

## **Managing Suppliers for Continuous Improvement**

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### **Summary**

Suppliers are the backbone of industry today, representing 60-70% of manufacturing or service operations cost. As supplier cost, quality and delivery improves, so will the customer's products and services. Few organizations, however, have effective supplier improvement processes. Little to no primary research is available for companies to benchmark their own processes. The benefit of this paper is to provide a model for use by manufacturers and service providers to evaluate, assess, improve, monitor, and develop their supply base over the long term. A set of criteria will be provided which represents the best practices in the literature and from company research projects. Best practices will be presented from the automotive, electronics, and industrial equipment sectors. This model can be used immediately to improve supplier results.

### **Key Words**

- Supplier Assessment
- Supplier Improvement
- Supply Management

### **Introduction**

In many manufacturing and service companies, purchases from suppliers can range from 50-80% of manufacturing costs. The ability of the customer and supplier to control purchase costs has an enormous impact on the return to shareholder value and profitability. Supplier-provided product also becomes the most critical quality and delivery issue due to the impact on final assembly and administrative quality. Quality costs for inadequate supplier performance in managing defects and deliveries has been found in some companies to approach over 10% of purchase costs. Other costs associated with poor delivery and responsiveness can greatly add to the cost of doing business with suppliers. We will include cost of quality examples from a major aircraft engine manufacturer who developed a cost component based on the level of PPM achieved by the supplier and from a major computer company that developed a cost of quality formula for the percentage of acceptable products received. A third example will



be provided from Texas Instruments who developed a cost of quality factor based on the chart of accounts. Due to the enormous influence that supplier quality performance has on corporate profitability and efficiency, companies must evaluate their continuous improvement processes and systems so that supplier improvement can create greater value for shareholders and suppliers in its supply management processes. Best practices should be benchmarked, and new and revised systems and processes should be put in place for supplier excellence.

Companies, in fact, have developed supplier improvement programs, using company-specific assessment tools, which include budgeted resources, continuous improvement efforts, and supplier specific goals.

### **The Honda Story**

Companies such as Honda of America have devoted the resources and organizational focus to improve its suppliers. Over 80% of their manufacturing cost is comprised of supplier direct costs and their administrative time and costs in managing the supply base. Its Best Practices (BP) program has achieved world-class supplier performance in quality and delivery performance. For instance, last year over 50% of their suppliers supplied defect-free products and an equal percentage achieved 100% on-time delivery. Any companies would cherish this type of performance. How did Honda accomplish this feat?

Honda developed a concise process of managing the supplier over the long term. They received their suppliers' unequivocal agreement to provide the resources and commitment necessary to work with Honda to reduce total costs. They train their suppliers on the BP process. Over 200 supply management people work directly with their 400 suppliers on improving products and processes. In one case, engineers were sent to a supplier for over 7 months on a full-time basis to work together for improvement.

Further, there is the need to develop a highly structured and aligned process to manage the people, data, organizations, and time expenditures associated with a continuous improvement initiative. We will describe the various elements of the Honda system and identify the key reasons for their success.

### **A Fortune 200 Example**

Here is an evolving scenario from one of our customers. They are an international company with plants in 20 countries. Over 3400 suppliers support their manufacturing operations. Examples of the supplied product include sheet metal, plastics, raw steel, cabling, and printed circuit boards. Purchasing responsibilities are decentralized to each plant in three regions. Purchase volume is over \$1.5 Billion annually. Quality assurance is performed on the line, although some source inspection is done at new or critical suppliers with quality problems. Supplier quality data is not available and there are



inconsistent methods of tracking and measuring suppliers. Little feedback was provided to suppliers on their performance, and only 1% of the suppliers have been assessed at a certified-capable level. We will describe how this company has structured a worldwide supplier improvement program on a consistent basis using standardized approaches, measures, and processes. We will review the basis of the improvement plan and indicate how this company is managing supplier performance and improvement across the globe. One of the key aspects of their success is the development and deployment of a supplier improvement tool that is used to diagnose supplier performance against 14 quality system elements. Suppliers are rated on a scale of Level 1 through 4, with Level 2 being the lowest acceptable score, Level 3 being the “certified level” and Level 4 being world class status. This company develops improvement plans with the supplier to move from one level to another. The goal of this initiative is to reach Level 3 in all of its 500 suppliers worldwide by 2002. We will describe the tool and process used, along with results achieved to date and lessons learned.

These are both real scenarios. We will add additional examples from Boeing, Intel, and Foxboro Company. We will also provide examples from companies who are trying to improve the supply base and are failing due to a myriad of factors. Most of these companies will be referenced by industry, not by name. The supplier development systems that have produced significant supplier improvement have five common elements:

1. An excellent Continuous Improvement Tool
2. A method to provide interim maturity evaluations of the suppliers’ quality systems
3. Long term goals which are shared with suppliers
4. Trained evaluators and CI professionals
5. Dedicated, budgeted resources for supplier development

It is possible to provide a model which can be used to develop a world class supplier development program using ideas from best practices across many industries. This model can be used to develop and define the supplier improvement process, establish effective goals, assess supplier capability and performance, and improve the supply base over the long term. The balance of this paper describes this model.

### **Outline of the Model**

This model has three features: Assessment, Analysis, and Action Planning. Each will be addressed in turn.



## **Assessment**

The organization must evaluate their current supplier management process and determine the following:

- Commodities Purchased
- Quality Level Achieved
- Cost of Quality - Examples to calculate supplier cost of quality will be provided
- How Current Suppliers were chosen
- Quality Surveys used and the Results
- Number of Suppliers who are certified (shipping directly from their production line to the customer's production area without incoming inspection)
- Current Resources Devoted to Improving the Suppliers in those commodities

Note: This is a data-gathering step. Most companies have some of the data already but must perform some first hand research on processes used, internal and external costs, personnel levels, and the current status of the supply base.

## **Analysis**

Once the above data is developed, the company should analyze the results. The first hand quality results should be compared against industry and best practice benchmarks. The tools used to evaluate supplier quality systems must be evaluated for completeness, accuracy, and improvement orientation. The supplier development activities must be assessed. The extent of supplier improvement in quality, responsiveness, and delivery must be assessed. Suppliers should be asked to critique the supplier development process and suggest improvements. Internal staff such as manufacturing, quality, supply management, engineering, production control, receiving, and finance should be asked to comment on their satisfaction with the supplier improvement process and results. The bottom line is to evaluate whether the current system is motivating the company and its suppliers to improve.

This is an important issue to consider because suppliers typically receive many audits from its customers (1-2 months) and from ISO auditors, and from governmental bodies. The company's system has to be viewed by the supplier as something to pursue, producing cost savings and quality improvement that cannot be attained through separate means. Otherwise, the company might as well use the ISO, QS, VDR, TS, or AS standards to assess the supplier's quality system. But the fact that most Fortune 1000 companies have their own unique surveys demonstrates that company-specific quality and business surveys will continue to be used. Based on our experience and work with supply management groups, we have observed that the following criteria can be used to assess supplier capability and gain supplier acceptance of the customer's improvement process:



- Management Responsibility
- Quality System
- 5S System
- Continuous Improvement
- Corrective and Preventive Action
- Customer Satisfaction
- Design Control
- Drawing Control
- Process Control
- Supply Management
- Material Control
- Control of Test Equipment and Gauges
- Training Packaging, Handling, Storing, and Transporting
- New Product Introduction
- Inspection Planning and Process
- Safety and Environment
- Lean Manufacturing System
- On Time Delivery Process

Once the analysis phase is completed, the company is ready to develop action plans to address the deficiencies noted and the problems with its current system.

### **Action Planning**

The company is now in a position to develop an action plan, when implemented, will provide the company and supplier with a value-added system capable of producing vast improvements in the supply base. Based on our experience, actions typically are needed as follows:

Development of a new diagnostic tool

- Training of Auditors, CI staff, and Suppliers
- Alignment of resources
- Renewed improvement goals
- Prioritization of suppliers for improvement
- Benchmarking to develop best practices
- Piloting of the new process
- Introduction of the tool in the supplier selection process

We will also provide a brief case study that provides an overview of the current situation with a supplier in the electronics industry from a supplier improvement standpoint. We will demonstrate how the model can be used to enhance the company's current process and provide the basis for substantial supplier improvement.

### **Conclusion**

Few companies have an effective, structured and value-added supplier improvement process. This is primarily due to the lack of a process of ensuring ongoing supplier improvement that includes the resources required to accomplish the needed improvement. By using a structured process, companies will have a more consistent



way of determining the status or maturity of the supplier's quality system and to develop an organized plan for improvement, which potentially could be for suppliers to reach specific world-class benchmarks. The proper resources should be applied and long term goals should be set, along with supplier input. The entire process should be evaluated for completeness and output quality.

