What Do You Know About Your Critical Suppliers?

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Abstract. Supply management is about creating and leading the supply chain to ensure continuity of supply with better service and more involvement for suppliers to provide our customers unexpected results. Many authorities agree that supplier evaluation is a critically important element of supply management processes and that we ought to be able to do it better, faster and with fewer resources. Now web-based techniques make it relatively easy and economical for us to create even more complex models for supplier evaluations. This workshop shows how traditional and web-based supplier evaluation and development models help us maximize the value of our supply base and our personal value to the organization.

Making Supplier Evaluations Work. Today many senior managers recognize that supply management is an important strategic process and that its importance is increasing every day. We also understand that our responsibilities as supply managers are to search for, identify, and develop methods that improve our performance from several critical perspectives. One of those critical perspectives is supplier evaluation. For many organizations the total spend exceeds 50 percent of total revenue. Hence any enhancement of the value of the organizational supply system can be significant to the organization.

Information gained from formalized supplier evaluation processes should be the foundation for all actions concerning a supplier—favorable or remedial, from selection to dismissal. Favorable actions include supplier selection, development, recognition and the award of additional business at the expense of less satisfactory suppliers. Remedial actions include all our efforts to expedite performance through communication, corrective action aimed at improving performance, to the ultimate cancellation of contracts and removal from the list of approved suppliers. From this definition, it is clear that supplier evaluation should be a formal supply management program and our suppliers should know how it works and be involved with the process. Our ultimate goal is improved supplier performance and our tools are established metrics and meaningful business processes applied correctly and consistently over time.

As our resources are constrained, our first decision should be to prioritize and schedule suppliers evaluation. Suppliers should be ranked by strategic value using the “A, B, C” rule. Our major efforts should be concentrated on those few important suppliers in the “A” category. Certainly, a careful evaluation is a major part of any remedial action to help a troubled supplier that we want to keep in our supply base. Similarly, we want to evaluate any new supplier during the selection process. Any existing supplier that is being considered for an important new role in our supply chain should also be carefully evaluated in terms of that new role. Finally, if resources permit, we should conduct evaluations for the remaining suppliers in the “B” and “C” categories. Supply base rationalization helps make our supplier evaluation process more manageable in terms of limited available resources.

Supplier evaluation should always be a team process. Typically, teams include senior managers, quality, operations/manufacturing, engineering, accounting and finance, supply

management, service managers and others when appropriate. Team members must be in position to recognize quality, delivery, service, cost, and other metrics that the team identifies as important to a particular supplier or supply process.

The team is responsible for its annual schedule and must be in position to respond to any negative supplier behavior, unexpected trends or situations.

Models for Supplier Evaluation. The National Association of Purchasing Agents now the Institute of Supply Management™ (ISM™) commissioned a national team to address the question of supplier evaluation in the 1950s. The team report identified three models ranging from quite simple to very complex. The original models were 1) the categorical model, 2) the weighted-point model and 3) the cost-ratio model. The names suggest a degree of difference and complexity between the models. Each of the three models has stood the test of time. Now computer and web-based communication techniques make it relatively easy for us to create and use even more complex models for the supplier evaluation process.

Here is an example for each model. Due to space limitations, my examples are simple and consider only three or four metrics for each model. The number of metrics actually used should match the importance of your supplier decision. The mathematics and process of the categorical model are quite elementary.

An Example of a Categorical Model for a Supplier

Departments include SM, ENG, MRO, and INV
Item Scores: Preferred = +3, Acceptable = 0, Unsatisfactory = -3

Category:	SM	ENG	MRO	INV	TOTAL
Price	+3	0	-3	+3	3
Quality	0	+3	0	+3	6
Delivery	+3	0	+3	+3	9
Service	0	+3	+3	+3	9
Totals	+6	+6	+3	+12	+27

Score: 27/48 = 56 %
Standard: ≤ 40 %is unacceptable; ≥ 41 % but ≤ 70% is acceptable; ≥ 71% is preferred
Team discussions to decide recommended action: This supplier is acceptable
Compare score with past scores for trend line and other suppliers
Rewards or corrective action as suggested by score

Indeed, the scoring process could be “yes” or “no,” or “satisfactory” to “unsatisfactory.” Even so, evaluating a set of suppliers against the same metrics and scoring process gives us a system to compare them and identify the preferred supplier.

By definition, the weighted-point model implies more sophistication. Now we have our metrics to be scored and weights that let us compare the meaningfulness of the metrics and give importance to metrics in comparison with other metrics. The evaluation team must agree on the importance of metrics and weights before it can evaluate the suppliers. Once the weights

are determined it is straightforward mathematics to calculate the numbers and identify the preferred supplier in the group.

The example in the figure on the next page shows the increased complexity of the weighted-point model.

The cost-ratio model is the most complex model. It provides a set of numbers that compare suppliers by the costs that they cause for our operations. With the cost analysis techniques available today, we should be able to use this model to provide us information to select the lowest cost supplier.

An Example of the Weighted-Point Model for a Supplier

Factor	Weight	Measure
Quality	50	100% - % Rejects
Service	25	100% - 7 % per Failure
Delivery	25	100% - 5% Each early or late delivery

Results: Quality = 5 % rejects, Service = 3 failures, Delivery = 2 failures

Calculations:

Quality	50 x (100 - 0.05) =	47.50
Service	25 x [100 - (0.07 x 3)]	19.75
Delivery	25 x [100 - (0.05 x 2)]	22.50
Overall Evaluation		89.75

Standard: ≤ 70 is unacceptable, ≥ 71 but ≤ 89 is acceptable while ≥ 90 is preferred
Compare score with past scores for trend line and other suppliers
Rewards or corrective action as suggested by score

I think that getting to a measure based on cost is better than one based just on metrics and even better than one that uses weights with those metrics.

An Example for the Cost-Ratio Model Comparing Two Suppliers

Supplier	A	B
Price	74.85	76.45
Quality Cost Ratio	5 %	2 %
Service Cost Ratio	2 %	- 1 %
Delivery Cost Ratio	2 %	4 %
Total Of all Cost Ratios	+ 9 %	+ 5 %

Supplier A = 74.85 + .09 x 74.85 = $81.59
Supplier B = 76.45 + .05 x 76.45 = $80.27

Decision and Recommendations: Supplier B is the preferred supplier
Compare score with past scores for trend line and other suppliers
Rewards or corrective action as needed by score

Although the cost-ratio process is the most complex of the traditional models, we now have very complex web-based models available that provide in depth supplier information that can be tracked over time. These web-based models are discussed in the next section.

Web-Based Supplier Evaluation Systems. I think information technology and the web offers us an opportunity to speed up the supplier evaluation process and at the same time utilize even more sophisticated analytical processes to collect, analyze and better understand more data even faster.

The web is many things to many people, but in terms of supply management and indeed most management processes, the web is a significant tool, an enabler, that offers us significant communication, data collection and analytical capabilities. The web includes many suppliers but only a few of those potential suppliers provide dedicated supplier evaluation programs. The table on the next page introduces five companies and includes the web site address for each company. Each of the web pages introduces the company, its product lines, organization, and typically includes recent news releases and selected customer comments. These suppliers were selected only as examples and listed alphabetically.

Web-Based Sources of Supplier Evaluation Programs	
IBM Global Systems	www.ibmglobalsolutions.com
Intellimet	www.intellimet.com
Open Ratings	www.openratings.com
Supplier Insight	www.supplierinsight.com
Valuedge	www.valuedge.com

You can find other suppliers and programs identified in ISM and other publications. This list does two things; 1) it proves that the opportunity for web-based supplier evaluation processes exist today and 2) it offers the readers a quick way to get started.

As we noted earlier the huge amount of face-to-face, time-consuming work for purchasing teams conducting supplier evaluations with the traditional methods is a major problem for supply managers. The web-suppliers address this situation in their web pages and users attest to resource constraint as a major reason for looking to the web-based suppliers. Ken Marcia at United Technologies says, “UTC is developing web-based supplier programs at three levels, 1) monitoring supplier operations, 2) assessment of operations and capabilities and 3) developing improvement processes for the suppliers.” He is quick to note that the web-based processes help them reduce the bottleneck caused by their own constrained resources.

Similarly, “At Motorola’s Semiconductor Products Sector (SPS), using web-based applications to perform supplier assessments and evaluations is critical.” According to Bethany Heinrich, C.P.M., “SPS has been using a web-based supplier performance rating system since early 2001. This tool was designed to provide consistent performance data and feedback to Motorola’s suppliers on a quarterly basis. The web has allowed the process to become more efficient; encouraging input from additional cross-functional team members. As a second phase to the process, SPS has also been working on the development of a web-based supply chain risk assessment tool to extend the data collection process throughout the supply chain. This new process will concentrate on collecting data related to how suppliers work with their

suppliers in both processes and risk reduction. Our goal is to gather better information faster, allowing us to be proactive in our sourcing strategies."

I am convinced that the web-based resources can provide several beneficial results. Foremost, I think is the capability to provide comprehensive reports based on supplier input and industry information. Second and equally important, I think is the power to provide more comprehensive data analyses and reports than were ever available from our own teams. Now it can be done economically and with less time. The web-base systems offer us a powerful way to rapidly communicate the reports and any requisite actions to our supplier and the supply management team. Finally, the web-based systems strategically change the need for face-to-face contact and interaction. Now the face-to-face interaction can be about strategic issues and solutions for improvement rather that fact-finding missions and inspections. Like the traditional supplier evaluation systems, the web-based systems still require trust, openness, and cooperation in the supply chain. For long-term success, it must be a "Win-Win" model.

The reader is challenged to visit the websites to better understand what each company can do and to see the differences between the companies and their programs. Clearly, we should use the same sound new supplier evaluation/selection processes with the web-based supplier that you would use with any other significant supplier.

Metrics for Supplier Evaluations. From literature and experience we can develop long lists of metrics to support supplier evaluation processes. I suggest that we should not use the same list of metrics for a 'C' supplier that you would use for the more important 'A' supplier. Here is a list of 32 widely used metrics. Every list I have ever seen included quality, delivery, and price. We now call "price" 'total all in cost." After those three, the lists usually diverge quickly. Divergence is acceptable because the metrics utilized should fit individual organizational needs. Clearly from this list of metrics we develop hundreds of questions. Networking with others will provide sample questionnaires and data collection processes.

Metrics for Supplier Evaluations	
Quality performance	Managerial team, size, capabilities, age
Delivery performance	Labor situation
Total all in cost	National vis-à-vis regional or local status
Service performance	Facilities, equipment and overall capabilities
Dedication to cost analysis and cost control processes	Model considerations
	Fit to our operations
Technical assistance capability	Fit to our style
Electronic communication capabilities	Participation in early supplier programs
Response time to communication	Location vis-à-vis our sites
Financial situation/strengths/weaknesses	Relationships with their supply chain and base
Margins	Willingness to locate in-house
Inventories	Willingness to do supplier managed inventories
Ability to innovate	Consistency of performance
Willingness to create and share data and information	Sufficient size and ability to meet our needs
	Demonstrated interest in our needs
Flexibility	Warranties
Quality improvement capability	
Lean thinking status and ability for lean operations	

Our job is to create a process to meet our need for information to support the interaction with selected suppliers.

Generally we have two kinds of metrics—qualitative and quantitative. Qualitative metrics are just words—"Acceptable" or "Unacceptable," "Yes" or "No," or similar "either-or" situations. Quantitative metrics are numbers and we define the numbers by their ability to support analytical tools. We generally name three categories of data—Nominal, Interval, and Ratio. The names define their elegance and power. Nominal data are just counts of metrics or things. Ordinal or interval data can show us a rank order for the metric evaluated. The cost-ratio model uses both ordinal and interval data and can generate ratio data for sound analyses. The Web-based models have the ability to use all types of data. Our correct use of the proper metrics and correct analytical processes ensure our ability to draw sound conclusions for comparisons between suppliers, using benchmarks and creating alternative solutions.

Increasing Your Personal Value. Why should you bust your hump to evaluate and develop your suppliers? Simply put, we all want the same thing from our jobs and work—job satisfaction. We also know that the highest forms of job satisfaction come from self-direction, decision-making, increased involvement and responsibility, achievement, recognition and communication. We need to be better at understanding opportunities for building our personal value from the supplier evaluation process.

This example shows that our operations create value for the organization and have a profound influence on the bottom line. The two columns titled "Before Changes" and "After Changes" show the positive impact of a 10 percent reduction in MRO costs generated by a supplier development project. The bottom line jumped 20 percent to $6 million and EPS is now $20.00. Can you imagine a CEO, owner or stock analyst that wouldn't be delighted with the impact on the bottom line and earnings per share?

YOUR ORGANIZATION			
Your Condensed Income Statement	Before Changes	After Changes	Comments
Total revenue	100,000,000.00	100,000,000.00	
All operations & taxes except purchases	45,000,000.00	45,000,000.00	Ignores some tax increase on increased profit from change
Purchases Materials MRO	 40,000,000.00 10,000,000.00	 40,000,000.00 9,000,000.00	MRO costs were reduced by 10 percent through a supplier development project.
Net Profit (Bottom Line)	5,000,000.00	6,000,000.00	A 20 Percent Increase
Earnings Per Share (300,000 shares)	$16.67	$20.00	A 20 Percent Increase

We have known for a long time that strategic organizational communication is almost always in financial terms. In supply management we have resisted that idea. Hence much of our conversation is tactical at best and often ignored. Get strategic and talk CEO "speak." The example above shows that you have a profound message—"EPS is up 20 percent!" But we need to communicate that fact better.

Several things can be done simultaneously to ensure success and promote enhanced value for our suppliers, colleagues and organizations. Not everybody agrees to any list, but here are my five top recommendations to ensure that organizational success enhances job satisfaction and builds individual value.

1. Establish clear supply management objectives and metrics tied to organizational objectives.
2. Define supply management priorities in terms of strategic organizational goals.
3. Make teamwork more meaningful by delegating authority and resources to multi-disciplined teams and expect successful team execution.
4. Expand communication authority and eliminate all boundaries that constrain team relationships.
5. Provide timely feedback and recognition concerning program execution and successes. This concept includes access to all requisite operation information on line as well as all forms of recognition from the "one-minute manager" to formal bonus programs.

We can do these things collectively and individually to enhance our personal value and rewards vis-à-vis our work processes. Set your own objectives and get buy-in from others. Establish your own priorities to earn respect and approval to include more authority. Build your own networks that expand your communication base and processes. Finally and perhaps most important provide timely feedback to your leaders in their language. You can be so valuable that they won't even think of living without you.

REFERENCES

Journal or magazine references:
Kemp, Robert A., Ph.D., C.P.M., "Coaches Column, MRO Procurement and Supplier Selection" a series of five articles justifying the need for supplier evaluation, introducing the models, web-based systems, metrics and the personal value of better supplier evaluation processes. See the April/May, June/July, August/September, October/November and December/January issues for 2002.