

Offshore Manufacturing: The Pros and Cons

By: Charles (Ed) Becze, Ph.D.

This article is part of an ongoing series of white papers. In this article Ed talks about offshore manufacturing and the role that your design and development firm can play in an innovator's decision to manufacture at home or abroad. What considerations should be taken in to account and what are the benefits to be had in various scenarios?

Many companies use offshore manufacturing as a strategy to reduce costs and add scale. Companies that have significant demand for their products or are looking at reducing their costs often consider such strategies. This can be of significant benefit, but it does carry some consequences that North American product companies must be aware of and should consider for their business's success and longevity.

Alignment with an offshoring strategy must be a thoughtful process. Going offshore for your manufacturing should not be considered the only route to take just because large companies such as Apple do it. When these multinationals effectively execute on this model, they have built up entire organizations aligned with this strategy. Because of their volumes, offshore manufacturers will dedicate significant effort and focus on working with them to overcome the challenges that complex products inevitably have. So, for companies like Apple, offshore manufacturing can be viewed as a sound strategy.

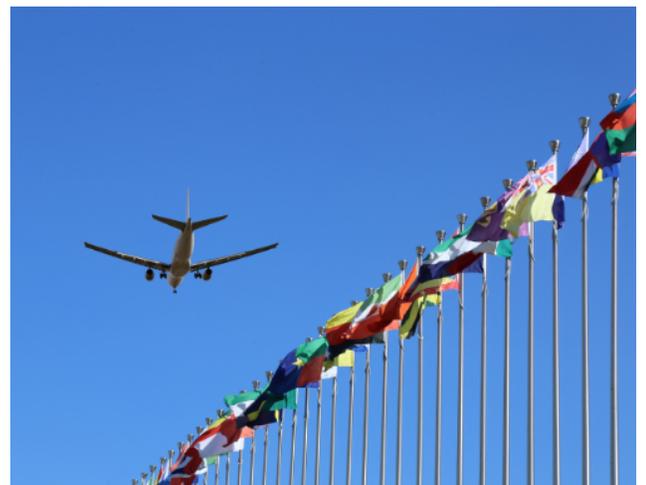
I am often surprised when I come across clients whose automatic inclination will be to manufacture offshore because it is in vogue to do this. Yet the same time, they have not considered the relevant criteria to make that decision.

Whether onshore, near-shore, or offshore, your manufacturing partner selection is a critical decision that must be made with several criteria in mind. Do not make a decision based on trends or dogma; consider your business first. Following are some factors to think about.

Do you have the right support structure to offshore?

If you do not have your own manufacturing capability, then you will typically consider contract manufacturing.

Some contract manufacturers are still left with a footprint in North America, but their scale is limited and often will have offshore production to supplement capacity. Either way, if your business or product requires it, you will be considering offshore manufacturing.



The very first consideration you should seriously contemplate is your organization. There is often a reluctance to off-shore production for new products, and it will often come from the team who will actually be executing your product into manufacturing. Generally, these concerns stem from hesitance to travel for sustained periods of time. This should rarely be a driving force for the decision, but from a business perspective, your business needs to assess if it has the capability to execute product introduction effectively. Capability is key here and merits discussion.

Assuming you have a competent development organization, you have to assess if they have the ability to support the necessary churn, and very often, the patience associated with offshore capability. We have worked with many manufacturers both in North America and overseas. Our observation is that none has identical capability – every one of them has a subtle variance in how they like to see designs executed. This is why we tend to partner with a set of good manufacturers we know because we understand how they operate, and we drive those rules into development early on. Changing manufacturers mid-stream will trigger yet another set of rules to follow.

From a development perspective, it can get frustrating for the designers – especially your mechanical team, during the Design for Manufacture (DFM) process. If your mechanical designers have spent the majority of their career designing for North American manufacturing, they will definitely voice their frustrations repeatedly. The reason being our once mighty manufacturing industry had consistent rules and best practices that translated fairly well from manufacturer to manufacturer. Further, in days of old, companies had their go-to partners for various aspects of their products. Partnerships lasted a long time. As a result, one set of rules was adopted and followed, allowing for a streamlined development process. When you consider building your product lines with a contract manufacturer, count on changing a few times in your career.

Changing manufacturers in the mechanical world will give you headaches as they rarely have consistent rules and methods. Either way, early engagement with your manufacturing partner during development will tremendously minimize the churn. Your mechanical organization's capability to support offshoring is merely but one aspect. There's also electronics fabrication and assembly to consider, but this is rarely an issue. However, wisdom dictates that one should scope capability for this aspect of development as well.

More importantly, it is vital to consider your test organization. Let's preface this by highlighting that your manufacturer wants to make money off of your product. This is an essential consideration as it drives certain behavior as they often will try to minimize costs and liability, thereby increasing their margins. This may conflict with your product needs. There are many aspects to why this is an important consideration but suffice to say your team must have the experience and capability to test your product as thoroughly as possible to minimize your business's exposure with as much coverage as necessary to guarantee your product quality. Remember – you are typically bound by contract, and if an issue arises, it's up to you to demonstrate cause.

You Are Under Contract

This is a particularly noteworthy topic that can have significant repercussions for your business. Do your own due diligence on your manufacturer, be it onshore or offshore. If you are uncomfortable with this, hire a professional development team to help assess capability and alignment with your product. The point is to choose wisely and hopefully early on in the development process. Again, you are typically under contract after the initial engagement. This is a marriage that can be as good or as bad as you can imagine, and you have to provide the same consideration as any important partnership demands. Once the agreement is signed, happy or not, it becomes challenging and expensive to pivot, especially with offshore manufacturers. A-priori assessment of capability, ethics, and cost are critical to your business.



Product Maturity

We encounter many clients either wanting to offshore their product manufacture or repatriate to North America. Both efforts face challenges. The advice we typically provide is to assess the product's maturity. In the event clients want to offshore their production, we would typically assess the product maturity from a design perspective.

We would ask questions centered around known quality or performance issues, and we use our extensive experience to gauge if these issues are manufacturing-related or design-related. If your product is fairly new into manufacturing, I offer the advice of caution. Refinement and resolution of product issues can become a veritable nightmare and typically require extensive on-site support to resolve. In fact, if your product is new, I suggest extensive telemetry be adopted at the factory level to provide your design team with as much data as possible to facilitate root cause and corrective action processes. The aim is not to scare anyone away from their strategy but to highlight what one can step into, and I can assure you that it is a painful process.

Repatriating products onshore can also be quite a challenge. Recall that every manufacturer has a different capability. Repatriation of products implies you have to bring up another manufacturer with yet another set of requirements. Also, do not underestimate the importance of tribal knowledge from a well-functioning assembly line. Any transfer, repatriation or other, will definitely consume schedule, and the ramp is rarely easy. That you can count on, so plan for it!

How Do You Classify Your Product? If it is Innovative, Beware!

As part of your due diligence process, you may find that a potential offshore manufacturer will have a capable engineering team to support you. You may think this is a great idea as it can help relieve your team's pressure. This is true, and it can benefit you immensely. However, my team and I consider both the product and the innovative nature it possesses. Perhaps an example is best suited here.

Years ago, we helped some early adopter product companies with smartwatch development. The effort was quite big and challenging. Further, I cannot cite one particular smartwatch made in North America. Very quickly after the market took off, I noticed several foreign companies offering smartwatches at CES. Indeed, they may not be identical in terms of hardware, but there were literally hundreds on the market and all suitable for re-branding. Why is this important? Commoditization.

This is a classic example where a product class was commoditized due to several manufacturers leveraging very talented teams to develop the concept into their own product line with the goal of re-branding. These ready-made solutions are a desirable strategy for companies wanting to jump on the latest trends. The impact: your market share or margins will inevitably decrease due to lower-cost copies of your innovative idea penetrating the market.

Capitalizing on innovative ideas and platforms by developing or piggybacking on technologies has always occurred regardless of geographic location. Still, it usually takes either time or significant effort to do so. Generally, the only way to offer some protection of your innovative product is to patent it or keep critical design intellectual property a secret. More importantly, keep the road map and innovation going to stay ahead of the pack!



When Should You Consider Offshoring Products?

Offshore manufacturing can bring significant benefits to your product lines lowering costs and improving scale. However, it does come with some very significant considerations. So, when does one consider manufacturing offshore? This is a big question we always have a difficult time answering for our clients as it does need competent and honest consideration. It is very heavily dependent on the client's specific needs and capability, and this critical decision must consider both aspects. We generally provide guidance for this by balancing a client's product needs such as cost, volumes, maturity etc., with an honest assessment of their design organization's capability to support offshore challenges. For new products in particular, we assess if the client has the intrinsic capability to develop their particular product efficiently, shortening their time to market and understanding the intrinsic challenges associated with any product development. In the absence of an experienced design organization, we suggest that they select a competent design partner who has experience with this execution model. Every client is different, and a blanket statement is impossible to provide, but an experienced technology partner is a critical first step in securing your place in tomorrow's market.



About the Author



Charles (Ed) Becze, Ph.D., is a co-founder of Pegmatis, Inc. Over his career, he has worked with Pratt & Whitney, Ford, and an electronics Original Equipment Manufacturer (OEM). Pegmatis Inc is home to a team of highly experienced software, hardware, and manufacturing professionals who are proud to have produced some award-winning products, many of which you may have in your own homes. Connect with Ed on LinkedIn or contact him for more information at Pegmatis.com.