A Practical Methodology for Restructuring Supply Chains

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BACKGROUND

Over the years we have been asked to support a variety of projects aimed at evaluating and restructuring supply chains. Virtually all of these requests are triggered by either an acquisition or a corporate cost reduction initiative focused on identifying and rooting out redundant costs spread across multiple divisions. The core trade offs are typically associated with the degree to which a company should consolidate supply chains that serve multiple business units or territories and the processes for eliminating variability and waste for each level of consolidation. While it is intuitive that the overall cost of operating consolidated supply chains is less, it does not necessarily follow that the best strategy for a multi-division company is a single supply chain that supports all divisions. Customer service requirements, competitive practices, sales policies, geography, freight profiles, technology requirements and many other considerations must be weighed to determine the most appropriate supply chain strategy.

The following concepts for how to best tackle projects of this nature is the result of having supported this type of project dozens of times across multiple industry segments. The methodology we share in this document is intended to serve as an initial framework for companies contemplating such projects.

OBJECTIVES

While every organization is a bit different, the fundamental questions driving management's thinking in projects of this type are typically:

- What is the magnitude of any potential cost savings?
- What is the likely impact on customer service?

- What are the requirements for executing the new strategy?
- What are the associated business risks?

Logically, if the opportunity is significant and has minimal/acceptable risks, then an actionable plan can be developed and launched to achieve the savings. On the other hand, if the opportunity is relatively insignificant and/or the business risks are high, then no action will likely be taken. Therefore, there is a need for a proven methodology that efficiently addresses these overarching questions.

METHODOLOGY

Three key ingredients are necessary to execute this methodology successfully – knowledgeable people, accurate data and analytical tools. Those ingredients are intertwined throughout the 10 step methodology below.

Step 1: Identify and select project team participants. Careful consideration should be given to the composition of team participants. The overall project leader should be someone in the organization that is well respected as an open-minded practical thinker that has a reputation for getting things done. Ideally, he/she has a solid overall understanding of the physical nature of the companies supply chains as well as the business process linkage to sales, finance and IT. The balance of the team should be selected based on functional expertise and ultimate "ownership" of project results. Each organization culture is a little different, but usually transportation, distribution center operations, IT, customer service, sales and finance are represented in some fashion on the team. Other crucial skill sets include experienced logisticians that are proficient using state-of-the art technology, particularly optimization and simulation programs.

Step 2: Document service requirements. The "ying and yang" of any discussion about supply chain cost is a discussion about supply chain service. After all, the only reason any supply chain exists is to support a business plan. The business plan should identify market segments and their respective customer service requirements as well as competitive insight. So the first question here is – what are the service targets the supply chain is trying to achieve? The second question is – how well has the existing supply chain been doing vis-à-vis these targets? Specific service targets include such dimensions as order fill rate, transit times, picking errors and many other statistics that are meaningful measures to individual companies. Documenting the facts associated with these two questions is the core of this task. Demonstrated service performance versus targets represents the value the supply chain provides to the enterprise. As an illustration, from a senior management perspective, it's important to understand that for the $50 million annual supply chain spend the resultant value is: 95% order fill rate; 85% of customers delivered within 3 days; picking error rate is 0.12%; etc.

This step is often glossed over or completely overlooked but it is critical to ultimate project success. The reason being, that as potential changes to supply chain design are

evaluated later in the project, it will be necessary to not only quantify the cost implications of those changes but also the service trade offs as well. Using the illustration above, if closing two DC's can reduce the $50 million annual spend to say $45 million, but only 60% of the customers can now be delivered in 3 days, what is the best decision? This task sets the foundation from which the team can measure the service impact of changes in supply chain design. Absent these service metrics and the capability to measure the impact of changes to supply chain design, all discussion will be subjective.

Step 3: Identify internal sources of data and information. Projects of this nature are inherently complex, data intensive and time consuming. In many cases, the data necessary to conduct the analysis is fragmented across business units, incomplete, or simply does not exist. This critical step focuses on understanding what is, and what is not available to work with. At this point it is useful to define the specific supply chain cost elements that must be isolated and quantified:

> **Inbound Transportation Costs**: These are costs associated with movement of product to the company's facilities. The inbound data gathering effort should include pinpointing the "ship from" and "ship to" addresses of the nodes in the supply chain network along with a sample of actual shipments volumes by mode over a period of time (month, quarter, etc.). If transportation costs are buried in the cost of goods, it will be necessary to sort out the transportation costs to get the full picture. Also, variability due to peak demand periods or seasonality should be addressed in gathering the data.
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> **Outbound Transportation Costs**: These are costs associated with the movement of product from the company's facilities. The outbound data should be gathered in similar fashion to the inbound. Further, if dedicated contract carriage and private fleet movements are involved those should be segregated.
>
> **Distribution Center (DC) Operating Costs**: These include all costs associated with keeping a DC open including building depreciation or rent, utilities, salaries of all on-site DC personnel, etc. as well as volumetric data flowing through the DC should be gathered.
>
> **Inventory Carrying Costs:** Total inventory investment should be identified by deployment location and then multiplied by the internal carrying rate used. This rate varies across industry but includes cost of capital, obsolescence, damage, storage, etc.
>
> **Supply Chain Administration Costs:** These include senior supply chain management, centralized planning functions, corporate allocations, etc.

The five major elements above summarize the total cost "template" created for each business unit included in the scope of the project. A word of caution – the typical chart of accounts in most organizations does not easily translate into these five categories.

Inevitably, concessions must be made in the data gathering effort - to fill in for missing data, change units of measure, etc. The key to making these concessions is to involve the people closest to that portion of the operation so that they have confidence in any underlying assumptions and how the data was assembled.

Of the five major cost elements above, those associated with transportation and distribution center operations usually represent 75% (or more) of total costs. Therefore, a possible shortcut that may be acceptable is to eliminate the inventory carrying and administration costs from initial consideration. That decision should be made by senior management, depending on the precision they are looking for in the answer and the timeline allotted for the analysis.

These costs elements become the benchmark from which all potential supply chain design changes will be measured as the project progresses.

Step 4: Collect data and information. This important step is focused on actually gathering all the data identified in Step 3 above. If simulation tools will be used to provide modeling support, it's important to spec the data collection requirements with that in mind to save time later in the project. Typically several resources are involved to complete this effort. IT personnel may write queries to extract electronic data, transportation personnel may be sampling freight bills, contract carriers may be providing key input, etc. This is usually "the long pole in the tent" from an overall timeline standpoint because it always seems to take much longer than planned. The project manager will hear a myriad of excuses – "I haven't had time", "my boss reassigned my priorities", "and I thought that data field existed but it doesn't" and many others. Further, there are usually a number of "do overs" necessary because what was first gathered was not quite accurate or complete which adds more aggravation for everyone. As a result, this is the point where the project is in greatest danger of bogging down, and in some cases being abandoned. Here is where the project manager must step up to the plate and do whatever it takes to get the data/information assimilated.

Step 5: Identify potential improvement opportunities. This task is usually best performed as a brainstorming session with the full project team. To make the best use of everyone's time, prior to the session, the project manager should identify and summarize specific actions that appear worthy of analysis and present them to the team for their discussion. This typically gets the ball rolling for the team to generate additional ideas. Examples the project manager may tee up include:

- Transportation
    - Expand/eliminate the private fleet
    - Leverage more volume through fewer carriers; negotiate deeper discounts nationally
    - Reduce empty miles through the use of better planning tools
    - Centralize route planning nationally; execute locally
    - Bid out selective major traffic lanes

- Network
    - Consolidate multi-division facilities into one
    - Close "x" number of DC's
    - Exit owning/operating DC's; use 3PL
    - Strip "each pick" out of DC's; use wholesalers for that volume
    - Create cross docking facilities

- Inventory
    - Move slow moving SKU's to single central location
    - Reduce/eliminate slow/no moving SKU's
    - Reduce supplier lead times

- Administration
    - Consolidate all/part of multi division organization structure

The above are illustrative only and certainly are not all inclusive. The data/information gathered by the team will steer the collective thinking to where the opportunities lie. The output of this step should be a limited number of recommendations that will be analyzed in great depth in the next step. Care should be taken by the project manager that the number of recommendations doesn't get out of hand - keep the 80/20 rule in mind; 20% of the actions will generate 80% of the benefit.

Step 6: Conduct detailed analysis. This step is directed toward quantifying the cost and service impact of the recommended actions identified in step 5. Robust simulation tools, powerful optimization models and other sophisticated technology products are useful to handle the heavy number crunching. Closing or opening new DC's or cross docks, evaluating freight consolidation scenarios, changing service territory configurations, minimizing empty miles, etc. are typical scenarios that exceed the limitation of simple spreadsheet and desktop computing power. In most cases, 5 digit zip code precision, the ability to simulate the impact of delivery distance and driving speeds, etc. are necessary to have confidence in the breadth and depth of results.

Step 7: Summarize preliminary results. The full team should be reassembled to review the output of step 6. Prior to the meeting, the project manager should pull together a crisp summary of the results in a brief power point presentation. The primary purpose of the session is to critique and challenge the "hard numbers" analysis to ensure it is complete and accurately represents the business environment. The secondary purpose of this step is to begin the softer internal selling process to those members of the team who will ultimately be responsible for implementation. It is common at this step in the project for team members to ask for further evaluation of an alternative or a variation of an alternative. If necessary, additional analysis should be completed as quickly as possible to maintain project momentum. At the culmination of this meeting, the team should have built consensus around the "short list" of alternatives that have meaningful business benefit – all other alternatives are scrapped.

Step 8: Develop business risk framework. Irrespective of how attractive an alternative may appear, some logical thinking should be applied to the overall business risk associated with that alternative. This step focuses on pulling together a consistent framework that will be applied by the team to each surviving alternative. We suggest considering three dimensions of risk to develop such a framework – people, process and technology. Every company has a unique culture and an internal acceptance/rejection tolerance to new ideas and change. Therefore, an objective assessment of the incumbent talent and desire is a critical first step. In some cases, the skill set necessary to implement new concepts may not reside within the organization necessitating an outside hire. The second dimension involves an understanding of to what extent the existing business process will be disrupted by possible supply chain modifications. For example, seemingly simple changes, such as going from aggregate carton count at the receiving dock to SKU sort and count, can become very complex when multiple languages are used across a national DC network. The third dimension of risk is the technology supporting the business processes involved. Unfortunately, in many companies, changes to the technology infrastructure and/or operating environment are very long lead time efforts requiring significant resources. Therefore, enlist the help of internal MIS personnel to help realistically assess the technology risks of each alternative considered.

Step 9: Formalize results. The team should be assembled once again with the objective of reviewing the final iteration of the cost/service tradeoff analytics and to apply the risk assessment framework to each alternative. The recommended alternatives should be very specific and prioritized in descending order – greatest benefit/lowest risk at the top. As with earlier team meetings, we suggest the project manager prepare a "straw man" document for the team to critique and challenge rather than waste a lot of time with unfocused discussion. Typically, at this point in the project there is plenty of debate, the key is to keep the debate focused on the recommended alternatives.

Step 10: Conduct management briefing. The final step in the methodology is for the project team to conduct a management briefing to present recommendations. The briefing should include identification of all alternatives initially identified and the rationale used for those that were not considered for detailed analysis. The prioritized recommendations along with suggested next steps should be the heart of the discussion. It is not uncommon for senior management to request yet another scenario or alternative variation is added for evaluation. If so, be prepared to complete it quickly to keep the project moving forward.

SUMMARY

Hopefully this methodology will be a useful roadmap for those embarking on supply chain opportunity assessments. We emphasize this is a generic plan that can be expanded or contracted to fit the unique needs of specific industry segments or individual

companies. If you have questions or comments, feel free to contact Ron Gable at ron.gable@scientific-logistics.com.