Large Animal Supply Chain Analysis

ProModel
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Vertical	Manufacturing	**Pharmaceutical**	Healthcare	Portfolio	Logistics	Financial	Government	Business

Genre	Case Study	**Project Review:**	White Paper	Technology Overview

Client
A leading global pharmaceutical firm

Situation

Over the past three years, the firm's Safety Sciences (SS) department faced a dramatic cost increase of 20-30% per year for its large animal supply chain, with no end in site. This left SS facing an unacceptable cost business model due to the following:
• The sole-source supplier of the large animals increased the prices at an alarming rate.
• The company's mergers and growth caused an increase of large animal Safety Science studies.
• Reorganization and budget pressures highlighted the significant global costs for large animals.

To help better plan for the future, SS needed an improved methodology for predicting the required number of Safety Science studies, and the subsequent demand for large animals.
Without an accurate predictive methodology, the company was more vulnerable to:
• Shortages in the large animal supply chain that could result in delayed studies and NDA filings.
• Risks of using a sole source for its scarce large animals.

Objectives

• Evaluate changes to the large animal supply chain that would reduce costs while maintaining zero delays in study starts.
• Analyze the impact of multiple supply chain sourcing options.
• Provide a methodology to rapidly model portfolio shifts and their impact on the supply chain.

Solution

The solution included a computer simulation application that integrated a detailed supply chain model with a high-level strategic portfolio model. This enabled the firm to use high-level, Global R&D portfolio projections to help manage the large animal supply chain.

Portfolio Simulator was used to simulate the company's movement of global portfolio of drug candidates through the discovery and development process, in order to predict the future requirements for Safety Science studies.

The estimated SS study requirements were then used as the input to a detailed large animal supply chain model that includes all animal inventory, animal breeding, and global study sites.

The solution was validated to be 90% accurate when compared to historical data.
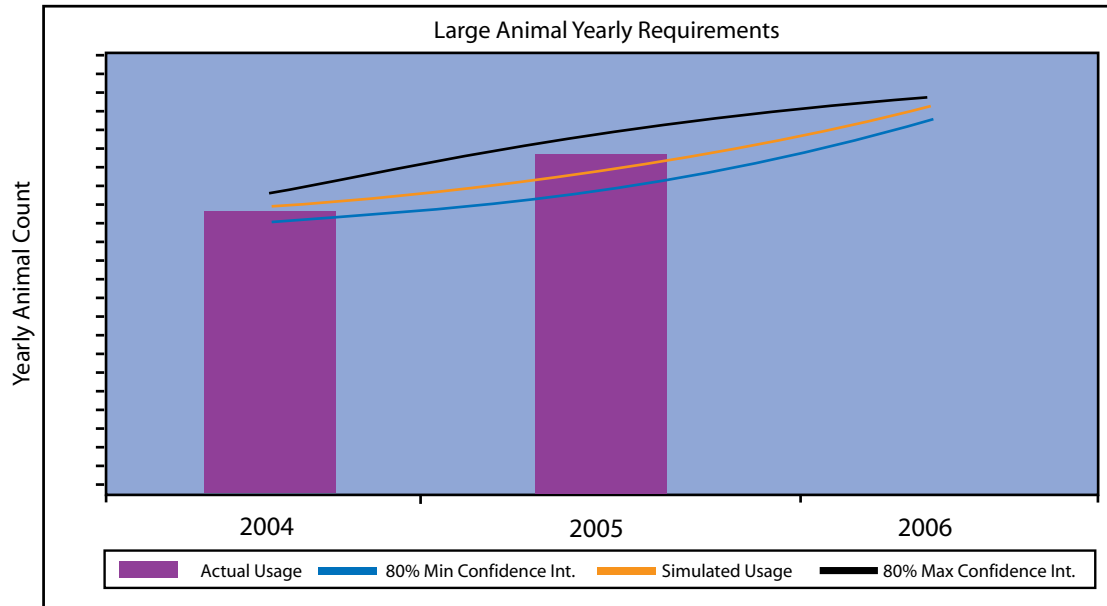
Results

Tangible benefits:
• Allowed the company to prove the feasibility of a new combination of supply chain sources and distribution centers resulting in a cost savings of more than $4,000,000 annually.
• Aided with the planning of a revised supplier contract which resulted in a 60% reduction in "daily storage cost."

Intangible benefits:
• For the first time, the client has the ability to accurately forecast global large animal demand for five-year time horizons.
• Helped facilitate the right organizational changes.
• Provided confidence that the changes would result in no delays due to a shortage of animals.
• Delivered a viable methodology to help with yearly analysis of global large animal safety study requirements and management of its supplier's contractual obligations.
• Created a better understanding of the relationship between Therapeutic Area (TA) studies and large animal requirements.

Results

Large Animal Yearly Requirements

Yearly Animal Count

2004   2005   2006

| Actual Usage | 80% Min Confidence Int. | Simulated Usage | 80% Max Confidence Int. |

Actual Large Animal Usage vs. Simulated Large Animal Requirements

The results of the simulation solution can be displayed in a variety of visual and meaningful ways. The above chart, just one of many possible output display selections from this solution, shows the actual large animal usage for 2004 and 2005 with the vertical bars. The predicted usage from the model is indicated by the horizontal lines. The center line indicates the simulated usage, and the top and bottom lines indicate the potential variation from the simulated requirements due to real life factors such as changes in the number of studies, or the number of animals required for a study. The predicted requirements are very close to the actual usage. This supports the prior statement that the model is very (90%) accurate compared to actual historical information.

ROI Range

$0 - $500k $501 - $1Million $1 Million - $3Million   > $3 Million