

CHAPTER 1

WHAT IS OUTSOURCE MANUFACTURING?



BAYSOURCEGLOBAL.COM



Chapter 1. What is Outsource Manufacturing?

Outsource manufacturing consists of hiring people outside of the company to assemble parts of, or build an entire product. The main reason why companies chose to do this is to cut costs. Labor is often among any company's largest costs. Outsourcing parts of the production line to a third party in a lower cost location leads to a significant decrease in production costs. It is more affordable to outsource production processes to companies that have a comparative advantage in that area than to produce them internally. Many times one of the greatest advantages of outsourcing is to utilize assets (plant, property and equipment) already in place without having to make an investment in fixed costs.

Outsourcing production can have some advantages for a new start-up product provided there are existing suppliers qualified to manufacture the items to your specifications. Control over the new product can be documented in contractual agreements. It is always a good idea to have more than one supplier, if possible, to ensure you can meet your product delivery demands. However, multiple suppliers can create problems with maintaining consistency of quality.

Outsourcing also means you would not have to invest heavily in developing your own infrastructure. Your market research and your business plan should give you a basic idea of your potential sales volume and selling price, from which you could calculate a break-even point in terms of recouping your initial investment when you switch to outsourcing.

WHEN DOES OUTSOURCE MANUFACTURING MAKE SENSE?



Chapter 2. When Does Outsource Manufacturing Make Sense?

Manufacturing companies have a myriad of reasons for outsourcing production, but the main drive for deciding in favor of outsourcing usually boils down to one thing: cost reduction. Businesses often outsource manufacturing processes with the aim of making a fixed cost fully variable. It makes sense to outsource those activities or processes where other suppliers have competitive advantages in place or are already performing. If any part of the line of production, from conceptual design to finished product, can be completed faster or at a lower cost elsewhere, it is best outsourced. For example, companies who have skilled and certified employees who are familiar with specific processes means greater efficiency and increased speed to market without the investment of time and training.

Some of the advantages of outsourcing are:

- **Financial benefits**—Improvement of balance sheet by reducing or eliminating assets and increased cash flow
- **Strategic optimization**—Focus on core mission and allocation of operations to more profitable activities
- **Better Supply Chain Management**—Ability to select suppliers who are leaders in their specific categories
- **Market discipline**—Opportunity to focus company payroll and resources on growing your market share
- **Technology**—Gain access to state-of-the-art technologies

- **Flexibility**—Resources can be redirected to the company's core operations and new product development

It is important to evaluate and analyze all costs required to perform the work in-house, including capital investment to acquire new manufacturing technologies, or to build, modify, and expand facilities.

Companies should constantly review key business processes and strategies when making outsourcing decisions. Activities and processes that are redundant, don't contribute to profitable growth or are a strain to current operations should be considered for outsourcing thus focusing on higher profit yielding, value-added activities.

Cost advantages from outsourcing can come from following factors:

- **Cheaper labor and lower asset cost**—the most common regions for outsourcing manufacturing are Asia, Latin America, and Eastern Europe. Additionally, the cost to set up business (land acquisition, construction, etc.) is lower.
- **Economies of scale due to pooling**—this effect is most pronounced in manufacturing when fixed costs are high and pooling across organizations result in lower per unit cost for all.
- **Expertise due to learning curve**—the idea, also known as experience curve, was examined and popularized by BCG in 1960s. The theory says that an organization reduces its cost by 25% every time it doubles its production. Though the exact figures may not hold for all industries alike, the concept is still valid. As a company increases production, it learns how to better use its equipment, how to standardize and optimize processes and how to better use equipment. Employees gain expertise and become more efficient resulting in higher productive and increased cost savings.
- **Lower fixed cost**—in outsourcing, the company only pays for the variable cost of production and does not incur upfront fixed cost for setting up the operations. As a result, the barriers to entry are lowered. Companies that earlier found the business unviable could now enter and also be competitive.

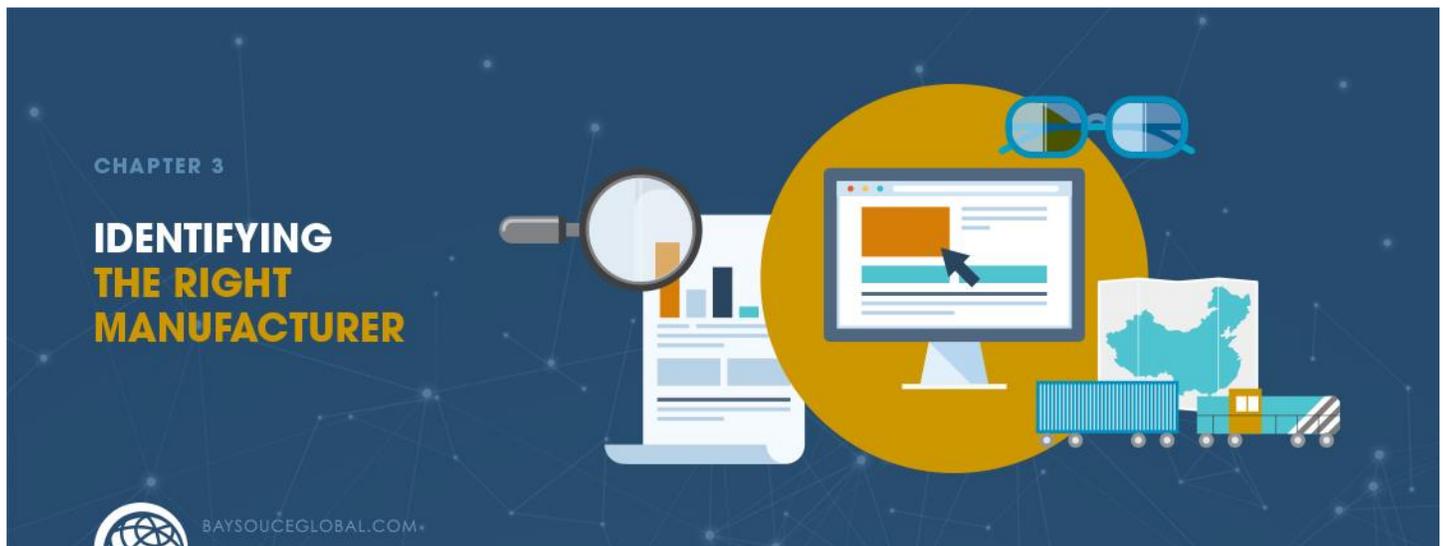
When outsourcing, it is key to identify suppliers who are credible, qualified in their field and compatible with your needs. This new flexibility allows companies to build strategies with deeper vision and creativity.

Factors to keep in mind when outsourcing:

- Look for compatibility and management philosophies that align with your own
- Focus on the best solution, not just lowest price

- Develop detailed RFPs (Requests for Proposal), contracts that incorporate up-to-date legal caveats
- Share risks and rewards
- Involve key players
- Document the transition phase
- Communicate clearly from the beginning

If your company produces a product, determining how and where to complete manufacturing operations is very important. While many businesses can thrive by manufacturing domestically, outsourcing may prove to be a better option.



Chapter 3. Identifying the Right Manufacturer

Choosing a contract manufacturing organization (CMO) is critical. Choose the wrong contractor, and you could be faced with delays and cost overruns. With much on the line, decisions should be made based on proven strategies. With the right preparation and a well-documented RFP, selecting a CMO means doing good work on the front end to avoid pitfalls down the road.

In the past, selecting a manufacturer often meant choosing the one with the lowest cost. While cost is still a driving factor, it is no longer the sole determinant. Stricter government regulations and foreign policy changes have added many considerations to make when selecting manufacturers, especially those located overseas. Quality and safety are also very important aspects to consider when brand reputation is on the line.

It is important to dig in and research in order to determine the legitimacy of every prospective manufacturer. The most vital step in determining the validity of a supplier is to visit them in person. This allows for the assessment of skills, verification of equipment and quality.

It is important to select a manufacturer with experience and certifications in producing products similar to the one you are seeking to outsource. Do not select a factory who you will be putting in business for the first time.

Location of the manufacturer is very important. Although production costs may be the same throughout the area, taxes may vary. Goods produced in China are assessed a Value-Added tax which is reduced from the company once the goods are exported. This rate varies by province. China is broken down into clusters of manufacturing. For instance hi-tech products tend to be found in Southern China. Metal works and other industrial products are found further North.

There are many advantages to working with contract manufacturers. First and foremost, the OEM manages their own supply chain that consists of multiple suppliers. This means they assume the responsibility of qualifying all necessary suppliers or subcontractors. In addition, they become the single point of contact to collaborate on projects, obtain status updates, schedule meetings, or perform other joint tasks. By partnering with a contract manufacturer, the OEM is removed from managing conflicts that can arise when dealing with multiple vendors, such as timeline interruptions, material availability, lead times, and logistics. Moreover, by working with a full-contract manufacturer, the OEM can share all aspects of a project with a single vendor, vesting both parties in its success from start to finish.

CHAPTER 4

HOW TO QUALIFY A MANUFACTURER



BAYSOURCEGLOBAL.COM



Chapter 4. How to Qualify a Manufacturer

There are literally thousands of manufacturers who produce the same categories of products. It's important that you select the manufacturer that will best serve your interests in terms of quality, cost, and punctuality without compromising any of your philosophies.

First, you must ensure the selected CMO has the technical capabilities, capacity, facilities, and systems to provide the services desired. Second, assess the CMO's willingness and capability to modify systems, utilities, processes, or procedures to meet your requirements. The sponsor puts the product's success in the hands of the CMO. Therefore it is crucial to do preliminary research and make sure the company is financially stable, has robust quality systems, and can manufacture a product that consistently meets specifications while meeting production schedules.

After preliminary evaluations, the two companies can begin discussing the project, developing timelines, outlining responsibilities, and sharing knowledge about the product. Establishing a good line of communication early on is important because as the project progresses to the technology-transfer stage, it will be critical that the two sides maintain active, two-way communication about any challenges or problems that may arise.

Here are ten factors to consider when qualifying a manufacturer:

- Legal – Does the CMO hold the necessary manufacturing authorizations?
- Competence – Can the CMO manufacture/test/pack the product(s) in question?
- Quality – Does the CMO meet or exceed the quality standards of the sponsoring company?
- Capacity – Does the CMO have the capability to meet sales demands?

- Cost – Can the CMO supply the product cheaper than in-house production or competition?
- Commitment – Does the CMO value your business?
- Continuity – Is the CMO a secure and experienced business capable of long-term contract?
- Delivery – Does the CMO deliver orders on time and in full?
- Communication – Does the CMO have an infrastructure and culture capable of providing accurate, comprehensive and timely information?
- Cash resources – Does the CMO invest sufficiently in maintaining up-to-date technologies?

Make sure the contract manufacturer's focus is to fulfill your needs. You also have to ensure the manufacturer operates and maintains efficient processes that meet western specifications and requirements.

CHAPTER 5

HOW TO CREATE A REQUEST FOR PROPOSAL



BAYSOURCEGLOBAL.COM

Chapter 5. How to create a Request for Proposal

Creating a quality RFP is absolutely crucial. This is where you define your objectives and create the requirements that your potential manufacturers must live up to. You need convey the right information and ask the right questions so that both you and the manufacturers are able to achieve an accurate understanding in order to avoid surprises later on. Before you begin writing, you need to define the project and your specific needs. You are trying to find the perfect “who” for your project. You need to be able to delineate the what, when, where and how.

When writing an RFP, remember that the manufacturers who will be responding need to have a clear understanding of your organization and its needs. A well-written RFP will clarify your objectives and the scope of the services you are seeking. It will also provide a structured format that delineates the way the contract manufacturer will present its capabilities, costs and expectations. Be sure to include these three requests, which are considered the most important requirements of any RFP:

- References: You want third-party validation on the solution you're choosing.
- Information on a manufacturer's organization: Make sure you know how long they've been in the business, the company's stability, the tenure of the executive team, number of lifetime customers, customer retention rate, and so forth. You need to be sure that your business partner is prepared for a long-term commitment.
- Information on research and development: What percentage of the staff is committed to R&D? What's the company's monetary commitment to R&D? What's its release cycle?

RFPs typically have the following sections, though these are malleable and dependent on the nature of your project:

Introduction:

Explain to potential bidders in broad terms why you are putting out an RFP and what you hope to accomplish by hiring one of them. You may also summarize key points from other sections, such as when their responses are due and when the project will start.

Background information:

This section includes pertinent information about your organization and the history of the current project, leading up to the need for the RFP.

Requirements:

This is the most important section and usually requires the most time. Included should be a detailed explanation of what you need the manufacturer to do, and a list of the information you expect to receive from the candidates.

Structure of the response:

Present the structure of how you would like to receive the response. If the project is complex or highly technical, you can break down the requirements into bullet points to which the manufacturers are expected to respond.

A typical format for the response might include:

- Executive summary (high-level overview with key points)
- Manufacturer company background information
- Proposed services or deliverables (how the manufacturer will meet the RFP requirements)
- Pricing
- References

Selection criteria:

Tell the contract manufacturers the main determinants that you will use to select the winning bidder. This gives you a chance to highlight your priorities in order to guide manufacturers' responses.

Timelines:

Specify the deadline to receive their responses, the date you will announce the winning bidder, and the date the project will begin.

Keep in mind that the longer your RFP is, and the more detailed response required of bidders, the more time you need to allow them to prepare a thorough response.

Don't choose a manufacturer based on price alone. After you read the RFP responses, narrow the list down to the best ones and interview those.

Finally, once you choose a manufacturer, write a good contract that spells out all the particulars and protects both your interests and those of your contract manufacturer. Your RFP and the manufacturer's response to it form the framework of your contract. If the RFP is well written, the contract negotiation process should go more smoothly.

CHAPTER 6

PRODUCT DESIGN-BASIC REQUIREMENTS



BAYSOURCEGLOBAL.COM



Chapter 6. Product Design-Basic Requirements

Design for manufacturing, also known as design for manufacturability or simply DFM, is an industry-wide solution. Although technologies vary within each discipline, DFM pertains to the art of designing products in order to streamline manufacturing.

Product developers thoroughly review each new project by focusing on material specifications, dimensional drawings and all levers that affect Fit and Function—all with a key emphasis on maintaining a balance of high quality and low total cost.

As projects move from the design and quotation phase tool and prototype building, first article of inspection samples and final approvals must all be coordinated.

DFM is a proactive product design solution. It is a combination of two stages of development: designing the new product and the manufacturing process together. Through concurrent engineering DFM optimizes all manufacturing functions and provides the best possible cost, quality, reliability, compliance, safety, customer satisfaction, and time to market.

Quality is maintained through all stages of design through optimal part selection and proper integration of parts, for minimum interaction problems. By considering the cumulative effect of part quality on product quality, designers are able to carefully specify part quality.

DFM can reduce many costs, since products are able to be assembled quicker from fewer parts. The goal is to simplify the design to decrease assembly time and increase quality. Parts are designed for ease of fabrication

and commonality with other projects. DFM encourages standardization of parts, maximum use of purchased parts, modular design, and standard design features.

Companies that have applied DFM have realized substantial benefits. Costs and time-to-market are often cut in half with significant improvements in quality, reliability, serviceability, product line breadth, delivery, customer acceptance and competitive posture.

From product concept to manufacturing and assembly, your product will be a success if you follow these twelve steps:

1) Product concept:

What is your product and how is your product going to be used? This step includes brainstorming, sketching, and any other creative methods used to come up with a sellable product.

2) Research:

Know the current market and its demands. Are there similar products already being manufactured/sold. If there is a similar product, how is yours going to be better?

3) Product design development:

Using the information you have gathered from your research you will be able to develop your product designs.

4) Research and development of the final design:

Creating accurate drawings with dimensions and material selection carefully considered will finalize your product design.

5) CAD (Computer Aided Design):

Using 3D modeling software you will get a computerized 3D model of your final product design. These designs will highlight problem areas where the theoretical stresses and strains on the product will be shown. If there are any problems you must address the design faults and revisit step 4.

6) CAM (Computer Aided Manufacturing):

A prototype of your design will be created using computer aided engineering systems. The physical representation of your design will be used for testing and developing.

7) Prototype testing:

This is a critical phase, and you must be completely scrupulous in order to find out if your product will function properly. If it is not completely ready for manufacturing, you must return to the drawing board.

8) Manufacturing:

Once your product prototype is completely satisfactory, you can then move to the manufacturing process. Manufacturing costs depend on the complexity of your product. The number of components, material selection, and batch numbers must be considered to ensure healthy profits.

9) Assembly:

This is where your product finally takes form. It should be assembled using lasting materials and sound design. Quality assembly practices ensure a good product.

10) Feedback and testing:

The manufacturer will test your final product. Again it is vital to be critical and honest in regards to the final product in order to decide whether any more product development is necessary at this point.

11) Product development:

If your testing and feedback highlight areas that need improvement, you will need to revisit your product development. However, a good manufacturing companies will have flagged obvious issues before you get to this stage.

12) Final product:

Now it's time to sell your product. The more you sell, the larger the manufacturing batches you can order, which will lower the cost of manufacture and increase your profits!

CHAPTER 7

UNDERSTANDING STARTUP COSTS, SAMPLES AND PRODUCT CHANGES



BAYSOURCEGLOBAL.COM



Chapter 7. Understanding Startup Costs, Samples and Product Changes

Selecting a manufacturer is one of the most important decisions a company with a new product to sell will make. While some companies may decide to keep production local, most will choose an international factory for mass production. Typically these processes will be outsourced to Asia or South America, depending on the product.

Business owners need to be extra aware at early stages of development. Startup costs require careful planning and meticulous accounting. Many new businesses neglect this process and hope for a flood of customers to keep the operation afloat –usually with abysmal results.

In an article by Caron Beesley, Contributor for the US Small Business Administration, she says that “Understanding gross margin is often overlooked by startups and new business owners. This can have a direct impact on your ability to effectively manage a growing business, price your products, and most importantly, make a profit.”

Put simply, gross margin is the money left after you have covered all the costs associated with the sale of a product or service (such as wages, materials, etc.). It is a measurement of your production efficiencies and it determines your break-even point. It is a key calculation as you assess the risk and profitability within your company.

Startup costs are the expenses incurred during the process of creating a new business. All businesses are different, and each one requires unique expenditures. Online businesses have different needs than brick-and-mortars; consultants, for instance, have different requirements than car dealerships do.

Having an educated idea about startup costs will benefit your business and cut down on unforeseen problems. Looking at your business expenses as individual components will help you manage all the costs involved in your particular business.

However, there are a few standard costs that are common to all business types:

- Research expenses
- Insurance, license and permit fees
- Equipment and supplies
- Advertising and promotion
- Borrowing costs
- Employee expenses
- Technological expenses

To remain competitive in a changing business environment companies must be aware of all aspects of their business and look for ways to refine operations in order to reduce lead times, expedite speed to market, and reduce the cost of operations. All of these processes make the company more flexible so that it can respond to changes in customer demands and improve its market share.

MONITORING AND MANAGING PRODUCTION- QUALITY ASSURANCE



Chapter 8. Monitoring and Managing Production-Quality Assurance

Quality assurance (QA) involves preventing mistakes or defects in manufactured products, guaranteeing that quality requirements will be fulfilled and avoiding problems when delivering solutions or services to customers.

Quality assurance is an integral part of monitoring and managing production and cannot be overlooked.

Whether the item being produced is simple or complex, it is bound to have several steps in its production process. From manufacturer selection, to materials selection, to production and everything in between, quality assurance is vital every step of the way.

Every person involved in the project should be focused on maintaining or improving quality and consistency. Monitoring and managing are essential parts of the process to ensure quality. Every stage of the production plan should possess a set of procedures to monitor and control the processes. First and foremost, the selected manufacturer must be evaluated in terms of its quality of technology, procedures, and labor. During the production and manufacturing stage, each product must have a predetermined set of steps that will be followed to ensure their safety and quality. These monitoring procedures are used to foresee, detect, and repair any issues in quality. If a potential forfeiture of quality is detected, testing methods with approved tolerance limits should be constructed. If an event occurs outside of the tolerance parameters, it needs to be evaluated and addressed. Then the monitoring and control procedures can be reworked to accommodate any updates.

In order to ensure that all decisions are made in a comprehensive manner, most companies employ the weighted matrix analysis. This is a decision-making technique used when an issue involves many aspects or options that helps prioritize your needs and score each option against your prerequisites. For instance, one could make a

manufacturing decision based on cost, but when dealing with outsourcing production, many other considerations such as quality, time, and technology should all be taken into account when making a decision.

The decision matrix analysis considers each option and the different aspects of each one. Then every factor of each option is scored and weighted for a final score. This way, one is able to make the best decision with all factors under consideration. This matrix is especially useful when deciding on a specific manufacturer to use for your product. Each manufacturer has strengths and its weaknesses, and by using the weighted matrix analysis, one is able to ensure the most suitable company is chosen in order to reduce any problems in quality assurance.

On-site factory audits are the best way to ensure quality. Audits are performed before approving a manufacturing source, and continuously throughout the process. It takes years to develop a set of standards for manufacturing companies and that does not compromise quality or consistency. Once a manufacturer has been selected for a certain product, every step of the production process needs to be monitored, ensuring that all specifications are followed. After the audits, a report should be compiled and shared that details progress including photos, videos, timing updates and anything else necessary to assure the quality of every product being manufactured.

COMMUNICATION AND PROJECT MANAGEMENT



Chapter 9. Communication and Project Management

The goal of Project Communications Management is to ensure timely and appropriate generation, collection, storage, and distribution of project information. Successful project management depends heavily on quality communication. In order to accomplish a project successfully, everyone involved must take part in open and candid communication. The leaders need to be in touch with every aspect of the project in order to recognize and uphold team roles, understand challenges, and maintain the level of quality and integrity that the sponsors/stakeholders are expecting upon completion.

Every successful project manager has taken the time to develop their communication skills. This is necessary due to the inherent nature of project work as compared to process work. Projects are unique one-of-a-kind sets of activities that require constant evaluation and consideration throughout the entire process.

Obviously, the methods and frequency of communication will vary from project to project. Simple projects require less communication, since it is usually a one-person team and only one stakeholder involved. Focused projects require more communication, planning and execution. In terms of complexity, typically fall in the middle because there are only a few people on the team. The project manager can often handle the communication through informal channels such as one-on-one meetings or calls to all of the team members and stakeholders.

When the complexity grows to the size of full-scale projects, the focus of the communication must shift. The project manager must spend dedicated time keeping everyone on the project aware of statuses, issues, and changes all while maintaining the timeline. Also, stakeholder meetings hold much more weight and require large amounts of preparation. Throughout complex programs, the program manager spends the majority of their

time maintaining communication and attending to risk management. These programs are typically managed as a portfolio of integrated sub-projects. The program manager is continuously communicating between the sub-projects to ensure they stay integrated and to guard against a problem in one sub-project flowing into all of the others.

Projects are fluid and constantly need to be evaluated. Any method that could increase efficiency or reduce risk needs to be considered and implemented if deemed worthy. Hence a project manager has to consider every change and challenge all the way through until the end of the project. He is responsible for making certain that the team and stakeholders are each fully up to date with the progress and information necessary to their role in the project.

To ensure that effective communication is applied throughout the whole project and that the team is organized and equipped to overcome any challenges that may arise, a project manager should incorporate a communication plan at the planning stage of the project. When making a communication plan, a project manager will have to ask the following questions:

- What kind of communication is required? (Management meetings, team meetings, management reporting, project records, etc.)
- Who needs to be communicated with? (Who should stakeholders, team leaders, team members, etc.)
- What is the chain of command? (Everyone should know exactly to whom they should report progress/issues)
- How frequent is communication required? (Scheduled meetings, open doors, progress reports, etc.)
- What needs to be communicated? (Reports, meeting minutes, details or summaries, etc.)

If any team member does not know what their tasks are, or how to accomplish them, then the entire project will grind to a halt. Without open, two-way communication procedures, the project manager is unable to monitor project progress. If a stakeholder is not understood, the project is guaranteed to fail. Maintaining open, regular and accurate channels of communication with all levels of project staff and stakeholders is vital to streamlining the manufacturing process and handling any difficulties along the way.



Chapter 10. Conclusion

Over the past few decades a global trend to outsource factory production throughout South America and Asia in order to cut costs developed. Meanwhile, innovative work involving complex engineering has tended to stay in-house in high-cost countries. Manufacturing was seen as just a cost center, so it was often offshored without much regard to quality or process. However, many contemporary companies are of the opinion that manufacturing and production make such a big contribution to the success of research and development that innovation is more likely to happen when R&D and manufacturing are in the same place. However, in-house manufacturing raises costs exponentially, making it difficult to produce a product that is accessible to large portions of the market.

A good manufacturing and distributing company has developed their services to provide companies access to a system of resources that has been compiled and refined for over a decade. Their team should have years of experience providing offshore manufacturing solutions so that products can be produced with the highest standards of quality and the lowest costs. They should also have a positive relationship with their partners and be committed to the highest standards of honesty, transparency, integrity and quality.

To be successful in outsource manufacturing, document control and quality need to function in concert with your partner. From initial product specification to final sign-off, your product team must be in close contact with your outsourcing-manufacturing partners to ensure that your cost, quality and schedule goals are met. Each step will work towards building a concurrent process between all project members.

It is important to establish a collaborative relationship with your contract manufacturers (CMs) and design partners from the start. By building a strong alliance it will be easier to tackle any challenges that arise during

the design or manufacturing stages. Creating a process to submit feedback or other suggestions (like manufacturing change orders) enables communication to take place and strengthens collaboration between all parties.

Some manufacturing companies have increased flexibility by outsourcing their production. Typically, production gets outsourced to a contract manufacturer, or a company that produces goods under the label or brand of another firm. Contract manufacturers might produce goods for two or more companies, and even for competitors within the same industry. Since the contract manufacturer has more production capacity than the original manufacturing company, it can facilitate increased production requirements.

Some companies have experienced extreme paradigm shifts that have prompted them to outsource their manufacturing. A company that realizes its core competency is the sales and marketing of its product and not the production of its product, often will choose to outsource manufacturing. With the production outsourced, the company can now focus its resources, on the areas that increase revenue and profit. If outsourcing reduces manufacturing costs, the company can increase its revenue through a better focus on sales and marketing therefore increasing its profit margin as well.