



## Supply Chain Analysis

# Sourcing Optimization Driving Supply Chain **Decision Making**

Sourcing optimization projects rely on collaboration across the organization and between external stakeholders. Optimization analyses not only determine optimal decisions based on cost, but also quantify and evaluate strategic business objectives. Utilizing an analytical and comprehensive approach to sourcing projects will reduce costs, mitigate risks, and create a consistent decision making process for your organization.



Sourcing decisions are extremely complex and must consider both cost factors and sourcing objectives related to risk management, contingency planning, sustainability and other strategic considerations.



## Introduction

Procurement teams are under constant pressure to drive down costs and reduce purchasing expenses while maintaining established quality standards. Year after year, purchasing groups negotiate pricing with suppliers to meet specific goals to control COGS and help their organizations stay competitive. These teams must balance cost reduction efforts while ensuring their decisions support the overarching corporate strategy of their organization.

As a result, sourcing decisions are extremely complex and must consider both cost factors (raw materials, production transportation, storage, etc.) and sourcing objectives related to risk management, contingency planning, sustainability and other strategic considerations. Evaluating the impact of these factors, and the associated tradeoffs, is challenging which is why the use of advanced analytical models to support sourcing decisions is recommended.



## Overview of Sourcing Optimization

Sourcing optimization projects support decision-making by applying quantitative methods to determine the lowest total landed product cost for the network while meeting business requirements, which include enabling growth and agility. In addition to analyzing the quantitative aspects of a sourcing effort, qualitative factors such as risk management, contingency planning, sustainability and other strategic considerations should be incorporated into the decision making process. The main outputs of a sourcing optimization project are:

- (1) The preferred sourcing solution, including sourcing alignments and supplier awarded volume
- (2) The estimated savings associated with the preferred solution as compared to the current state, and
- (3) The cost impact of each additional sourcing objective through scenario and sensitivity analysis

Evaluating broader business factors including risk mitigation and contingency planning ensures that the final solution aligns with the organization's overall strategy and supports future growth. In the end, it is the combination of the quantitative analytics and these qualitative factors that will result in a desirable and implementable sourcing decision.

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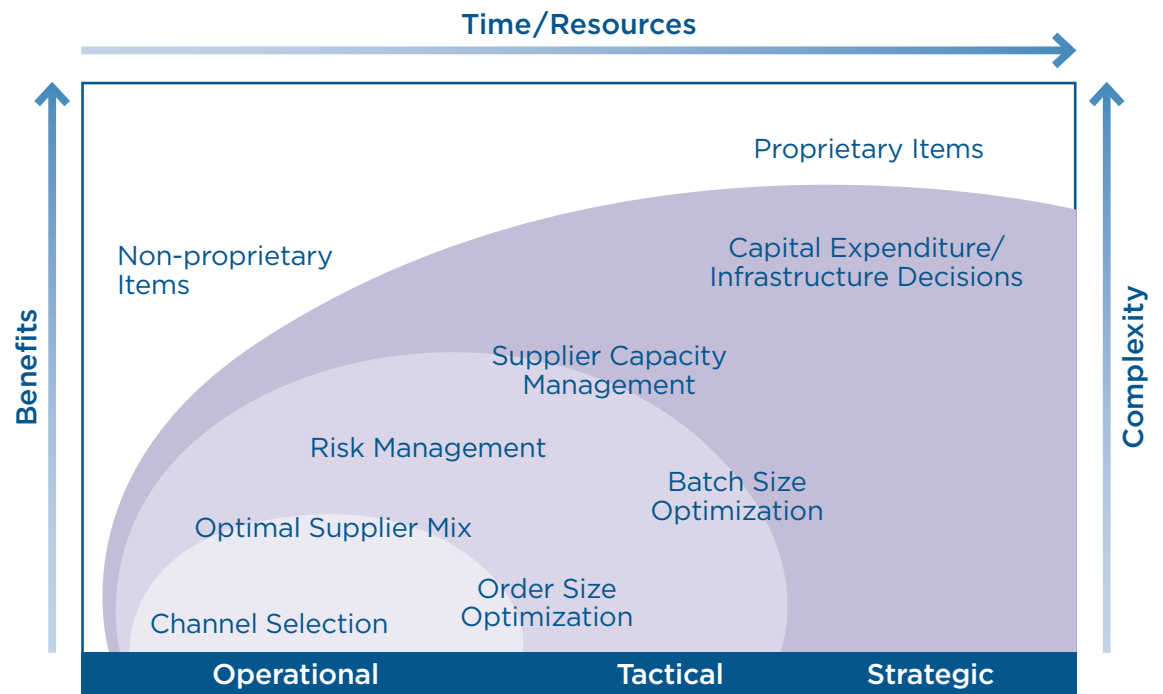
## The Complexity of Sourcing Projects Varies

Projects that determine where to make or source product in a network can have varying levels of complexity. Resource and time requirements grow with the scope of the project, but the return from a long-term strategic project will be much higher.

In order to appropriately scope a sourcing project, it is important to consider item segmentation - defining the project based on an item's proprietary, core, non-proprietary, and/or commodity nature. Understanding the characteristics of the items involved ensures that the appropriate strategic implications are considered throughout the life of the project.

The image below illustrates the factors to be considered across the continuum of operational, tactical and strategic sourcing efforts in the context of complexity, resource investment, and organizational benefit.

## Sourcing Optimization Continuum



Source: ARMADA

## Operational or Tactical Sourcing

A sourcing optimization project that is considered to be operational or tactical is answering questions such as: “Which manufacturing locations should source which distribution centers to minimize total landed cost?” or “Should we alter the location alignments due to the seasonality of our business?” These types of questions arise frequently and typically require quick answers.

Which manufacturing locations should source which distribution centers to minimize total landed cost?



The main parameters to consider for this type of a decision include transportation costs, product costs, and volume forecasts at the distribution centers and capacity constraints at the different manufacturing locations. Although the return from each project in this category is smaller, establishment of a standard, data-driven methodology enables these projects to be completed without significant time and resource commitment.

## Strategic Sourcing

A strategic sourcing project seeks to answer more complex questions regarding multiple echelons in the supply chain, longer time horizons, company growth, risk and contingency strategies. These types of projects answer long-term questions such as: “Should the supplier expand an existing facility or build new facilities?” “How many new facilities should there be (if any) and where should they be located? How should the potential raw material sources be aligned with existing and new facilities?”

Should the supplier expand an existing facility or build new facilities?



A strategic project that involves capital expenditure decisions requires a more extensive list of inputs that necessitates a holistic data collection effort – seeking inputs from multiple nodes in both the current and the potential network. Transportation and logistics costs must be quantified from the raw material sources to manufacturing locations to the forward warehouses and ultimately to the point of demand. Manufacturing costs need to capture all of the fixed and variable costs for each current and potential supply point. Plant start up costs, raw material product costs and bill of material conversions need to be incorporated into the model as well as the capacity constraints at each node.

The complexity of strategic sourcing projects requires a longer investment of time and resources. They provide significant business value by applying a robust quantitative approach to support investment decisions that may be necessary to augment current assets and infrastructure.

## Sourcing Optimization Unlocks New Value Drivers



A data-driven methodology will enable the procurement team to respond to changing constraints and parameters quickly and accurately.

Analytic sourcing projects quantify strategic business goals and measure the expected impact on supply chain operations through a holistic process that engages stakeholders across the organization. This approach delivers value in multiple ways.

### Unbiased data-driven decisions

The ability to evaluate options through quantitative analysis empowers stakeholders to make decisions knowing a broad range of factors were taken into consideration. This not only ensures better solutions but also creates a common language for communicating the tradeoffs to various functional groups.

A data-driven methodology will enable the procurement team to respond to changing constraints and parameters quickly and accurately. It is often observed that developing an implementable solution comes after many iterations of presenting the initial results to different stakeholders, updating the inputs based on their feedback and refreshing the analysis. Therefore, the ability to update the models and generate results quickly becomes crucial. An analytical approach will also provide the procurement teams with a deeper understanding of how each supplier's cost structure impacts those suppliers' awarded quantities in the final solution – improving the outcome of negotiations.

### Sensitivity analysis

As with any analytical model, the quality of the output relies heavily on the accuracy and the completeness of the data. Despite the best data collection efforts, educated assumptions are still required when data is unavailable or not deterministic in nature. Therefore, sensitivity analysis becomes crucial to understand the robustness of the solution. It is important to present the decision makers with ranges for certain parameters, such as fuel costs, warehousing and labor costs, etc. and the associated answers so the influence of different assumptions can be understood. The decision can then be based on the most likely or most conservative figures depending on the nature of the question and business objectives.

### Scenario analysis

Costs are rarely the only variables considered when making sourcing decisions. For example, awarding the sourcing of a core item to a single lowest cost supplier has a positive impact to financial performance but does not provide the company with contingency in the event of service issues or unexpected demand variability. Hence, the decision makers need to consider a multitude of qualitative criteria before finalizing their decisions. Qualitative factors such as risk management, contingency planning, diversity, and sustainability are often incorporated into the decision making process through scenario analysis.

Scenario analysis is helpful in understanding and explaining the cost of hard constraints as well. For instance, by being able to articulate the cost of capacity with supporting data and analysis, the decision makers may decide to invest in additional capacity to drive down overall costs.



## Key Benefits of Sourcing Optimization

Sourcing optimization projects quantify strategic business goals and measure the expected impact on total landed cost through a holistic process that engages stakeholders across the organization. This approach delivers benefits in multiple ways:

- **Reduced Analysis Lead Time** ➡ once a modeling process is established, projects can be evaluated faster and provide more insight
- **Cost Savings** ➡ opportunities for cost reductions that are not easily quantified without an optimization approach are identified
- **Improved Negotiation Process** ➡ by understanding the variables impacting your supply chain, collaboration with suppliers to identify mutually beneficial solutions is improved
- **Internal Buy-In** ➡ by quantifying the impact of different scenarios and the associated trade-off's across the organization, cross-functional teams can collaborate more openly

A successful sourcing optimization project relies on collaboration across the organization and between external stakeholders.



## Conclusion

Even at the simplest level of a sourcing project, a mathematical modeling and optimization tool is necessary to identify the best solution while satisfying business constraints. But these mathematical solutions have their limitations and must be augmented with input from subject matter experts.

A successful sourcing optimization project relies on collaboration across the organization and between external stakeholders. Optimization analyses not only determine optimal decisions based on cost, but also quantify and evaluate strategic business objectives. Utilizing an analytical and comprehensive approach to sourcing projects will reduce costs, mitigate risks, and create a consistent decision making process for your organization.

**CASE STUDY****Using Analytical Modeling to Drive Decision Making**

A product manager was trying to determine how to most efficiently source product after learning that one of its suppliers would be exiting the business, resulting in the three existing manufacturing locations utilized being reduced to only two. The departing supplier was a low cost provider, meaning that its exit would result in a cost increase to the network. By working with a supply chain analytics team, the product manager was able to review a variety of scenarios and the associated costs. This enabled a data-driven decision making process and allowed for the selection of a sourcing strategy that minimized the cost increase and aligned business objectives.

At the outset, the primary question being answered was: Which manufacturing locations should source each distribution center in order to minimize total landed cost and balance plant utilization?

The product manager was able to review a variety of scenarios and the associated costs. This enabled a data-driven decision making process and allowed for the selection of a sourcing strategy that minimized the cost increase and aligned business objectives.



A model was created to consider key variables such as plant capacities, transportation costs, production costs, and item demand profiles. The model was initially run to reflect current operating parameters, which established a baseline and verified that the model was reflecting the existing supply chain costs accurately.

The model was then run to determine an optimal sourcing alignment, taking into account that one supplier was exiting the network. Prior to this analysis, the supplier submitted a proposed sourcing strategy, which would increase logistics costs by 4%. The optimization model was able to find a sourcing alignment which would mitigate cost increases to only 1%, while meeting all required constraints.

Finally, an additional model was run which excluded the capacity constraints at the manufacturing locations. This model found that logistics costs could be reduced by 15% if capacity was increased at one of the manufacturing plants. Using this information, the product manager was able to collaborate with the supplier to determine if the potential savings would offset the capital costs required to expand capacity.



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## About Armada

Armada creates innovative, fully integrated supply chain solutions that deliver competitive advantages and improve business performance for its clients.



Through its long tradition of partnering with clients, Armada has become one of the largest fully integrated logistic providers to the restaurant industry, in addition to serving broader industries, with operations and offices around the country. Current clients range from Fortune 500 companies to privately held and family-owned businesses. Armada's business model is founded in a deep-rooted commitment of extraordinary service to its clients by providing outsourced logistic solutions that create smaller, smarter and more agile networks.

**We believe** that there's a better way to manage our clients' supply chains.  
A better way rooted in simplicity, transparency and extraordinary service to our clients.

**We are changing** the way supply chains are managed – now and for the future – through innovation and collaboration with our clients.

**We provide** logistic solutions that create smaller, smarter and more agile supply chains that adjust to our clients' evolving marketplace demands.

**Learn more about how Armada can be your competitive advantage.**

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