

Product and Process Design for Supply Chain Management

Product design for supply chain management means building products that thrive in and enhance your supply chain architecture. Simply "giving customers what they want", while fundamental to customer satisfaction, is rarely enough. Companies must be able to give customers the right products in the most resource-effective manner, without sacrificing quality or service. If your supplier, manufacturing, and post-sales support networks are being stressed to the breaking point, if your products require excessive inventories to maintain service levels, if your offerings aren't attracting new buyers in a saturated market, or if you need to reduce costs and complexity throughout your supply chain, designing products to take advantage of and strengthen your supply chain can provide extraordinary benefits.

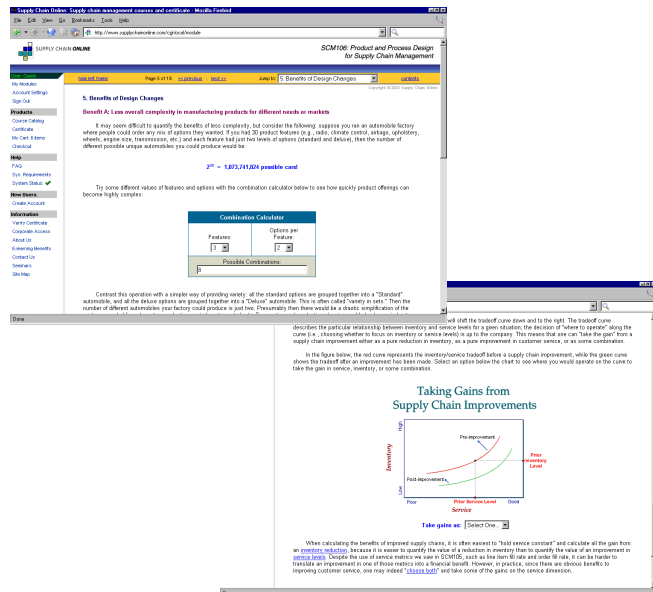
This module, the final in our series on "Fundamentals of Supply Chain Management", will provide you with a powerful set of tools to achieve these goals. You will start by exploring three fundamental concepts: component commonality, modularity vs. integral design, and universality. A framework for costs and benefits will help you understand the value of these ideas and what to expect as you integrate them into your product design plans. You will see an excellent example of postponement, a strategy that can enhance service levels with lower inventories. You'll also learn how to quickly estimate the positive impact of a postponement strategy in your own company without analyzing sales data or using complex calculations. You will see examples of how postponement can be implemented through software, applied to product packaging, and even how it can help during a new product launch.

Course Benefits:

- Learn the significant benefits of component commonality, modularity, and universality
- Discover how a "postponement" strategy can reduce inventories while maintaining service levels
- Apply "postponement" to product packaging
- Discover supply chain enhancements available from process improvement
- See how to implement Mass Customization using these concepts

Contents:

Component Commonality * Modularity * Integral Design
 * Universality * Framework for Costs and Benefits *
 Benefits of Design Changes * Postponement *
 Packaging Postponement * Postponement via Software
 * End-of-Life and New Product Situations * Process
 Design for Postponement * Mass Customization *
 Incentive Issues



5. Benefits of Design Changes

Benefit A: Less overall complexity in manufacturing products for different needs or markets

It may seem difficult to quantify the benefits of less complexity, but consider the following: suppose you are an automobile factory, where people could order any mix of options they wanted. If you had 20 product features (e.g., radio, climate control, stereo, navigation, wheels, engine size, transmission, etc.) and each feature had just two levels of options (standard and deluxe), then the number of different possible unique automobiles you could produce would be:

$$2^{20} = 1,048,576 \text{ possible cars!}$$

To some extent, values of features and options with the combination calculator below to see how quickly product offerings can become highly complex.

Feature	Options per Feature	Options per Feature
Feature 1	2	2
Feature 2	2	2
Feature 3	2	2
Feature 4	2	2
Feature 5	2	2
Feature 6	2	2
Feature 7	2	2
Feature 8	2	2
Feature 9	2	2
Feature 10	2	2
Feature 11	2	2
Feature 12	2	2
Feature 13	2	2
Feature 14	2	2
Feature 15	2	2
Feature 16	2	2
Feature 17	2	2
Feature 18	2	2
Feature 19	2	2
Feature 20	2	2

Taking Gains from Supply Chain Improvements

When calculating the benefits of improved supply chains, it is often easiest to "add service content" and calculate all the gains from an improvement. However, it is easier to quantify the value of a reduction in inventory than to quantify the value of an improvement in service levels. Despite the use of service matrices we use in SCM106, such as the Item ID card and order ID card, it can be harder to translate an improvement in one of those matrices into a financial benefit. However, in practice, since there are obvious benefits to improving customer service, one may indeed "add service content" and take some of the gains in the service dimension.

Module Specifications:

- Delivery Method: Online (Internet browser)
- Estimated Study Time: 1 – 2 hours, Approx. 10,600 words

System Requirements:

- Internet Explorer 5.0 or higher OR Netscape 4.X or higher
- JavaScript, cookies enabled
- Macromedia Flash 4
- 800 x 600 minimum screen resolution