



“Your Source for the Flow Processing Advantage”

A treatise on operational savings choices

Today's customers are demanding shorter and shorter response from the time that they place their order for products to when they expect shipment. BPCG believes that significant improvement in response to Customer orders can give any company a distinct competitive advantage.

The goal of any manufacturing company should be to support its customer base with the highest quality product, the best customer response, at a competitive price that generates as much profit as possible. Many companies are using operational methods today that may be in direct conflict with these goals.

How does this happen?

Customers expect their orders to be shipped in a lead-time. To satisfy customer orders, a manufacturer must purchase material from suppliers to build products that the customer will buy. The material is brought into the factory and processed with people and machines to make a product available to the customer. From the point in time that the purchased materials enter into manufacturing until the materials are converted into shippable items is referred to as “manufacturing lead-time”.

There may be a problem, however, if the manufacturing lead-time is greater than the customer's expected lead-time. Manufacturers have developed some solutions:

1. Tell the customer to wait for the manufacturing lead-time. If you have competition that does not make the customer wait you will likely lose the order.
2. Respond to the customer's request by shipping products from Finished Goods Inventory. This can only work if products are generic. If the product(s) that the customer is willing to buy are configured to order or designed to order, FGI is not a solution.
3. Create work-in-process inventory of assemblies or sub-assemblies that can be final assembled in a shorter lead-time.

In all solutions, purchased material must be available in inventory because of supplier delivery lead-time.

Should a manufacturer choose the second or third solutions, the question is, “How much and at what level of completion should inventory be held to support our customers”?

Inventory levels are typically determined by forecasting the quantities of Work-In-Process or Finished Good Inventory to be held as a customer response solution. In all cases we must use a forecast to order parts from our suppliers since no customer is likely to wait supplier lead time plus manufacturing lead time.

Inventory levels can become unacceptably large with these solutions. We tend to blame the inaccuracy of the forecasts as the cause of the “excessive inventory” problem. We ask you to consider the following truism: Forecasts will never be right. Companies have spent years and millions of dollars trying to more correctly predict the future. If you have not been successful at reducing inventories by trying to forecast more accurately, it's unlikely you will ever be able to.



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Excessive inventories have significant impact on profitability through working capital implications. Inventories consume cash. They require valuable space in the factory, in warehouses, and distribution centers. Inventories must be counted and managed. These activities are not free and will certainly add to the cost of doing business as overhead.

This is a significant problem

Product cost is comprised of 3 elements: Material, Labor, and Overhead.

Purchased material is the largest portion of product cost in most cases. Common ratios are 60% Material, 30+% Overhead, and <10% direct labor.

The purchased material element of product cost causes a large amount of cash to be tied up. It is likely that we will have to pay suppliers of it before its conversion into a shippable product can begin. Typical supplier payment terms are net 30. Purchased material can sit in-house for weeks or months. Even if you delay payments to your suppliers, your customers usually will not pay you for at least 45 days after you deliver the products to them. The problem can be further compounded if you have excessive WIP or FGI.

Example

If your manufacturing lead-time was 4 weeks (20 manufacturing days) and supplier lead-times were 6 weeks (30 calendar days), in-house purchased material inventory would total a minimum of 50 days. If you carried 10 days supply of FGI, the in-house purchased inventory would now total 60 days at a minimum. If you shipped your product to a customer and transit time took 5 days, you would still likely own that material. The days of inventory would be 65. The Accounts Receivable clock of 45 days to payment from your customer starts at the time of delivery of your products. If you paid your suppliers in 45 days after delivery, you would have to “float” the cost of 65 days worth of purchased inventory.

The road to profit can have many options

Most companies try to generate more profit by focusing on each of the 3 elements of product cost with different programs. They implement activities to purchase cheaper material, often with minimum success. They try to reduce overhead costs by cutting improvement programs, canceling training, and eliminating employee recognition events. They may even stop buying new equipment, begin outsourcing control activities, or reducing investments in the company’s new products. They try to implement workforce productivity improvements, hire minimum wage people, or even reduce the workforce.

Untapped savings

A large, yet frequently untapped source of savings is to reduce the working capital or cash float required for funding inventories. Improvement manufacturing lead-time would cause far less money to be tied up in inventory. A shorting of lead-time would create a direct benefit of improving customer response time and service.



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Lets calculate the amount of cash that can be tied up in purchased inventory.

Assumptions

- The Z brand company has Annual Sales of \$150,000,000 a year.
- Presuming a 20% pretax profit.
COGS₁ would be = \$120,000,000
- With a product cost ratio of:
 - Material = 60%
 - Overhead = 30%
 - Labor = 10%
- MCOGS₂ = \$72,000,000
 - Overhead = \$36,000,000
 - Labor = \$12,000,000 (400 DL employees paid \$30,000. per year)
- A day's worth of purchased inventory = \$197260. (\$72,000,000 / 365 days)

Current conditions at the Z brand company

- Manufacturing lead time = 20 work days (28 calendar days)
- Customer lead time = Shipping in 5 calendar days after receipt of order (ARO)
- Transit time 5 days
- On hand inventory at MCOGS = \$12,000,000
- Inventory turns of 6, wall-to-wall

Distribution of purchased inventory:

		Days	Value
Purchased	=	30	\$5,917,800.
Work In-Process	=	21	\$4,109,600.
Finished Goods	=	5 In-house	\$1,972,600.
		5 in-transit	

This example would result in Z brand company having a working capital requirement of \$12,032,860. Simply stated, 8% of every dollar shipped in revenue would be tied up in funding inventory. This causes significant cash “crunch” for any company.

Think of this example from a personal perspective: 8% of your pay could never be spent or could never earn interest. Companies often fail not because of lack of orders but lack of cash.

1 Cost of Goods Sold

2 Material cost portion of Cost of Goods Sold



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One savings choice

Let’s save some money by implementing a productivity improvement program that reduces the workforce:

- Our employees driven to work a lot faster and a 15 % (very, very optimistic) productivity gain is achieved
- Shipping volume stays the same
- The workforce is reduced by 15%

Productivity based savings = \$1,800,000. = 400 x 15% x \$30k.

Consider an alternative

Assumptions

- The Z brand company
- Its suppliers expect to be paid in 30 days (N30) although games are played with payment terms. Actual terms = net 45
- BPCG’s Flow Processing techniques have been implemented which significantly reduced in-house lead-time to 3 days from 20
- Flow based response time = 3 days
- Customer lead time (ARO) = 5 days
- Zero gain (highly unlikely) in productivity

Distribution of purchased inventory after Flow implementation:

		Days	Value	Savings
Purchased	=	30	\$5,917,800.	None initially
In-Process	=	5	\$ 986,300.	\$3,123,300.
Finished Goods	=	2 in-house		
		5 in-transit	\$1,380,820.	\$ 591,780.

Flow processing savings = \$3.715.080.

Versus

Productivity based savings = \$1,800,000.

It is only money.



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In closing

Work capital tied up can be calculated by valuing purchased material in Stores + WIP + FGI + Accounts Receivable then subtracting money owed for the materials (Accounts Payable).

When manufacturing lead-time is shortened, a significant improvement in response time through manufacturing occurs and the reduction in the amount of working capital required begins. This cash would be available to be invested in many different ways or be brought to the bottom line. This is not just a one-time improvement. Inventories could be managed at significantly lower levels, eliminating overhead and inventory carrying costs that represent another 20% of the value of the inventory.

If you are responsible for a company's bottom line you make choices every day. We at BPCG hope that this document will give you another tool to help you improve profitability. We can show you how to change and improve your business methods using the tools of Flow Processing.

Bob Shepka
Senior Partner
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The Business Process Consulting Group has training workshops and consulting services that teach you “FLOW PROCESSING”. Our products are tailored to the specific needs of each client. We have gained international respect because of our flexibility, hands-on approach, and our effectiveness.

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