

Member Question:

Have you been able to utilize simulation or optimization modeling to solve a demand-side supply chain problem? If so, what was it?

My Response:

There have been numerous studies and reports on the various methods (i.e. Monte Carlo) used in determining supply chain optimization.

I would have to say that my preferred method has been to use the heuristic approach under an agent-based model in which the unique operating attributes of each stakeholder is understood separately before a collective outcome is identified and achieved.

It is this latter "twist" if you can call it that, that has enabled the optimization process to extend beyond the limitations of executional boundaries referred to in a May 2007 article that appeared in Supply Chain Digest titled Supply Chain Optimization versus Simulation. Specifically the author's assertion that "Mathematical" optimality is not used, and is not required or likely even feasible. Optimization almost always takes at least some minutes to process (and in some cases hours), and hence isn't generally usable in an execution environment."

With partial funding from the Government of Canada's Scientific Research and Experimental Development (SR&ED) Program, I developed a theory that I refer to as "strand commonality" in which disparate and seemingly unrelated data streams can be linked through the use of advanced algorithms to produce a "positive or beneficial" collective outcome.

It is really quite fascinating in that production models have consistently produced the correct results in terms of real-world applicability approximately 98.2% of the time.

It gets really interesting when you introduce multiple tier factors that include intangible elements such as the value of technician certification versus x number of years of practical experience.

The key starting point is to recognize that the term supply chain is a misnomer in that it implies a sequential order of events (in the spirit of your question, a non-deterministic set of algorithms which aligns with the equation-based modeling used by most software vendors).

In reality however we operate in a world in which synchronization between diverse (and now global) stakeholders have to exchange and quantify disparate data on a real-time basis, and therefore the term supply practice would be a more appropriate description.

Once again, when you recognize this elemental difference you will then take the first steps towards building an effective and meaningful optimization model.

I hope this helps. In the meantime I have included a link to the 2007 Supply Chain Digest.

Reference Links: <http://www.scdigest.com/assets/FirstThoughts/07-05-31.php?cid=1073&ctype=content>