

THE EVOLVING NATURE OF OFFSHORE/ONSHORE OPTIONS

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ABSTRACT

Re-shoring is a hot topic, but savvy sourcing teams and their suppliers understand that all labor markets evolve in terms of cost structure over time. When labor costs go up, efficiency improvements follow. Project migration choices require careful review. The challenge for many of today's sourcing teams isn't simply riding the re-shoring wave, but instead re-strategizing which geographies make the best sense for their mix of projects. This presentation looks at regional advantages/disadvantages in Asia, the U.S. and Mexico from the perspective of a contract manufacturer with facilities in those regions, and discusses the project types likely to fit best in each region.

Key words: electronics manufacturing services, EMS, outsourcing, re-shoring, Vietnam, China, Mexico, contract manufacturing, total cost analysis, evolving markets.

INTRODUCTION

Years ago, the major focus of original equipment manufacturer (OEM) outsourcing decision teams was 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.

According to a survey by The Boston Consulting Group (BCG) released in March 2012, more than a third of U.S.-based manufacturing executives at companies with sales greater than \$1 billion are planning to bring back production to the United States from China or are considering it. According to the report, the top factors cited as driving future decisions on production locations: were labor costs (57 percent), product quality (41 percent), ease of doing business (29 percent), and proximity to customers (28 percent). In addition, 92 percent said they believe that labor costs in China "will continue to escalate," and 70 percent agreed that "sourcing in China is more costly than it looks on paper."¹

The reality isn't that China is suddenly a bad place for manufacturing. Instead, it is more a case of sourcing teams realizing that products that were marginal fits for China production can no longer be cost effectively manufactured there. While the BCG study focused on re-shoring plans for the U.S., there is ample evidence that sourcing rationalization ships products to other parts of Asia, as well. For example, the International Monetary Fund predicts China's real GDP growth will slow to 8.5 percent by 2017 from 9.2 percent last year, while real GDP growth in Vietnam will reach 7.5 percent from 5.9 percent, according to projections published in April.² The same report projects real GDP growth in Mexico will be 3.6 percent in 2012, tapering off to 3.3 percent in 2017.³

The key to developing a viable long-term sourcing strategy is carefully evaluating the trends and hidden costs associated with each region. Additionally, it is important to analyze each potential contractor's preferred business model and its suitability for the project. Involving potential contractors in this analysis can help identify areas of potential cost surprise and/or more cost effective manufacturing strategies.

UNDERSTANDING EVOLVING MARKETS

The lowest cost labor markets tend to have the least infrastructure and lesser skilled workforces. As labor markets evolve from emerging to established, workforce skills increase, wages go up and infrastructure improves. Increases in popularity drive up wages and other costs over time. Mature markets tend to have the highest labor costs, but overall cost may remain competitive as a result of higher productivity, established infrastructure and ease of doing business. In short, it is important to understand the tradeoffs in each market and balance those against project requirements. Table 1 illustrates the characteristics of evolving markets.

Table 1. Evolution of Labor Markets ⁴

Emerging
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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

While labor cost is typically a relatively small part of total costs, it can be indicative of trends in specific regions. Figure 1 shows the U.S. Bureau of Labor Statistics annual percentage changes in hourly compensation costs in manufacturing in selected countries and regions to provide some historical perspective.

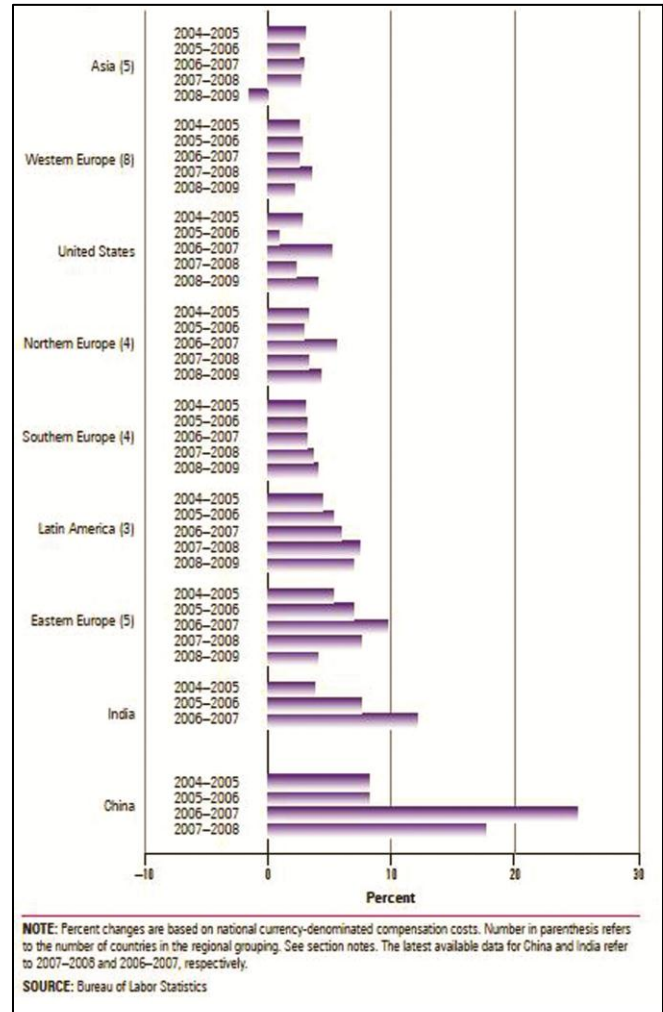


Figure 1. Annual Percentage Changes In Hourly Compensation Costs In Manufacturing For Selected Countries and Regions, 2004-2009. ⁵

However, it important to keep relative labor market cost in perspective. Figure 2 shows the U.S. Bureau of Labor Statistics estimates for hourly compensation costs in manufacturing as of 2009.

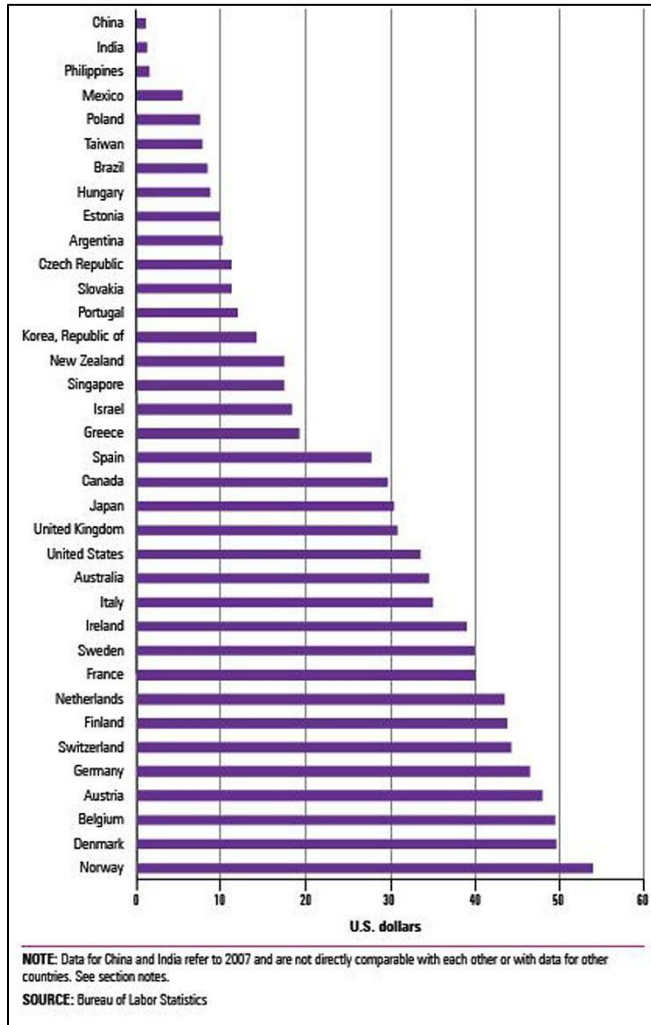


Figure 2. Hourly Compensation Costs In Manufacturing For Selected Countries In U.S. Dollars For 2009.⁶

As mentioned earlier, evolving labor markets have tradeoffs. To better illustrate that, select country statistics from The World Economic Forum’s Global Competitiveness Report 2011-12 are shown in Table 2. The report ranks 142 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 shows, 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.

Table 2. Select Global Competitiveness Report Rankings 2011-12.⁷

Country	GCI Rank	Macroeconomic Environment	Goods Market Efficiency	Labor Market Efficiency	Technological Readiness	Business Sophistication
Singapore	2	9	1	2	10	15
United States	5	90	24	4	20	10
Malaysia	21	29	15	20	44	20
China	26	10	45	36	77	37
Czech Republic	38	43	36	42	31	36
Poland	41	74	52	58	48	60
Indonesia	46	23	67	94	94	45
Hungary	48	67	55	66	36	69
India	56	105	70	81	93	43
Mexico	58	39	84	114	63	56
Vietnam	65	65	75	46	79	87

Thoroughly analyzing those costs requires evaluation both easily measurable factors such as landed unit costs as well as factors that can be more difficult to measure. Six areas that can drive cost surprises are:

- Product mix and demand variability
- End market regulatory requirements
- Inventory taxation policies
- Regional component pricing differences
- Total logistics costs
- Product maturity.

PRODUCT MIX AND DEMAND VARIABILITY

High volume products with predictable demand are relatively easy to outsource. However, many OEMs outsource a basket of products that also include medium and lower volume part numbers with variable demand. Cost surprises associated with those types of products can include expedited shipping charges, quality issues associated with product configuration errors and incompatibility with supplier’s preferred business model. Segregating high volume and lower volume, less predictable production may result in higher pricing for the less attractive part of the mix. Looking at a region such as Mexico which can offer both lower labor cost and logistics simplicity for variable demand product may be the best option for accessing a lower cost labor market while maintaining logistics simplicity.

END MARKET REGULATORY OR CONTENT REQUIREMENTS

Highly regulated products such as medical devices or military/aerospace products often have very rigid specifications for custom parts or processes. In some cases, this limits the 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 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.

REGIONAL COMPONENT PRICING DIFFERENCES

Trends in this area continue to change and perception is not always reality. An Avnet presentation comparing China and Mexico noted that:

- Pricing in China was generally lower on passive and interconnection components, but that quality was inconsistent
- Pricing on active components tended to be lower in China for consumer-related products, but higher for industrial, medical and aerospace applications
- Strategic components such as ASICs, FPGAs and sole-source parts tended to have no pricing difference.⁸

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.

TOTAL 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.

PRODUCT MATURITY

As OEMs have cut internal resources, EMS providers have been expected to add more support to the frontend 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.

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. That said, sourcing strategy should consider regional and country-specific trends. For the purposes of this presentation, we look at regions in which Sigmatron has manufacturing facilities.

North America advantages include:

- Wide variety of high service EMS and related 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
- Mexico's drug cartel war has increased overall crime and created significant 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.

FINDING 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.

If a project may need to be built in multiple regions or there is a desire to do detailed analysis on best options, a multinational contract manufacturer is often a better option than a provider with a more limited facility footprint. Multinational contractors can often provide cost comparisons that illustrate the different between their build site options. Questions to ask during the sourcing evaluation include:

- Are there projects of similar size and scope being built at this facility?
- 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 activities or plans 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?
- 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

Evolving markets require more detailed analysis of total cost. As illustrated above, there are a number of variables to be analyzed which may require strong expertise in regional trends.

Fortunately, today's contract manufacturing model is not simply focused on building product efficiently. It is instead focused on both manufacturing expertise and in helping customers make the best choices in build site selection and outsourced services for their project's requirements. Tapping contractor expertise when developing an outsourcing strategy is one way to better understand the cost implications of various build site options and the support services available to mitigate the likelihood of cost surprises.

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