Producing Tech Products with Low Cost and Maximum Efficiency

The technology products business changes constantly; only the most energetic and savvy of tech companies succeed in staying on top of their markets. In addition to needing to react very quickly to changes in technology, standards, and competition, tech companies are also under constant pressure to price competitively and deliver quickly.

How to produce products at low cost and peak efficiency is a formula that every tech company will assess at some point – and most do so on a recurring basis. This short paper outlines how outsourcing the manufacturing of electronics products plays a significant role in helping companies to remain agile, stay ahead of the market, and react quickly to disruptive changes in the technology environment.

The paper explores the decisions that early-stage companies face regarding what to outsource, when, how much, and to whom, and describes the various options available in each case.

Asking the Right Questions

Outsourcing the manufacturing of electronics products enables a tech company to achieve maximum agility. By leveraging a contract electronics manufacturer, such a company stands to:

- Achieve economies of scale unavailable to low-volume purchasers
- Minimize or eliminate inventory risk
- Avoid capital expenditure while taking advantage of the latest manufacturing technologies
- Enhance its sales and marketing by demonstrating that the company is supported by a reliable manufacturer with a repeatable process volume capability.

> **Top four reasons that companies outsource electronics manufacturing:**
> - Economies of scale
> - Minimize inventory risk
> - Take advantage of latest technology without capital expenditure
> - Demonstrate manufacturing processes and volume capability

But, tech companies debating whether they can or should outsource their manufacturing have a lot to consider. Manufacturing is a long-term process that is tweaked and adjusted over time as product designs change and technology evolves, so the relationship with a contract manufacturer (CM) is also a long-term commitment. Before making an outsourcing decision, tech companies will debate the following categories of questions.

1. CAN We Outsource?

Many tech companies, particularly new ones, small ones, or those just beginning development of a new product will generally begin by wondering whether it's even possible for them to consider outsourcing. Typical concerns include:

Do we know enough?
Companies new to outsourcing may worry that they lack the knowledge required to make outsourcing work or to manage the relationship with a CM. However, it is up to the contract manufacturer to answer these questions in a satisfactory manner and to meet standard service level agreements. Companies of all sizes and at all stages of product development should feel confident in meeting with potential CMs to assess their processes capabilities, and the kind of working relationship that the CM offers.

Is our product design advanced enough?

Early-stage companies or those with new product designs may be concerned that a CM is not able or willing to deal with an evolving product design. However, the earlier in the design process that manufacturing expertise is involved, the more manufacturable the end product will be. For example, involving the CM in early product iterations prevents design decisions from having negative impact on the sourcing of parts or cost of manufacturing.

Are we too small?

Early-stage and smaller product companies with low-volume production runs will be concerned that a CM cannot give them the same time and attention as it would give to a larger customer. This is a problem only when the "fit" is not right.[1] A certain category of CMs (including OCM Manufacturing) is focused on low-volume manufacturing. Even early-stage companies that anticipate large-volume production in the future will be well served in the early years by this category of CM, as many low-volume CMs have strong relationships with larger CMs to whom manufacturing can be seamlessly transferred when the time comes.

Thus, early-stage companies, small companies and established companies with the glimmer of a new product idea should consider it possible, and desirable, to outsource their manufacturing.

2. SHOULD We Outsource?

While all tech companies will likely be able to find the right manufacturing fit with a CM of appropriate size and production volume, they will likely still wonder whether it is advisable to outsource. Common considerations include:

Will we risk losing control of our IP?

Delivering product designs and design specifications to a third party may make a tech company feel vulnerable to IP theft. In North America, contract manufacturers are bound by non-disclosure and non-compete covenants with their customers, and it is critical to their success that these contracts be upheld. In fact, the greatest risks to a tech company's IP are internal theft by employees, customers and partners. Tech companies should always seek patent and trademark protection.

Can we obtain better prices on our own?

Smaller companies in particular may believe that they are not significant enough to motivate a CM to drive a hard bargain on their behalf. But, if the fit is right, then the opposite will be true. Low-volume CMs serve a broad range of customers and manufacture many hundreds of products every year. As such, they have access to long-term supply relationships and order parts in volumes far greater than any individual company is able to do.

Is manufacturing integral to our core competence?

Every tech company must accurately assess this before deciding whether to outsource. If any part of its intellectual property (IP) involves manufacturing process or technology, then the company may actually be in the manufacturing business. In such cases, relationships with a CM will be structured very differently – or not at all – in order to protect and develop the manufacturing IP.

> **Manufacturing is an infrastructure business: assent-intensive with high fixed costs.**
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> **If it is not part of your core competence, then the risk of developing manufacturing infrastructure is too high.**

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[1] For details about how to determine the best "fit" with – and what to look for in – a contract manufacturer, see OCM's short paper entitled "Right-Sized Contract Electronics Manufacturing for the Small- to Mid-Size Company."

Do we have the resources and expertise required to undertake manufacturing?
Manufacturing is an infrastructure business – it demands a rigor and focus to achieve low defect rates, low costs and high service that is very different from the practice of product innovation. Physical space, costly machinery and software, extensive processes and specialized expertise are all required to establish a manufacturing line. CMs have already made this investment, as well as having established supply relationships, processes and standards compliance. Few tech products companies today can be both innovators and manufacturers – and most companies that once integrated manufacturing (called "vertically integrated" companies) are increasingly moving to an outsource model.

3. HOW Should We Outsource?
Once the decision is made to outsource, a company will want to determine its outsourcing methodology. Some common considerations include:

Should we partially outsource?
Partial outsourcing describes a model in which the tech company maintains some portion of the overall manufacturing supply chain in-house. Most often, that is purchasing and/or system assembly (box and build). Occasionally, companies may pursue this model in the early days because they don't realize that the right fit with a CM is available to them. In doing so, however, they miss out on the economies of scale that a CM can offer, and are slow in creating in the manufacturing process competence. Another danger is that, as operations staff grows so does the associated control infrastructure, which is anathema to the innovation business.

To whom should we outsource and how do we choose a CM?
Because the relationship with a CM is a long-term one, it is worthwhile to invest time and resources in the selection process. The most important aspect in choosing a CM is to attain the appropriate fit. Small- and mid-size companies should not expect less from their CMs in terms of capability, technology, process or customer service in comparison to large-volume companies. However, it is important for companies with low-volume tech products to find a manufacturer that is structured for the low-volume business. Details of this type of CM and how to assess one can be found in OCM's short paper entitled "Right-Sized Contract Electronics Manufacturing for the Small- to Mid-Size Company."

> **Look for power in processes:**
> - Automated forecasting capabilities
> - Enterprise resource planning system (ERP)
> - Competitive bidding process
> - Participation in buying consortiums
> - Offshore sourcing options
> - Open-book costing

How do we maintain control over our deliverables?
A company may feel vulnerable when it relies on a third party to meet delivery commitments to customers. By outsourcing manufacturing, however, delivery can be dramatically improved, because established and proven processes are used. Most CMs also have the ability to run more than one manufacturing line at a time. Furthermore, a CM's entire focus is on manufacturing, while a tech company will often find that its resources are pulled in many directions when difficulties arise or when delivery crunches occur.

A CM should also be expected to commit to service level agreements that include delivery commitments. Customer service should be a high priority for the CM, and companies should always have a means of obtaining timely updates on a project'

Self-Evaluation

The following checklist will assist tech companies in determining whether they should consider outsourcing their electronics manufacturing. This is a high-level guide to conducting a process of self-evaluation that will help all company leaders understand the outsourcing decision.

		Yes	No
1.	Our primary business is product innovation/product development and marketing.	○	○
2.	Our resources are best deployed on innovation, marketing and sales.	○	○
3.	We are trying to grow the business with minimum outside investment.	○	○
4.	We are under pressure to rapidly develop product and get to market.	○	○
5.	It is always a challenge to stay one step ahead of our competition's product introduction.	○	○
6.	We need to minimize our financial exposure and inventory risk.	○	○
7.	We want to keep capital costs low.	○	○
8.	Established contract electronics manufacturers are available to us.	○	○
9.	The manufacturing technology/processes we need are NOT proprietary.	○	○
10.	We have low-volume component purchases and have difficulty achieving economies of scale when purchasing.	○	○

Scoring:
2-5 "Yes" answers = manufacturing outsourcing should be evaluated.
6+ "Yes" answers = outsourcing your manufacturing is necessary to structure a viable, thriving business.

Sustainable Market Leadership

In today's highly competitive technology business environment, it is not adequate to merely have a more advanced product, a lower-priced product, or a groundbreaking product. Rather, a combination of these things is required. To succeed, a product company must continuously innovate while maintaining competitive quality, price and service. Without a clear focus, this pace of improvement is difficult to meet. Outsourcing is one valuable lever that tech companies should utilize to maintain their competitiveness on all required fronts. Outsourcing also reduces a company's capital and infrastructure investment, supporting a sustainable level of market leadership.