturing operations, and without a price incentive to change suppliers, the client stayed with their incumbent supplier.

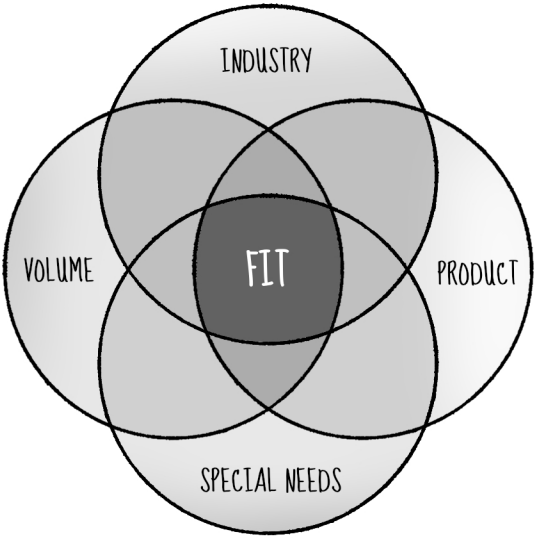
The net result was that we put in six months of work and resources with no benefit. The new potential client benefited by getting their costs reduced, but that could have been achieved painlessly by simply quoting us and then sharing their strategy with the incumbent supplier. This would have avoided all the hard tooling dollars and work of that six-month process.

Conversations are much easier than cutting steel and tooling up new products. I'd always rather get in front of the true needs! It's better for everyone to do the work up front and see if there is any way to preserve the incumbent supplier relationship. That way, we get to the same place much faster and with a lot fewer resources. And if a customer does move forward with us, it's on solid ground. We want to be our customers' best solution, or we shouldn't be in business with them. There's no point going through all that work only to find out later that the customer was already with the right supplier the whole time.

As a company, we have unique abilities to solve certain problems, and I want to know up front if we're a good fit or not. Otherwise, just like dating, if you start off with a false impression or a fake front, it's all going to come out later on and be that much more painful. Rejection is a favor. As Warren Buffett famously said, "The difference between successful people and really successful people is that really successful people say no to almost everything."

We learned to say no to 90 percent of potential customers so that we have time for our ideal clients. That has allowed us to bring A-level service to an underserved group of mid-volume industrial product manufacturers. We create and design parts to their standard. We modify parts for them. We build for them.

UNDERSTAND YOUR NEEDS



The simplest example of knowing your needs is to understand your product and whether a vendor fully supports the part you need to buy. For example, you might need to purchase high-volume computer monitors. Here at Phoenix, we specialize in small (15 inch or less) custom LCD modules, not a full 32-inch monitor. So that wouldn't be a match.

Next, you need to look for a match on volume. If you need to buy only five units, you should be working with a stocking distributor. On the other hand, if you're buying ten million units a year, you'll want to work directly with a large fabricator. In the mid-volume range of five to ten thousand units a year, a mid-volume manufacturer like Phoenix could be the right fit.

Another aspect of fit is industry. If you're in aerospace, you'll want a supplier with experience in that industry because you'll have very specialized needs and really tight tolerances. You'll need specific quality systems and reporting in place to support you. On the other hand, if you make consumer goods, you don't want to work with an aerospace supplier because all those tight controls become far too expensive and are overkill for your needs.

Consumer parts are allowed to fail sometimes. It's not a matter of life and death. And then we have industrial products somewhere in the middle—you're not paying for zero defects, but you need high-quality parts to last ten or fifteen years in the field without any problems. Wherever you fall along this spectrum, it's important that you know who you are and what you need.

It's also important to look at problems you've had to deal with in the past. For example, does your supplier need to be very responsive with lead times because your volume changes frequently? Or maybe you adjust your design every two years for business reasons, and your supplier will need to work with you to do that. These are all issues you should make a note of. Specific information like this reveals needs you might not have articulated before.

Finally, zero in on details: What is your ordering process? What unique quality constraints does your product have? What are your price targets? Where are you in your product's life cycle? Are you still in development, or do you have products in the field that might need replacement parts?

Get to know yourself and your needs so you can assess whether your current or a new supplier can meet those needs. You'll want to make sure you have this information at your fingertips when you initiate a conversation with the supplier.

ASK THE RIGHT QUESTIONS

It was only through developing the five problems framework that I realized its potential to help customers thoroughly vet a supplier. Generally, vetting a supplier is thought of as a quality audit, performed either on paper or in person. That will never determine if you have alignment with your supply chain. It will only tell you if your supplier has robust quality systems and is following those processes. That's one small part of the vetting process.

Inadequate vetting usually comes down to not understanding what to ask and not having a specific process to follow (or having a process that's not very useful). A buyer might get so focused on their current problems or the vetting process they used before that they can't see anything beyond that. Even a factory visit isn't

necessarily going to tell you what you need to know unless, of course, you happen to visit on a day when there's gross negligence going on. I once visited a factory that manufactured solar panels and saw the workers washing down their clean room with a garden hose. That one was an easy pass. But the red flags aren't always waving right in your face, so it behooves you to ask the right questions.

What you really need to do is vet that supplier's ability to solve all five supply chain problems, even the ones you aren't experiencing right now, because if you decide to change, you don't want to walk into new risks and new issues.

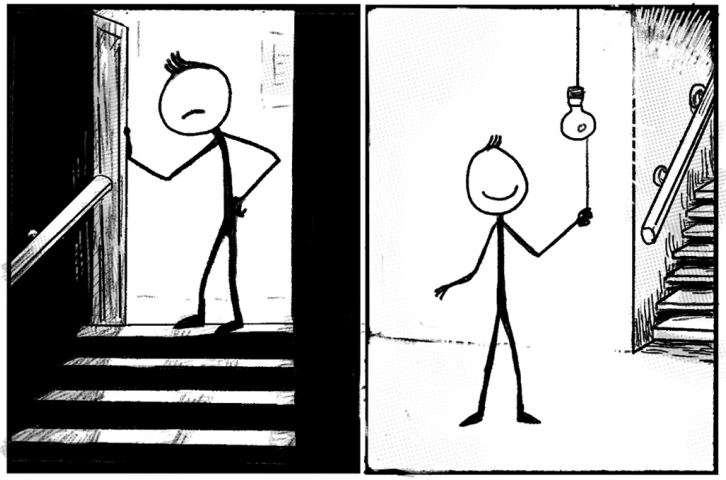
Vetting for cost is very simple, but you can't stop there. What is delivery like? What is their obsolescence mitigation plan? What are their quality processes? Can they match or improve your product's current performance? You need to vet across all five problems every time because if you don't vet the supplier correctly, you may have just jumped from one set of pain points into a whole new set of pain points.

KNOWLEDGE IS POWER

So what's the moral of Mary's story? I didn't identify Mary's real problem. Since Mary wasn't going to change suppliers for fun, she would only change because of a pain point. Cost wasn't

it. Even though there was a lower-cost option available, the cost wasn't a current issue within her product line.

I was so focused on providing a cost solution that I never even asked her about the other four potential problems, where she might have been experiencing a real pain point. For Mary, the risk of switching suppliers was much, much bigger than the benefit of saving on costs for one part. And Mary had no idea how to assess those risks.

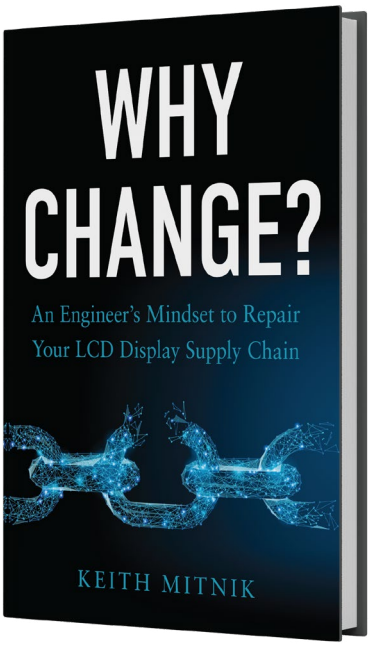


Since then, I have learned two crucial lessons about finding the right match for a partnership between a supplier and a manufacturer. First, you have to understand the current problem (or problems) and ensure that the new or existing supplier can solve it. That problem has to have enough pain behind it that it motivates your company to take action to solve it. Second, you need a strong vetting process. That's the only way

you can move forward with confidence that a change will be a change for the better.

In essence, Mary wasn't feeling a pain point that would cause her to seek out a new supplier. She didn't have a problem with her costs. The problem Mary faced was that she didn't know how to assess her risks and vet a new supplier. That uncertainty made her afraid to take a risk. She missed out on a big opportunity because of that blind spot. And we missed out on the opportunity to bring her on as a customer because we didn't yet understand how to help her.

Change will always carry some risk because it requires moving into the unknown. The process of knowing yourself and knowing your needs is how you mitigate that risk. And thinking proactively about all your risks is the best insurance you can have against delays, crises, or encountering supply chain problems that put you line-down.



AN OPPORTUNITY TO LEARN MORE

In the book I wrote called, "**Why Change? An Engineer's Mindset to Repair Your LCD Display Supply Chain,"** I offer an in-depth look at each of the five problems (and the one opportunity) we covered here. If you're currently facing issues with any of your suppliers in one of these areas, I encourage you to head on over to Amazon and read the book in its entirety. Once you're done, you'll be able to immediately implement ideas that take your supply chain from subpar to superior.

ABOUT THE AUTHOR

Keith Mitnik is the co-founder of Phoenix Display, an LCD display company. With a background in mechanical engineering and a master's degree in business, Keith has applied his expertise to identify the patterns and solve problems in supply chain management for the past two decades.

A quest to find clients who were a perfect fit for the company developed into a comprehensive business philosophy that proper alignment between client and vendor delivers the most value to both parties. Over twenty years of practice, that philosophy produced a practical model clients can follow to find the vendor who is a perfect fit for them.

This book documents Keith's clear framework for customers to resolve issues with current suppliers, determine when and how to change to new suppliers, manage the transitional process, and ensure sustainable success.

Phoenix Press

Why Change?

An Engineer's Mindset to Repair Your LCD Display Supply Chain

First Edition

ISBN 978-1-5445-3009-3 Hardcover

978-1-5445-3010-9 Paperback

978-1-5445-3011-6 Ebook