

Supply Chain Coordination for False Failure Returns

A cash incentive for retailers may save manufacturers money on false failure returns.

Product returns are a serious financial concern that costs U.S. firms more than \$100 billion annually. In an effort to keep consumers happy, most major retailers have liberal product return policies. While some products are returned because the products are defective, a large percentage of returns are false failure returns: returns that have no functional or cosmetic defect. Hewlett-Packard has found that false failure returns account for 80 percent of inkjet printers returned to the manufacturer.

Most of this cost is born by the manufacturer, which must transport the returns back to a factory, test to be certain the product isn't really defective, possibly refurbish, repackage, and then remarket the product, which cannot then be sold for its full original price. There is also a loss in value for the time a returned product spends in the reverse supply chain, which can be up to several months for some companies. For a company like Hewlett-Packard, all this adds up to 25 percent of the retail price of returned products like inkjet printers.

In his paper "Supply Chain Coordination for False Failure Returns," Gilvan Souza, associate professor of operations management, with co-authors Mark Ferguson, Georgia Institute of Technology, and V. Daniel R. Guide, Jr., Pennsylvania State University, looked at the problem of false failure returns as a function of supply chain coordination.

Souza proposes a target rebate contract that pays the retailer a specific dollar amount per each unit of false failure returns below a certain amount.

Because the manufacturer enjoys most of the benefits from reducing the number of false failure returns, the manufacturer must share some of these benefits with the retailer to achieve a coordinated solution. Souza and his co-authors developed a model to determine how best to motivate retailers to expend the optimal amount of effort to reduce false failure returns, and found that a target rebate would result in maximized profit for both retailers and manufacturers. The authors used real data from Hewlett-Packard and Bosch, a German manufacturer of power tools, in developing their model. Both companies are highly brand-name conscious and have a policy that a product returned for any reason must be returned to the company's product return center.

There are a number of reasons why consumers return a product that is not defective. The consumer may find it difficult to install the product, not because it doesn't work properly, but because the consumer did not understand the product's features. Sometimes the product may not perform to the consumer's expectations, not because the product is defective, but because the consumer just didn't know enough about what she was purchasing to choose the right product for her needs. Complex or complicated products, such as HP's printers or Bosch's power tools, are particularly prone to this problem.

If sales staff spent more time with customers, explaining complex products features or helping consumers better match the product to their needs, some of the problems that cause false failure returns would be alleviated. But that involves effort on the part of the retailer, and because retailers aren't bearing any of the cost of returned goods, they have no incentive to put any additional effort into decreasing the number of returns.

Rewarding retailers with cash is effective because it reduces the overall processing cost for false failure returns while providing the retailer with a higher level of net sales as well. It acts as an incentive for retailers to change their behavior to be closer to the actions of a coordinated supply chain.

Souza found that the average magnitude of profit improvement per expected return as a result of the retailer's increased effort is 31 percent for the retailer, 17 percent for the manufacturer, and 24 percent for the supply chain itself. "Fifteen or 20 years ago, there wasn't much discussion of strategic coordination issues among supply chain managers. Supply chain coordination is being thought about in a more strategic way, and managers are seeing the benefits of providing incentives for others in their supply chain to make decisions that are good for the system as a whole," says Souza.

Future research in this area may focus on generalizing these results to other settings and industries, says Souza. "Supply Chain Coordination for False Failure Returns" was published in the *Manufacturing & Service Operations Management* journal. For more information, contact gsouza@umd.edu.