



## *Title: Supplier Performance Evaluation*

Course Title : Manufacturing Management  
Course Number : EMGT 510  
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Term : Fall  
Year : 1992  
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Report No.:  
Type: Student Project  
Note:

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This research paper examines various areas for evaluation and elaborates their importance in detail. A two phase implementation method is suggested. Analysis of modern procurement concepts has been done.

Engineering Management Program  
Manufacturing Management  
Term Research Paper  
Fall - 1992

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**"SUPPLIER PERFORMANCE EVALUATION"**

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Manufacturing Management

Term Research Paper

EGMT - 510

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## **SUPPLIER PERFORMANCE EVALUATION**

### **Abstract**

Organizations have to face intense global competition to maintain a fair share of business. Quality of product and service play an important role in today's business environment. To remain among the major contenders and to maintain profitability, it is imperative to keep pace with rapidly growing technology. The reduced product life cycle and the product development cycle have affected many organizations. The early supplier interaction and the long term relationships with them provide security towards quality and help to excel.

Objective evaluation of key suppliers' performance will play a dominant role in buyer-supplier relationship. Supplier Performance Evaluation (SPE) projects overall capabilities of the supplier rather than the narrow perception formed on the basis of the price quoted. Many times it is understood that the material price is only a fraction of the total cost of purchased material.

This research paper examines various areas for evaluation and elaborates their importance in detail. A two phase implementation method is suggested. Analysis of modern procurement concepts has been done.

## **INTRODUCTION**

Many times it is not understood that material price is only a fraction of the total cost of purchased material. If a purchasing analysis is done without considering the total cost, it will severely hamper the bottom line profitability. A rational way of evaluating the suppliers is critical for establishing successful long-term relationship with them. Long-term relationship is built on mutual trust, overt communication and timely support. A long-term relationship makes a major contribution towards organization's productivity and, the purchase manager is instrumental in establishing a long term relationship (10).

Selecting the world-class suppliers plays an important role in keeping the organization ahead of competition, maintaining required quality level, enhancing operational efficiency and in reducing the suppliers base (9). It has become prominently useful when having complex manufacturing processes , shorter product life cycle, shorter development cycle, highly demanding customers and high administrative cost. The novel practice called Concurrent Engineering encourages the involvement of suppliers in early stages of the product developmental cycle which plays a key role in Time to Market. Many organizations, adopting Concurrent Engineering, have reaped high profitability in the initial stages before considerable threat from their competitors shows up (shorter span of introduction increases maturity span in product life cycle phase).

The latest successful management concepts like TQM, JIT insist on performing the tasks right the first time, so that additional cost involved in rectification can be avoided. All these advantages answers the question why is it so critically important to evaluate suppliers and to select them on the basis of their performance.

## **AREAS FOR EVALUATION**

Supplier evaluation is a certification process based on the performance. The evaluation can be done in following major areas.

**Quality conformance:**

Conformance can be seen as the expected performance while adhering to the required specifications at an affordable price. The first step towards achieving quality is to let the suppliers know what is expected out of them. A step further in this process is to explain the suppliers about the sensitivity of your market and your customers' expectations. Open communication clarifies the expectations and lays a foundation for mutual trust.

**Delivery reliability:**

Delivery reliability is measured by considering the factors such as accurate execution of orders, repeated punctual deliveries.

**Delivery leadtime:**

Short delivery lead-time and ability to meet emergency demand during unexpected crisis are valued highly during delivery evaluation. As the Economic Order Quantity is becoming obsolete, frequent delivery in small quantity to the exact requirements under a long term contract is moving in.

**Response flexibility:**

Response flexibility is quantified by the regular communication and contact mode that are established. The response is measured by the accessibility to the various functional personnel of the supplier's organization including senior management. The geographical proximity of the supplier makes a difference when comes to emergency situation. The smaller the suppliers base, the better are the performance due to clear two-way communication and interaction.

**Price:**

Price of the product is derived by considering the costs of materials, labor, manufacturing cost, selling cost, overhead and the profit. Preference can be exercised by looking at these cost. Manufacturing cost, selling cost, profit and overhead speak a lot about the supplier's organization. Cost-based evaluation puts emphasis on total cost of buying which includes the

cost that are hidden under non-conformance associated with inadequate quality, delivery, service, support, price in the form of Supplier performance Index (SPI) (7) .

$$SPI = \frac{\text{Extended Purchase price} + \text{Non-performance cost}}{\text{Extended purchase price}}$$

JIT goes one step further and includes quality cost, scrap and rework cost, plant efficiency, line stoppage cost and customer return costs (5).

**Consistency:**

Consistency of product quality and service is rated here. Suppliers build their reputation for being consistent. Forecasting supplier performance based on historical data can be good measure.

**Wish for partnership:**

Benefits from supplier partnerships can occur in the areas like product development, schedule development, financial support, problem solving techniques, response time, quality enhancement, Just-in-Time purchase, commitment on reliability, delivery timing and pricing. Successful partnering is on the platform of coordination, cooperation, trust and loyalty. The question is: How do we get all these from a supplier. The answer is Supplier Certification (6). It may also lead to sharing the resulting savings when both the parties make honest efforts to reduce costs and produce to conformance. Flexibility and positive attitude of the supplier plays critical role in partnering. Traditional approach of encouraging direct competition among suppliers breaks this ties.

**Suppliers financial stability:**

Financial stability is one of critical factors for consideration when narrowing down the suppliers base. With a thin suppliers base, the buyer's organization becomes extra-ordinarily sensitive to performance of the suppliers. Buyers could be crippled by suppliers when the later are trapped into financial problems.

Dr. Newman has suggested the following methods of measuring financial capabilities of suppliers(9).

1. Clout ratio (buyer's annual order value/sales)
2. Current ratio (current assets/current liabilities)
3. Quick ratio(current assets less inventory/current liabilities)
4. Inventory turnover (sales/inventory)
5. Collection period (receivables/sales per day)

**Product range:**

Another way of looking at suppliers is, through their product ranges and their extensive product line-up. Product range reflects on flexibility and adaptability in engineering changes.

**Problem solving techniques:**

Technical knowledge on problem identification and, fixing them at the root level is an unique strategy that varies with each organization. Identification and fixing of a problem becomes relatively easy when the documentation of every action is recorded and reviewed. ISO 9000 series, the European Standards (1), and Prestigious Malcolm Baldrige award (4) aim for documentation to enhance quality.

**Technical support:**

Pre-sales & post-sales technical consultation service is common among engineering companies. But the question is, how effectively this service is rendered ! Technical support may show its prominence in supplier's selection just after Quality, Delivery and Price. However it varies with the buyer product(s), their ability to handle the rapidly changing technology. Service factor rating (SFR) is for the performance that can not be measured in dollars (7). It is highly subjective measurement by various personnel with whom the supplier is having direct or indirect contact.



**Corporate philosophy:**

Supplier's belief on philosophies like TQM, JIT procurement and in other quality programs. All these Quality philosophies are based on teamwork. They are netted on strong interaction and communication within various teams inside and outside the organization. Any breakage in one link can pose a tremendous problem while implementing these practices in buyer's organization.

**Equipment capability:**

Investing on latest technological machines reduces the cost of manufacturing at the supplier's end, which in-turn leads to competitive pricing of the product or initial high profit margin or both.

**Process capability:**

One way of checking process capability is to the process capability index (9). The supplier can be asked to produce the P.C.I. Internal use of statistical process control by the supplier is also a measuring point. State of art technology like CAD, CAM, CIM, FMS & SPC, that has been inducted into the manufacturing system, protects the system from variation leading to six sigma quality level.

**Social contacts:**

Personal relationships and social contacts with supplier personnel satisfies the social needs of the purchasing managers and increases the perceived value of job satisfaction (3).

Ranking of the above mentioned measuring factors in the order of importance varies with the organization's philosophy and mission(long-term or short-term), type and specification of the product & service, Potential supplier availability, complexity of the transaction (12) etc

**BENEFITS OF EVALUATION**

Some of the benefits of evaluating suppliers are already discussed while explaining Areas for Evaluation. Dr.Monczka and Trecha (7) listed the following benefits:

- The ability to source requirements based on total cost considerations
- A methodology to increase supplier accountability and control
- An equitable and consistent evaluating tool
- Definition of supplier performance expectations
- Communicating buyer's priorities to supplier
- Ability to perform sourcing risk assessment
- Strengthening internal communication channel for reporting critical supplier sourcing information.
- To provide positive supplier reinforcement
- Basis for a supplier awards program

## IMPLEMENTATION

Supplier performance evaluation can be implemented in two phases.

### **Phase - I : Data quality:**

Supplier Performance Evaluation (SPE) and, the intensity of evaluation are to be decided considering the grouping process of items such as critical, troublesome and common items. The quality of information is the factor that leads to successful implementation. Accuracy in forecasting (helps supplier to understand buyer's requirement) and the data quality facilitate making correct decisions. Importance of Data quality is felt when the organization is operating with narrow suppliers base, just-in-time purchase, small lot size production, zero inventory management and total customer satisfaction. Under Phase-I, quality data base and information flowing channels are structured. The firm will establish evaluation criteria, devise measure for those criteria, and implement the performance evaluation process. In scrutinizing the suppliers, purchase department takes the help of other departments like quality control, engineering, receiving, production etc. to capture the importance of end-users' perception.

## **Phase - II : Supplier base reduction and supplier management process:**

Single sourcing is the deliberate decision taken by the buyer to buy all the requirements from one supplier. Better pricing results from higher volume, buyer obtaining more influence with the supplier, low purchasing cost, and better control are the gains in keeping a single source of supply.

Still the feelings among the buyers is that their dependence on selected sources of supply will reduce their degree of freedom to choose. This is indeed a trade-off to all the benefits that are feasible in partnering (11). Commitment to someone always reduces certain amount of freedom in any walk of life. Prudent supplier's evaluation and selection and the accuracy in the data quality for decision making reduce the risk involved. Employee's participation and little variation in production process will off-set the risk taken in buying the exact quantity at the right time from a limited suppliers base.

It is imperative for the supplier to streamline the production process before becoming single source supplier to anyone. Effective tools like Statistical Process Control, Material Requirements Planning, Small Lot Production and Scheduling are widely used by world class manufacturers to control the variation in the process.

It is interesting to note that Japanese buyers adopt single source supplier strategy unlike others all over the world, whose procurement practice supports multiple source supplier. The Japanese prefer the single source supplier to have little or no business relation with their competitors unlike the multiple sources buyer, who insists on supplier's good track records with the competitors or with the similar industries as a criteria to award an order. The Japanese believe that a single source environment encourages suppliers to understand and respond to the quality and service needs of the buyer.

The logic is:

If better SPE, then fewer suppliers;

If fewer suppliers, then better suppliers;

If better supplier, then fewer quality problems;

If fewer problems, then better process control;

If better process control; then lesser inspection;  
If lesser inspections, then better profitability and so on.

### ANALYSIS OF MODERN PROCUREMENT CONCEPTS

To have an effective supplier evaluation, it is necessary to motivate purchasing personnel by structuring an objective evaluating method in assessing the purchasing department's performance. It is often found difficult to evaluate the purchase department's performance. If the department's performance is measured on the number of purchase orders issued or the dollar amount of purchases per employee, it may reflect on department's efficiency (internal productivity) (10), but not effectiveness (the achievement of resource utilization with respect to productivity). Another way of measuring the productivity is looking at the criteria of the contribution the department makes towards organizational goals such as maintaining minimal optimal inventory level, on-time receipts, quality product bought at the first transaction itself, internal customer satisfaction (external productivity)(10). It is more likely that the suppliers are evaluated by purchasers on the basis of their contributions towards organizational productivity, when these purchasers are evaluated on their external productivity within their organization. A phenomenon called Productivity algorithm is calculated in which supplier performance is weighted heavily (8).

Goal programming model (linear programming model) whose parameters are related to the requirements of purchasing firms, delivery time, quality etc., is designed by Buffa and Jackson(2). Better purchasing planning, material handling, evaluation of suppliers and vendor relations will be outcome of the model.

These assessment methods may vary, and so are the outputs, depending upon type of the organization base like manufacturing, service or project. Honda, for example, checks part quality in defective parts per million (ppm) and also puts great emphasis on delivery windows, missing documents, incorrect label or entry (data quality).

Incoming inspection is non-value added task (the inspection by itself does not improve quality). Savings are prominent when incoming inspection is avoided. Xerox's Webster plant in upstate New York, where inspection is done for all the supplies (irrespective of the supply's origin and its final destination) had been stopped ever since they started practicing better supplier evaluation process and JIT procurement. There are other indirect cost involved in having multiple source suppliers such as the cost of tooling (with every supplier), suppliers investment cost (man, machine, method), supplier's learning curve effect.

### CONCLUSIONS

Strategic procurement planning does not any longer relate to low-price and timely delivery only. It revolves around productivity, profit margin, improved market information, market share and market leadership. The last , but not the least criteria is conformance to quality.

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