

MEMORANDUM

Date: October 26, 2006

Subject: Inventory Reduction for Valid Enterprise Co., Ltd.

To: Dr. Ford

From: Chris Bolanos

Introduction

As a newer company who manufactures all-terrain, sports boards, the inventory level versus stockouts, product not available when customer wants it, has been investigated as requested. The research focused on current service levels in relation to cost of stockpiling inventory versus stockout costs.

Findings

By having indifference in cost of stockouts or inventory holding costs, unnecessary costs can be eliminated. Valid Enterprise's current annual stockout and annual inventory holding costs are far from indifferent, causing additional, avoidable costs to the company.

Decreasing inventory, according to industry experts, is likely to cause vendors to experience some short-term pain, but the end consumers of the boards and the suppliers to Valid, and Valid itself could benefit from inventory reduction in the long run.¹

Of late, many of the world's largest retailers are moving to cut back inventories, which is what Valid needs to explore. It's recommended that a team is developed to explore this topic, focusing first on cost data analysis to acquire better estimates of inventory holding costs and costs related to stockouts. Next, they should compile their findings and, using the same data analysis method as used below, present a proposition on how much inventory should be reduced, if at all.

Discussion

Method. It's becoming common supply management knowledge that service level, the number of times a product is available divided by the number of times a product is requested, is directly correlated with the amount of inventory, because stockouts leave the customer without the product. This leads to three possible additional costs to the company: backorder, single lost sale, or lost customer for some period of time, but a medium between inventory and stockouts leads to higher efficiency.

Using the rough estimates provided by Valid, data was entered into Table1, Table 2, and the formulas following those tables, to arrive at quantifiable US dollar amounts of stockout and inventory holding costs. The procedures and formulas used for calculation are commonly accepted among supply chain researchers. In addition to raw data, three separate articles that had

strong relevance to Valid’s current inventory situation were examined to draw conclusions about effective inventory systems currently being used in retail and wholesale industries.

Supporting Data

- Cost Findings.** Table 1 calculates the inventory holding costs, a.k.a. carrying cost, for each board kept in inventory. It incorporates cost carrying factors of keeping the inventory as a percentage of product value and multiplies that by the unit cost per board to get the unit carrying cost. Table 2 determines the cost of a stockout as a weighted cost depending on what the result of the stockout was and how likely that result of a stockout will happen. Using the table computed values, the annual holding cost of inventory is calculated by multiplying the unit holding cost by the number of units/year in inventory. The annual stockout cost is computer in the same way; multiplying the cost per stockout by the number of stockouts per year. If the annual cost of holding inventory were close to the annual cost of stockouts, it would be hard to warrant additional research, but they are not.

Table 1: Inventory Holding Cost

Factors for Keeping	Percent of Product Value Cost for Holding
Plant, Property, and Equipment	11%
Production	8%
Insurance	1%
Obsolescence	4%
Total %of Product Value for Holding =24% Unit Board Cost = \$225 Inventory Carrying Cost (US Dollars): 225*.24 = \$54	

Table 2: Stockout Costs for Valid Enterprise Co., Ltd

Category	Percent of Stockouts	Cost per Event (US dollars)	Weighted Cost (US dollars)
Backorder	70%	\$6	.7*6= \$4.20
Single Sale Loss	20%	\$20	.2*20=\$4.00
Long-term Customer Loss	10%	\$200	.1*200=\$20
			Total Weighted Cost = \$28.20

- Number of units/year in Inventory = 1225
- Number of Stockouts per Year = 101
- Annual Holding Cost of Inventory: ($\$54/\text{unit} * 1225 \text{ units in inventory}$) = \$66,150 per year
- Annual Stockout Cost: ($\$28.20 \text{ per stockout} * 101 \text{ annual stockouts}$) = ~\$2,848 per year

External Comparisons. “The more costs Wal-Mart can take out of the system, the more it’s able to pass a portion of the cost saved on to the customer in the form of lower prices.” Craig Johnson, president of a retail consulting group Customer Growth Partners said.¹ By becoming a “leaner” inventory manufacturer and ecommerce retailer, Valid could offer lower prices for consumers of its product.

Wal-Mart, the world’s largest retailer is moving to cut back inventories this year.¹ In addition, North American inventories as a whole are down 10%, and their manufacturing chief estimates that figure could double this year.² “Factories are humming more steadily, boosting efficiency, as P&G measures it, from 55% to over 80% companywide.”² On the opposite end of the spectrum, many chip (computer) companies have built up their inventories too aggressively, leading to a fear of extra costs due to too much inventory.³

Limitations

The estimates used to compute inventory and stockout costs were very “rough.” No qualitative data on industry in board industry could be found and comparison to non-related industries may be inaccurate. Lean inventory systems are fairly new and not all the risks may be known.

Footnotes

¹Bhatnagar, Parija. 2006. Wal-Mart Puts the Squeeze on Vendors. *Fortune*, April 10.

²Saporito, Bill. 1994. Behind the Tumult at P&G. *Fortune*, March 7.

³ La Monica, Paul R. 2005. A Winning Year for the SOX? *Fortune*, February 17