

The Need for Optimization

In our world of global economies, tight supply chains and rising customer expectations the need for an organization to be able to consistently meet exact delivery dates for their customers' requirements is becoming more and more mandatory. Some customers have specific time windows for delivery to be met (e.g. the truck has to be at a specific receiving door between 10:00 and 10:15am). Many customers are now imposing financial penalties for shipments that do not arrive on time. These customers range across the spectrum from heavy manufacturers to retail chains to service industries and more.

The issue for suppliers is how to be sure that product can be manufactured, get into the distribution warehouse, get onto a truck and be delivered on time and still make a profit. When one thinks of the variables involved with making sure that 100 custom-made widgets that were ordered last week make it to a customer in another country on the promised date of 12 days hence and to do it cost-effectively, it can be a rather daunting task. The issues involve incoming material supply constraints, machine and personnel availability, warehouse constraints and the lead times and constraints of the outbound logistics function (e.g. transportation type/cost, documentation requirements, etc.). In a word, organizations now must **optimize** their supply performance.

In order to understand Optimization, let's look at the definition of the word. *Optimization* is a noun meaning "the act of rendering optimal". *Optimal* is an adjective that can be defined as "the most desirable solution possible under a restriction expressed or implied".

To be able to accomplish on-time, cost-effective deliveries more and more organizations are turning to software solutions that are generally known as "Optimization" solutions. These systems are also known by the acronym: APS. Depending upon whether you're in the manufacturing, distribution or transportation part of the supply solution, you might know these systems as "Advanced Production Scheduling" or "Advanced Planning Systems". These systems are becoming a hot topic among programmers and SCM practitioners alike. I certainly would not claim to be an expert on the underlying technology but it would appear that two similar programming techniques seem to be evolving: Simple linear programming models; and, Stochastic programming models which include multi-stage linear programming. Stochastic programming is the framework for modeling situations that involve multiple uncertainties that can be defined within some parameters and takes advantage of probability distributions that are either known or can be reasonably estimated. In transportation, some examples of the parameters that may have probability factors attached might be the cost of fuel or insurance. In warehouse management, examples might include the cost of labour or maintenance. In manufacturing, it might be the cost of labour or variable downtime factors.



2368 Hargood Place
Mississauga, Ontario
Canada L5M 3G1
info@e-mergingcommerce.com

Optimized Solutions in the Supply Chain

There is a type of optimization solution available for each part of the supply links in Supply Chain Management. Manufacturing, warehousing, distribution and transportation all have their unique challenges, demands and load factors but they all have the common issue of being able to plan as accurately as possible in situations that are far from finite. Using these solutions will decrease inventory, increase productivity, reduce costs and dramatically increase on-time delivery performance.

About the author

Ken Cowman has over 11 years experience working in operations management and over 26 years of management and enterprise solutions consulting experience. With over 25 years of executive management experience and 6,500 hours of education and seminar leadership experience, he has the experience to be able to view the organization from all levels and ability to provide the appropriate level of teaching and/or consulting to effectively assist organizations in their quest for continuous improvement.