Supply Chain Decisions - Make Sure You Understand the Dollars and Sense

 *Featured Author* - Jim Brown - July 21, 2003

Decisions That Count

Companies make decisions about their supply chains every day. The decisions may relate to introducing or retiring products, making changes to manufacturing or distribution capacity, or modifying market segments, channels or customers. In their efforts to improve productivity, companies also make decisions involving the introduction of new processes, outsourcing, new supply structures and technology. When companies face these decisions, they must make trade-offs between a number of strategic and operational options. The selection between these options can have a very large impact on the success or failure of the company. Decision-makers know that the answers have to be right, because they result in the commitment of significant company resources and expose the company to significant positive or negative impact in the eyes of the customers and shareholders. Not to mention the impact it can have on the career of the person making the decision.

Supply chain decisions, like the ones mentioned above, are an executive's responsibility. That is what they are paid for. Too often, short-term pressures and limited analysis resources cause these decisions to be compromised. In market conditions where there is ample growth in demand, errors made in these decisions were often masked. Today's economic conditions are significantly different, and the repercussions of flawed decisions are becoming increasingly transparent in terms of a company's financial performance. In fact, the differences between high performing and poor performing companies will increasingly depend on the choice of strategic supply chain options and their execution.

So how does a company ensure that decisions are being made in the best possible way? Do they have the necessary information and tools to efficiently find all of the available options and analyze them effectively?

There Has To Be A Better Way

To understand the challenges in making supply chain decisions, let's take the case of a Fortune 500 business that manufactures and sells industrial products. The business was being commoditized and its' brand was losing its strength with the onslaught of products from low cost countries. The company had acquired another company resulting in excess capacity, so some capacity restructuring was in order. Outsourcing to low cost countries was another option to be considered if lead-time issues could be addressed. One other option was adjusting the product mix by increasing focus on some products and dropping others. At the same time these options were being considered, there was continued investment in capital upgrades and productivity tools such as "Lean" manufacturing techniques.

All of the decisions were being made based on the best judgment of individuals and often with demonstrated ROIs. But were these the right choices? If the company could consider all of these decisions as a whole, would the decisions made work together to yield the financial goals that the company had set? Could the choices made stand up to potential changes in business conditions? The company wanted to ensure that the various decision-makers within his company were considering all these aspects sufficiently and making the right decisions. Another concern was making sure that the decisions weren't impacted by a natural tendency to quickly eliminate options that were considered to be "infeasible" due to a variety of perceived issues, biases, politics and, last but not least, the lack of time and resources to properly evaluate them. This early elimination of options can cause a company to lose the opportunity to objectively view the various opportunities that may be available to them.

The resulting decisions, including the tradeoffs between the options, were very difficult to conceptualize and to visualize. There had to be a better way to make business decisions, so the company decided to use Supply Chain Cost Modeling and Optimization. By modeling the cost and operational elements of the entire supply chain, the company was able to analyze the impact that the decisions would have, either independently or as a whole, on the business and it's customers. As more options were identified and explored, the company was able to quickly update the model to view all the options and their implications as a whole. The decisions made based on the modeling and optimization techniques proved to be more valuable, and the people involved were more confident in their knowledge of the total cost impact of the different choices and how the choices impacted each other.

Identifying the Most Valuable Business Options

Supply Chain Cost Modeling and Optimization provides the structured and analytical method to define and solve business problems. By allowing simulation of operational scenarios, they allow “what if” analysis to be conducted and help companies view the potential impact in terms of P&L cost items.

As the supply chain becomes more complex and there are more competing business options, the number of viable choices becomes substantial. That is where the need for supply chain cost modeling and optimization techniques come in, by providing the ability to generate scenarios that produce reliable financial outcomes and are based on real-life business constraints. This changes the decision-making from a purely gut-feel or experience-driven approach to a structured, standardize, unbiased and systematic approach.

This approach can lead to scenarios not previously conceived of, for example options that are valuable but may be counterintuitive or politically unpopular. Cost modeling and optimization expands the value of the supply chain model from simply validating current options to identifying new options and understanding the synergistic value created by the combined effect of the various options.

Analyzing the Real Costs

Most supply chain optimization models focus on optimizing supply chain. Frequently, though, the costs used in supply chain models are standard costs, averaged costs or “cost penalties”. While these costs act as good guidelines for tactical decisions, they are not appropriate for strategic decisions because they often lead to incorrect conclusions. There is an inherent challenge in that high-level strategic decisions often have multiple, cascading cost impacts. The reaction of the costs to changes in the supply chain system is not predictable in a simple relationship that is based on current standard costs, because strategic changes often involve step changes in costs that alter the balance of fixed and variable costs.

For example, analyzing the impact of restructuring a group of manufacturing plants using simple fixed and variable costs would not be effective. It would not accurately predict the impact of adding volume or shifting the product mix, realities that companies live with when restructuring. It may be necessary to introduce an additional shift, which in turn may require significant changes in labor rates or a change in supervisory overhead. Product mix changes may alter the number of changeovers and cleanups, may change the effective operating speed of the production process, and may even impact the labor and energy costs for the plant.

Unfortunately, what appears to be a simple decision requires a true understanding of the real cost drivers to be incorporated in the decision criteria. By providing the ability to incorporate the true activity-cost drivers, the analysis ensures that the cost impact predicted from the operational changes is reliable and real.

Understanding the Dollars and Sense

Another challenge in making business decisions is understanding the impact of the changes in relation to the overall business and its strategic direction, as opposed to looking at the decisions on a localized basis within specific functions or departments. This is also a challenge in communicating the solution to get appropriate buy-in from disparate functions and stakeholders within the company. Frequently, the best solutions for the entire enterprise involve some negative aspects for individual functions. For instance, a lowest total cost solution may involve increases in transportation costs, which may negatively impact performance metrics instituted for the logistics function of the organization.

In order to understand the business level impact, the outcomes must be linked back to the P&L and Balance Sheet items in a way that financial analysts can validate and support them. But success in a business is not entirely measured on the financial statements. Other key performance metrics, such as lead times, order fill rates and customer response time, must also be available for each of the scenarios to identify the potential tradeoffs between financial performance and relevant customer service elements.

Is There Help Available?

What tools and techniques are available for business analysts and executives responsible for business decisions? Activity based costing tools from companies such as **SAS**, based on their acquisition of **ABC Technologies**, can be employed to develop actual costs and cost drivers.

For simple decisions without many options and with few interdependencies, the tool of choice is **Microsoft Excel**. A spreadsheet allows the decision to be modeled and the results calculated based on simple scenarios. But spreadsheets cannot handle the complexity and interdependencies of most supply chain decisions.

As the complexity and number of options increase, the need for modeling and optimization tools develops. Supply chain tools such as network optimization tools from **i2 Technologies**, **Logic Tools**, **Insight**, **Manugistics**, and others provide the modeling and optimization tools required to address decisions that are too complicated to be handled on a spreadsheet.

One promising vendor to watch is **SCA Technologies**. SCA Technologies offers tools and methodologies that support modeling and optimization in conjunction with activity-based costs, providing Supply Chain Cost Modeling and Optimization in one solution.

Conclusions and Recommendations

Understand the Options – Companies can no longer afford to make decisions that are based on options that are convenient for them to evaluate or comfortable based on gut-feel of a few individuals. Not reliably understanding the complete financial and operational impact of the decision, as well as the sensitivity of the decision to changes in key competitive and market factors, is simply bad business practice.

Demand the Right Answer - Tools are available that can model the business impact of operational changes based on real costs and cost drivers. Do not accept decisions that lack the proper analytical support.

Develop a Systematic Decision Infrastructure - Companies should establish a standardized infrastructure to enable systematic and fact-based decision-making. Such an infrastructure should consist of a decision-making process, supporting toolsets that provide the analytical framework and standardized information that feeds the toolset to support a broad array of decisions. This will allow companies to effectively and reliably predict the impact of supply chain decisions on their company's financial performance, no matter which function or manager is making those decisions.

Start with a Pilot – The initial investment for establishing this type of a systematic decision infrastructure does not have to be a board level decision. Choose a business challenge that has a significant impact on the supply chain that can be achieved in a short period of time. Prove the value with a pilot project, and then expand to solve other business problems.

Summary

Companies make strategic business decisions on a regular basis. In order to ensure that they are evaluating and selecting the correct options, they must fully understand the impact that the decisions will have on their business. The impact must be developed based on critical cost drivers, and then evaluated on the predicted impact on the companies' financials and key performance metrics. Before you make decisions, know the dollars and sense in a way that reflects the degree of accuracy and reliability demanded by today's marketplace.

About the Author

Jim Brown has over 15 years of experience in management consulting and application software focused on the manufacturing industries. **Jim** is a recognized expert in software solutions for manufacturing and has broad experience in applying enterprise applications such as Supply Chain Management, Product Lifecycle Management, CRM and ERP to improve business performance. **Jim** created his consulting firm, Tech-Clarity Associates, to help make the value of technology clear to business. **Jim** can be reached at jim.brown@tech-clarity.com.

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