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HOW TO BEGIN THE PROCESS OF SELECTING AN EMS PROVIDER

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APRIL 2005**

The rapid growth of strategic outsourcing to EMS providers is a double-edged sword. Instead of a studied approach, it is tempting for original equipment manufacturers (OEMs) to leave off the strategic part and rush headlong into outsourcing the electronics assembly. Rather than consider the EMS provider as a partner, the relationship is built on cost alone. No matter that the EMS provider is the key source for their company's product(s) and has the ability to delight or, through inferior product or late deliveries, severely frustrate the OEM's customer.

To help you in your strategic outsourcing decisions, we offer some suggestions on how to begin the selection process of an EMS provider.

Strategic outsourcing, over the last two decades, has become a powerful weapon in the North American business arsenal. Virtually every business practice is a candidate for strategic outsourcing – from human resources to accounting to information technology to manufacturing.

In a special advertising supplement published by *Fortune Magazine* in 1995, Michael Corbet provides the rationale for outsourcing. "The traditional integrated firm is not the only, nor necessarily the best, way to create value – especially in the global economy of the 1990s. Today, almost any organization can gain access to resources. What differentiates companies now is their intellectual capital, their knowledge, and their expertise – not the size and scope of the resources they own and manage. As a result, outsourcing is being adopted by firms from across the corporate spectrum. No firm is too large or too small to consider outsourcing."

The electronics manufacturing services industry (EMS) has been the prime beneficiary of the drive to strategic outsourcing. The first ever market report published by IPC in 1984 pegged the North American EMS industry at a humble \$1.7 billion. IPC's research shows the North American industry at a staggering \$40 billion in 2003. Today, three publicly traded EMS companies are in the top 50 global electronics firms.

The EMS industry, however, like other industries that have benefited from strategic outsourcing, is at a crossroads. Throughout the *Fortune Magazine* supplement, and even more so today, the term "strategic outsourcing" is synonymous with "outsourcing." As a result, strategic outsourcing, as a business model, has slowly given way to the more tactical outsourcing model and then to the hyper-competitive practice of off-shoring. In the process, many companies are losing the benefits that strategic outsourcing provides.

Strategic Outsourcing

Strategic outsourcing, as a critical business process, demands that companies first and foremost identify their core competencies – activities (products or services) where the company has or could have preeminence and can provide a unique value proposition for the customer.

The identification of core competencies is a disciplined approach driven by senior management. In their article in the *Sloan Management Review/Summer* 1994, James Quinn and Frederick Hilmer outline what they believe to be effective core competencies. They are:

- Skill or knowledge sets, not products or functions
"Instead, competencies tend to be sets of skills that cut across traditional functions. This interaction allows the organization to consistently perform an activity better than functional competitors and to continually improve on the markets as markets, technology and competition evolve".

- Flexible, long-term platforms – capable of adaptation or evolution
“... dominating skills customers will value over time.”
- Limited in number
“Most companies target two or three (not one and rarely more than five) activities in the value chain most critical to success.”
- Unique source of leverage in the value chain
“Effective strategies seek out places where there are market imperfections or knowledge gaps that the company is uniquely qualified to fill.”
- Areas where the company can dominate
“... the capacity to bring more power to bear on a selected sector than any competitor can.”
- Elements important to the customer in the long run
“One of the firm’s core competencies should normally relate directly to understanding and serving its customers.”
- Embedded in the organization’s system
“Attracting and keeping top flight professionals.”

The identification of core competencies and “what to outsource” is only half of the strategic outsourcing equation to consider. Of equal importance is “who to outsource it to?”

Can the outsourced function be supported by a financially strong, technically superior supply base? In the case of strategically outsourcing electronics assembly and system and product build, the answer is a resounding “yes.”

EMS companies have transformed themselves from board stuffers (consigned parts) to contract manufacturers (turn-key: buying the parts and performing the assembly) to offering a complete range of services including product design and product build.

In analyzing its outsourcing benefits to EMS companies, a major electronics OEM listed several compelling reasons:

- cost effective entry into new markets – time to market;
- minimization of risk;
- reduction of total product cost;
- additional cash for strategic reinvestments;
- increased supply chain flexibility and responsiveness
- access to advanced manufacturing technology.

These benefits are significant compared to outsourcing a service like office cleaning which involves a relatively large supply base and very little inherent skill. Making a bad decision on office cleaning has marginal impact on the competitiveness of the business.

Conversely, choosing the correct EMS company is critical. Making the wrong choice ultimately, could damage or destroy the firm’s relationship with its customers, its reputation in the market and even its standing (if it’s publicly traded) on Wall Street.

If the choice is that critical, should low cost be the only driver in the selection decision? The answer is obviously “no” - not when the stakes are so high. Companies gaining the benefits of the strategic outsourcing model should not focus on tactical cost reductions but should focus on performance superiority, often called Total Acquired Cost. Differences in hard costs such as freight and duty as well as soft costs such as cost of quality, time to market and excess travel expenses are parts of TAC.

OEMs would agree in theory if not necessarily in practice. In rating important traits of their EMS companies, OEMs name quality as their key attribute according to a survey by the Outsourcing Institute. In an outsourcing forum, Motorola ranked delivery and quality above price with materials management and manufacturing rounding out their top 5 decision factors of “what they hold dear.”

Finally, companies, to take advantage of the benefits of strategic outsourcing, must not only commit the time to thoroughly analyze their core competencies but must also commit to a service provider model that meets key attributes and not cost alone.

In their paper “Strategic Sourcing: A Progressive Approach to the Make-or-Buy Decision” James Welch, P. Ranganath Nayak, and Arthur D. Little, in the *Academy of Management Executive* write: “The sourcing dilemma – to buy or not to buy – is of central importance. While cost is always important in any business decision, managers should consider strategic and technological issues in conjunction with the decision. Companies that continue to make sourcing decisions based solely on cost will eventually wither and die, as many already have. Conversely, thoughtful use of the strategic sourcing model, in conjunction with a rigorous cost analysis, can help companies make the sourcing decisions that will move them toward world-class stature.”

With all of this stated, we have outlined steps to consider when selecting an EMS provider.

1. Understand your core competencies.

Companies that get the most benefit from outsourcing view their business strategically and evaluate what functions or product lines to outsource. Outsourcing with this philosophy narrows the selection process and helps minimize redundancies in internal capabilities relative to an EMS company’s services.

2. The Outsourcing Decision: Is Offshore Manufacturing Right For Your Product?

Many OEMs seem conditioned in today’s economy to expect a quick “yes” in response to this question. However, a close examination may offer a different answer. The wave of OEM outsourcing of electronic manufacturing to low cost labor areas, led by China, continues to gather momentum. One cannot deny that offshore manufacturing does offer cost advantages to the OEM for the right product selection. However, there are also many products that are not a good fit to go offshore.

An offshore to domestic cost comparison is a complex process with many factors to be identified and carefully evaluated. The total acquired cost of moving manufacturing offshore is not always fully understood or properly valued. Hard costs, such as transporting products from China to the United States must be determined. Other soft costs are just as important to consider, especially since they may determine the OEM’s ability to deliver quality product in a timely manner. Higher inventory pipeline levels, schedule flexibility and processing of change orders are easily overlooked in cost comparisons.

The greatest cost savings with offshore production are normally associated with simpler circuits requiring a good deal of manual labor. The cost difference declines with more complex, highly automated assembly. There appears to be general agreement that many products are not suitable for offshore sourcing. Here are some of the factors to consider in making a sound sourcing location decision.

Product Maturity

Offshore sourcing is best suited for mature products. Inventory pipeline, quality and schedule risks increase considerably with the incorporation of change orders.

Engineering Changes

There are still some communication problems across oceans. Design changes may take longer to implement, there is a greater inventory exposure and a higher risk of poorer quality execution. The review process is also longer and more difficult.

Component Substitutions

Offshore sources tend to use more unauthorized component substitutions. This can impact performance and product certifications.

Transportation (“landed”) Costs

The cost to land product into the United States needs to be included in the cost comparison. Larger, bulky and/or heavier products are expensive to ship by airfreight. Shipments by sea can add four to at least six weeks to the delivery cycle and inventory pipeline.

In addition to freight charges, other related costs to be considered include customs fees and duties, taxes and broker’s fees. These changes can easily add 8% or more to the quoted cost (if prices are not quoted landed in the United States).

Inventory

Inventory risk and investment is greater with an offshore source because of the longer delivery pipeline and the greater chance of major delays (ex. disasters or SARS epidemic). Often overlooked is the potential for lost sales if product is not readily available to meet customer needs.

Schedule Flexibility

Sometimes overlooked in making the sourcing decision, schedule flexibility should be an important consideration. Domestic sources are more tolerant of schedule volatility. They will work with schedule push outs and respond aggressively to schedule acceleration needs of customers. They will ride the schedule/re-schedule wave longer and further than most offshore sources. Clearly, Just-In-Time modules do not work with offshore suppliers.

Volume Variations

Offshore manufacturing normally thrives on high volume. More than one OEM has had to return to its prior domestic source when volumes dropped to the point that the offshore source refused further production, incurring, of course, the additional cost of another move.

Confidentiality

Standard non-disclosure, confidentiality and non-compete agreements are more difficult to monitor and enforce with offshore sources.

Communication

Although English has become the universal language of doing business, communication in a different culture where English is the second language cannot be as effective as in the U.S. As an example, the time difference with China adds further complications and may cause delays.

Travel Time and Cost

It takes a considerable investment to send one or more associates to China and other low cost labor areas. Additionally, it is not a trip that can be made quickly or without some preparation and proper documentation. Problems often take longer to resolve when quick face-to-face meetings are not possible.

Cash Flow

Experience has shown that partial payment upfront, early payment or payment prior to or upon shipment is often required by offshore manufacturers. Cash is tied up carrying extra product in the inventory pipeline.

While difficult to assess and quantify, each of the above issues adds to the cost of offshore sourcing. There is a growing consensus in the industry that a price difference of 15-20% is necessary to justify making the move to offshore manufacturing. Even if offshore sourcing appears to offer a lower cost alternative, caution flags should go up whenever the product is immature, subject to frequent change orders, or when demand is difficult to forecast resulting in volatile schedules.

3. Make a list of the capabilities your ideal EMS provider should have.

Develop your selection criteria. Taking into consideration the core competencies you developed above, and any areas where you believe extra strength from an EMS provider is necessary to bolster your weaker areas, and the specific capabilities needed for the project under consideration, develop your list of criteria for selection. Make sure you have prioritized those carefully, separating those that are "nice to have" from those that are essential for success. Keep your focus on these criteria during the process you are about to undertake, and develop the criteria in advance of starting to qualify candidates. Criteria to specifically consider include:

- Manufacturing processes
- Equipment available
- Quality certifications/Facility approval
- Quality systems
- ECN Process
- Testing Capabilities
- Tooling Capabilities
- Design Support
- Prototype availability
- Volume levels
- Conformal coating
- Lead-free
- New product introduction process
- Design validation testing

Cultural fit

In selecting an EMS provider, it is easy to overlook some of the intangible issues that can have a big impact to the relationship. One of these issues is the “cultural fit” of the two organizations. It is important to look at the following aspects of corporate culture:

- Does your organization and the EMS provider have the same stated values and overall business objectives in nearly the same order of priority? Is your organization looking for a mostly transactional relationship or a partnership? If it is a partnership, in what areas will you be partnering (ex. manufacturing, engineering, materials, quality)?
- What does the organization’s structure look like and will it interface well with your organization? Will there be a single point of contact or multiple points of contact? Will there be teams on both sides communicating sporadically or daily?
- Are you personally comfortable with the contacts at the EMS provider? Do you have a sense of trust?
- Is the terminology between the two organizations compatible? If you need something ASAP and that means within 24 hours to your organization, does it mean 24 hours to the EMS provider or does it mean 1 week?

The cultural fit will determine how well the organizations can work together, whether your needs will be met without a lot of frustration, and if things become difficult how well the organizations will pull together to be successful. Some tangible criteria that may help you determine cultural fit include:

- MRP/ERP system capabilities
- Purchasing strength/Supplier relationships (On shore & offshore)
- Responsiveness/Flexibility
- Experience
- Business practices

4. Narrowing the Field

Look at the EMS provider’s experience with projects of similar size and scope

You don’t want to be the largest account or the smallest. Ideally, you should be somewhere in the middle in terms of size and project complexity. Finally, look for adequate experience in the process and packaging technologies your product requires.

Don’t over-survey

Many companies feel a need to create complex supplier surveys. Mountains of data get collected that have little relevance to the actual performance capability of the contractor. IPC has a standard survey document, IPC-1720, *Electronics Manufacturing Services Industry Qualification Profile*. This document offers several information gathering modules – in both hard copy and diskette.

Spend time getting to know the best few

A common mistake in company selection is failing to narrow the field to a manageable number. Sending out massive surveys and request for quotations to a field of 20 or more may actually cost more in the long run. The cheapest price is not always the lowest Total Acquired Cost. Many good companies will “no bid” or spend minimal time on quotation solicitations to a large number of EMS providers because they feel their chances of winning are marginal.

Focusing on the three or four EMS providers that best meet your needs can create a much more intense competition. In this way your selection team is allowed the time to get to know each contractor. The EMS provider also gets to know your needs. Usually the bid will reflect more detailed solutions to your needs, because the EMS providers feel the business is winnable if they provide the most unique and cost-effective solution.

Check References

Most EMS providers will not release reference names in the early phase of a selection process. (Would you want to receive 50 calls a week from prospective customers of a company you were doing business with?) However, once the relationship begins to move from casual information gathering to serious consideration of final candidates, most EMS contractors are comfortable providing references. Look for three to five customers references for similar projects of similar size and scope. Ask about performance track records, technical competence, and pricing trends over time.