

Will Migrating Your Product to a Lower Cost Region Actually Lower Cost?

By Curtis Campbell

Sourcing teams must continually ask one question: are they are outsourcing to the right contractor, in the right region for the current stage of their product? For companies under margin pressure with longer product lifecycles, a key point of determining the “right contractor” may be evaluating whether or not that contractor has a business model that provides choices in labor markets and service mix as product requirements change.

All labor markets evolve in terms of cost structure over time. The lowest labor cost markets are often highly inefficient because manual labor is cheaper than the fixed costs of automation. As Table 1 shows, as a market grows in popularity, infrastructure develops and labor costs increase.¹ Efficiency improvements follow. Choosing a region simply on labor cost not only discounts the hidden cost of emerging labor market inefficiency, it also fails to consider the impact of transfer costs when that

Table 1. Evolution of Labor Markets

Emerging

- Lowest labor cost
- Inexperienced workforce/low skills
- Often inefficient labor utilization or lack of automation
- Focus on consumer goods/lower quality expectations
- Minimal infrastructure
- Supply base may have gaps
- Communication may be an issue
- Highest potential for cost surprises

Established

- Better labor utilization and skills mix
- Turnover may be an issue if region is popular “safe” choice
- Increasing use of automation, but may be older equipment
- Mfg. business models may reflect preference for high volume product
- Fairly comprehensive supply base, but service issues may be present
- Communications issues may arise
- Popularity drives cost increases

Mature

- Best skills mix and labor utilization
- Higher tech automation
- Strong focus on higher level quality systems and CI initiatives
- High mix, variable demand support
- Highly specialized supply chain
- Strong communications and program management focus
- Business-friendly environment
- Good technical & educational infrastructure
- Predictable costs

market is no longer the lowest labor cost option. For shorter lifecycle products with marginal quality requirements, this may be an acceptable set of tradeoffs. However, for products with longer lifecycles with superior quality requirements, the hidden cost equation will significantly outweigh quoted cost savings.

Project migration choices require careful review. Any evaluation should recognize that every region has advantages and disadvantages. This paper looks at regional advantages/disadvantages in Asia, the U.S. and Mexico, from the perspective of SigmaTron International, an electronics manufacturing services (EMS) provider with facilities in those regions. It also makes recommendations for the project types likely to best fit in each region.

At the inception of contract manufacturing, original equipment manufacturer (OEM) outsourcing decision teams focused on selecting a contractor who could deliver quality products on-time at competitive cost. Geographic preferences were typically driven by end market logistics, labor content and product maturity. In the late 90s, China dramatically changed the playing field by devaluing its currency, investing significantly in infrastructure and making it easier for foreign companies to do business there. The devaluation was significant enough to cancel out the impact of logistics costs, making China sourcing attractive for a far larger variety of products. However, markets evolve and costs in China are increasing.

That said, China isn't a bad choice for manufacturing. It is simply a bad choice for projects that were a marginal fit, placed there simply on unit price considerations alone.

Today, sourcing teams are once again focused on evaluations of total cost which include product demand trends, production region and end market logistics factors, labor content and product lifecycle considerations. Finding a contractor who can offer a range of choices and discuss cost advantages/disadvantages of various regions can help support decisions which maximize flexibility to lower costs over time, while minimizing transfer costs during project migration.

As mentioned earlier, all labor markets have tradeoffs. To better illustrate that, select country statistics from The World Economic Forum's Global Competitiveness Report 2012-13 are shown in Table 2.²

Table 2. Select Global Competitive Rankings 2012-13

Country	GCI Rank	Macroeconomic Environment	Goods Market Efficiency	Labor Market Efficiency	Technological Readiness	Business Sophistication
Singapore	2	18	1	1	7	17
United States	5	117	20	4	15	6
Malaysia	24	38	10	25	51	20
China	29	10	61	34	85	45
Czech Republic	46	55	48	81	34	38
Poland	42	65	57	80	43	65
Indonesia	38	26	50	103	75	37
Hungary	63	84	78	85	46	96
India	60	110	85	99	98	42
Mexico	55	49	83	113	74	55
Vietnam	70	87	74	56	102	98

Source: The Global Competitiveness Report 2012-13. World Economic Forum
148 Countries Ranked.

The report ranks 148 countries based on analysis of a variety of metrics. As the numbers in the chart show, mature labor markets often rank highest in factors related to productivity, technological readiness and ease of doing business, although as the U.S. macroeconomic environment ranking has shown for several years, mature markets can also face significant economic challenges. Emerging markets tend to be ranked lower in productivity, technological readiness and ease of doing business than more mature markets and macroeconomic rankings can vary widely. From a sourcing standpoint, it is important to determine whether or not tradeoffs in efficiency, logistics costs and ease of doing business that come with an emerging market are fully offset by the cost savings found in that market.

Thoroughly analyzing those costs requires evaluation of both easily measurable factors such as landed unit costs as well as hidden costs that can be more difficult to identify. Six areas that drive costs which are harder to measure include:

- Product demand variability
- Regulatory requirements in the end market
- Inventory taxation policies
- Differences in regional component pricing
- Logistics costs
- Phase of product life cycle.

Product Demand Variability

High volume products with predictable demand are relatively easy to outsource anywhere in the world. However, many sourcing projects have a mix of products with low-to-medium volumes and some demand variability. Often it is assumed that the economies of scale in component sourcing associated with high runners will drive cost savings in the variable demand product, or that the size of the total project will drive some level of price discounting at the contractor. This isn't always the case. Lower volumes have more line changeovers and don't always have component commonality with the higher volume product. If the contractor doesn't value lower volume, higher mix product there may be late deliveries or expedited shipping charges. There may also be quality issues associated with product configuration errors. Yet, segregating high volume and lower volume, less predictable production may result in higher pricing for the less attractive part of the mix. That said, countries such as Mexico, which now compete on service as well as price offer both lower labor cost and logistics simplicity for variable demand product. This can provide the best option for accessing a lower cost labor market while maintaining logistics simplicity. If a mix of product is being supported, the border region with the U.S. may offer the most logistics flexibility.

Regulatory or Content Requirements in the End Market

Highly regulated products such as medical devices or military/aerospace products often have very rigid specifications for custom parts, processes, quality registrations and/or export licensing. In some cases, this limits the contract manufacturer build site or approved vendor list geographically. For example, one customer re-shored a product built in India because of a requirement to calibrate the product's thermostat in the U.S. When the cost savings of manufacturing in India was measured against the costs of using one source for manufacturing domestically, the U.S. build was cheaper.

Inventory Taxation Policies

Inventory taxation policies can vary widely, as can the cost of warehousing. As an example, many foreign companies in China are able to import materials from foreign countries or buy locally tax free. These tax free materials need to be declared through a China customs house and recorded in what is known as the in-bond book. These tax-free materials are bonded in the warehouse and then need to be processed and exported out within a certain period of time.

Before the materials are brought in, the contractor needs to go to China customs to apply for the quota with HS code for the next 9 months. This HS code limits the variety of material that can be brought in. At least 65 percent of the materials listed in the in-bond book must be exported within 9 months, otherwise inbound material is restricted. The 65 percent is measured by the total materials as well as each individual material categorized by HS code.

As a result, most Chinese EMS companies reconcile inventory every quarter or six months, and require customers to buy back the excess. This type of reconciliation is easy to manage and drives little extra cost in projects with no minimum buy liability and predictable demand. However, projects that have lower volumes and variable demand may see added costs if not carefully managed by the contractor.

Finished goods inventory taxation is also popular in many countries, including parts of the U.S. Companies trying to smooth variations in demand by requiring remote suppliers to provide finished goods kanban via a warehouse near the end market, may encounter added taxes on longer term inventory storage. Potential inventory taxation costs should be evaluated carefully if a dedicated warehouse kanban is part of the strategy.

Differences in Regional Component Pricing

While there is a perception that material costs are lower in Asia, that isn't always true. At a regional level, material pricing advantages or lack thereof can be heavily influenced by unit volumes and end application. Products with lower volumes or higher mix may see little or no materials cost discounting in emerging or established markets. The higher productivity/service focus of a mature market may represent the most competitive cost when total cost is evaluated.

Logistics Costs

Fuel prices and security concerns are driving up logistics costs and the complexity of shipping documentation. In evaluating logistics costs, OEMs should consider not only the quoted landed cost, but the likely impact of schedule variation and the added cost of shipment to the end market. In lower volume, longer life product, the benefits of using a single source for manufacturing, fulfillment and repair depot should be analyzed. In some cases, that analysis may show cost benefits for regions with higher labor costs coupled with high productivity and service cultures.

Phase of Product Lifecycle

As OEMs have cut internal resources, EMS providers have been expected to add more support to the front end of the product lifecycle. Suppliers in mature labor markets often address this issue far better than those in lower cost labor markets. Communications issues driven by differences in language or perception can add cost. OEM engineering personnel may be unwilling to accept heavy travel schedules, added work hours to address time differences or short-term assignments as a remote source inspector. Frequent engineering change orders (ECOs) may drive expedited shipments or rework at the end market. There can also be risk of intellectual property (IP) theft in areas with weak IP protection. The costs associated with any of these potential issues may be much higher than the cost savings in lower cost markets. Consequently, immature product may be best sourced closer to the site managing product development. Similarly at the end of a product lifecycle, a facility in a mature market close to the end market may be best suited for managing end-of-life production support, given the lower volumes and challenging material obsolescence issues that can occur at that point in the life cycle.

Regional Advantages and Tradeoffs

The fact that regions evolve over time should translate to adaptations in sourcing strategy rather than mass migration from one popular country to another. Selecting a contractor able to support flexibility in this area can minimize transfer costs while providing options as sourcing requirements change. SigmaTron's network of facilities in North America and Asia offer this type of advantage. The following overview looks at specific advantages and tradeoffs in regions where SigmaTron has facilities.

North America advantages include:

- Wide variety of supply base options in the US, Canada and Mexico that are geographically convenient to OEMs based in the region
- Strong focus on productivity and continuous improvement
- U.S. manufacturing supports "Made in America" branding
- The U.S. and Canada easily support product development and new product introduction (NPI)
- Mexico supports both high volume and high mix, variable demand

- There are minimal corruption or safety issues in the U.S. and Canada
- English is widely spoken at the engineering and management level throughout North America
- Mexico provides access to low cost labor and border-based manufacturing facilities offer logistics simplicity
- IP protection is strong.

North America disadvantages include:

- The U.S. and Canada are mature economies with concomitant higher costs
- While Mexico's border regions have efficient logistics, transportation from the interior can be inefficient
- While Mexico's drug cartel war has calmed down, there are still safety issues in some cities
- Mexico's government entities can be inefficient and some corruption exists.

China advantages include:

- Costs are still significantly lower than the U.S.
- There is a well-trained workforce and large supply chain infrastructure
- Manufacturing in China is the most cost effective way to support product sold into China
- There is increasing focus on improved productivity and continuous improvement which helps to balance cost increases.

China disadvantages include:

- Costs are increasing
- Labor turnover can be high in the most popular manufacturing zones
- China's government entities can be inefficient
- English fluency varies widely
- IP protection can be weak.

Southeast Asia advantages include:

- Emerging, established and mature labor markets to support the supply chain
- Suppliers are willing to do high mix, lower volume production, as well as high volume production
- Engineering, management and technical staff in many countries are fluent in English
- Established business model for contract manufacturing, skilled workforce and technical support infrastructure that supports continuous improvement efforts.

Southeast Asia disadvantages include:

- Some countries are seeing wage and cost-of-living increases
- Corruption and government inefficiency does exist
- Emerging markets may have fewer English speakers.

Consideration in Selecting the Right Contractor

All regions offer broad choices in contract manufacturers. However, just as evolving labor markets have tradeoffs, so do suppliers. Indigenous suppliers may offer the lowest costs, but be less flexible on schedule changes or less focused on service. The need to obtain customer approval for approved vendor list (AVL) or process changes is not always well understood by contractors predominately focused on consumer product manufacturing. Contractor business models in markets that are maturing may vary widely. Some may still focus on high volume work, while others may be optimizing to support higher mix or variable demand. In maturing markets, look for contractors who are mitigating labor cost increases with efficiency improvements.

Questions to ask during the sourcing evaluation include:

- Are there projects of similar size and scope being built at this facility?
- Do the contractor's systems give you remote visibility into project status?
- Does the contractor's team have sufficient engineering expertise to support the needs of your project?
- How closely does this project match the contractor's preferred business model?
- Does the contractor's facility footprint align with the likely requirements of the project over time?
- What current initiatives does the contractor have in place to mitigate market challenges or capitalize on market opportunities?
- Should the proposed scope of work be broadened to include post-manufacturing support?
- How well does your team seem to communicate with the contractor's team?
- Does the contractor appear to have good customs expertise either internally or through its broker network?
- How robust is the contractor's transfer of work process?
- What recommendations does the contractor offer to lower overall project cost?
- Does the contractor appear to have a clear understanding of government policies in the countries where it is located and a strong contact network within relevant government agencies?
- Does the contractor's team appear to fully understand any regulatory constraints associated with your product?
- Do quality systems and service capabilities align with the requirements of your project?

Conclusion

In high volume manufacturing, lower cost regions can save money. However, in low-to-medium volume manufacturing, the cost savings in lower cost regions may be marginal. Labor content, demand variability, product weight, proximity to end market, regulatory factors and product maturity all impact the equation. Selecting a contractor with a network of facilities and systems for good production status visibility provides the fullest range of options in longer term cost reduction.

References

[1] S.E. Mucha, "Risk Mitigation in Offshore Sourcing." Medical Product Outsourcing Symposium [Conference]. Boston. 3 Nov 2010.

[2] World Economic Forum, "The Global Competitiveness Report", 2012-13, pp. 16-22. Web. 10 Feb 2014, <http://reports.weforum.org/global-competitiveness-report-2012-2013/#=>.

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