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MANUFACTURING INVENTORY OPTIMIZATION: A COMPLETE GUIDE FOR CFOs

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INTRODUCTION

UNLIKE THEIR FELLOW BOARDROOM PEERS, CHIEF FINANCIAL OFFICERS (CFOs) HAVE A UNIQUE UNDERSTANDING OF A COMPANY'S INNER WORKINGS AND VALUE SOURCES.

They are also better able to recognize the long-term impact of logistics, distribution and purchasing practices on a company's financial objectives. As more businesses compete based on the agility of their supply chains, it comes as no surprise that CFOs are increasingly looked upon to play an active role in inventory-related decisions.

Successful CFOs embrace inventory optimization as key to improving cash flows, realizing revenue potential, and improving sales and customer service. However, there is a large gap between the importance of supply chains and inventory management—and their actual performance. From operational plans created in silos to decentralized inventory management, CFOs face several challenges, in both planning for, and implementing successful inventory optimization processes. Yet, without fundamental changes in how a business' supply chain and inventory are managed, many companies find themselves unable to keep up with their competitors.

This guide is designed specifically to help CFOs who have a basic or limited understanding of supply chain and inventory management processes, as they look to improve their business inventory optimization processes.

Specifically, this guide provides an overview of:

- Supply chain and inventory management fundamentals
- The challenges and benefits of a formal inventory optimization process
- How CFOs can help lead the business processes of supply chain and inventory management

The aim of this guide is to help CFOs look at inventory optimization as a critical and strategic business process, beyond a simple cost-cutting measure.

SUPPLY CHAIN BASICS

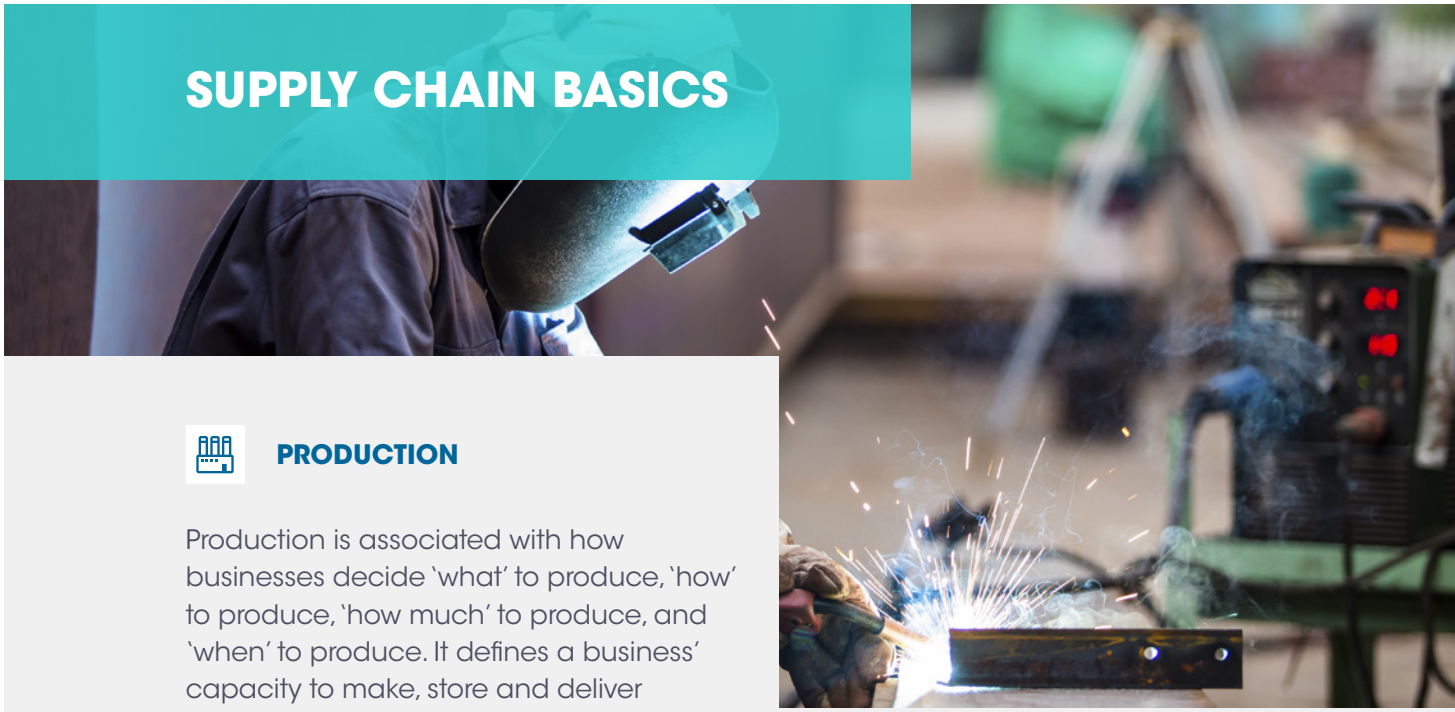
A SUPPLY CHAIN IS A SYSTEM OF organizations, people, activities, information, and resources involved in moving a product or service from supplier to customer. Supply chain activities involve the transformation of natural resources, raw materials, and components into a finished product that is delivered to the end customer. In sophisticated supply chain systems, used products may re-enter the supply chain at any point where residual value is recyclable. Supply chains link value chains. The chain includes vendors, manufacturing facilities, logistics providers, internal distribution centers, distributors, wholesalers and all other entities. The way in which a business conducts itself in the supply chain has a direct impact on the efficiency of the business, and the supply of goods.[1]

Information is shared up and down the supply chain, in order to allow all parties to facilitate the flow of products, and plan to meet business needs. Companies that are able to better integrate and coordinate their activities within the supply chain are more likely to optimize the flow of goods from supplier to customer. They are also able to react efficiently to changes in demand, implement strong supply chain processes, and achieve a significant competitive advantage. As a result, understanding how a business participates and manages its supply chain is key for today's CFO.

Supply chain ecosystems are diverse in nature—as each one has its own unique features, market demands, and operating challenges. Fundamentally, however, businesses engage in a basic pattern of decision-making, as it relates to the supply chain in five key areas—**production**, **inventory**, **location**, **transportation**, and **information**. These decisions are based on a trade-off between responsiveness and efficiency—the more responsive a supply chain is, the better it can adapt to market needs and unexpected increases in demand. The more efficient a supply chain is, the less flexible it is. The former is associated with greater costs, while the latter is less costly.

1 Wikipedia, 2016, "Supply chain"

SUPPLY CHAIN BASICS



PRODUCTION

Production is associated with how businesses decide 'what' to produce, 'how' to produce, 'how much' to produce, and 'when' to produce. It defines a business' capacity to make, store and deliver products, including the capacity of a supply chain's factories and warehouses, in order to make or store their products.

Production facilities can either be "product-focused" or "functionally-focused." Product-focused facilities usually include the complete range of activities required to make products—requiring the facility to develop expertise about the product as a whole, and resulting in reduced level of expertise for each component that makes up the product. Functionally-focused facilities are centered around performing a subset of the complete activities, which results in a high level of expertise about each component, but a lower level of expertise on the product as a whole.

CFOs must recognize that production decisions rest on the ability of a business to balance responsiveness and efficiency. While production facilities with the right amount of capacity have the flexibility to respond quickly to market realities, this capacity comes at a cost—the cost of acquiring factory or warehouse capacity, and the on-going cost of the facilities when they are not in use. As a result, any consideration of added capacity should take into account the financial cost and the cost of reduced operational efficiency.

SUPPLY CHAIN BASICS

INVENTORY

Inventory is found throughout the supply chain and businesses must decide what to stock at each stage of the supply chain. It is the area in which most businesses face challenges. Inventory optimization is the central focus of this guide, and will be further explored in detail.

CFOs acknowledge that holding large amounts of inventory may allow a company to be very responsive to any fluctuation in customer demand. However, the costs of producing and storing inventory must be kept to a minimum. Inventory optimization is key to providing businesses with a more dynamic and holistic approach to addressing supply chain costs.

LOCATION

Location refers to the geographical location of the materials facility. Businesses tend to make decisions based on whether to centralize activities in fewer locations, so as to gain economies of scale and efficiency, or to decentralize activities in locations close to customers and suppliers—in order to be more responsive. This decision tends to be strategic in nature because it means committing inventory and large amounts of financial resources to long-term plans—all of which have a strong impact on cost and performance within the supply chain.

CFOs must be cognizant of the various costs related to location decisions, including the costs of the facility itself, skilled labor, surrounding infrastructure, taxes and tariffs, and proximity to suppliers and customers.

SUPPLY CHAIN BASICS

TRANSPORTATION

Inventory must move between businesses within the supply chain, in order to reach customers. Decisions surrounding how to move inventory from one location to another are incredibly important, as the transport costs of a supply chain operation often equals one third of the total operating cost. These decisions impact both the response and efficiency of the supply chain, as well as the cost of the product, as it moves within the supply chain.

There are four categories of transport—air, sea, land, and electronic—with a range of eight transportation modes therein—ship, train, pipeline, conveyor, cableway, truck, airplane and electronic communications. It is common for businesses to use a mix of transport modes when deciding how products will move between businesses—with the type of product helping to determine the most suitable method of transportation.

CFOs should note that, in general, faster modes of transportation provide a higher level of responsiveness in the supply chain, at a higher cost—while slower modes of transportation are less flexible but more cost-effective. Further, higher-value products such as pharmaceuticals and electronic components require a higher response level while lower value products, such as bulk commodities, require a more efficient transportation network.

SUPPLY CHAIN BASICS

INFORMATION

Executives and managers require the right kind of information, in order to make sound supply chain decisions. This information must connect across the entire supply chain and provide insight into all relevant business drivers. While every organization wants good information, the cost of obtaining accurate data is often too high. Businesses must consider how much information to share with other businesses and partners, in order to boost the overall efficiency of the supply chain as well as, the risks associated with having this information being acquired by competitors. As such, deciding what information to collect, how much, and what to share with others in the supply chain is crucial to effective supply chain management.

Information is used for two key purposes in supply chain decision-making—managing activities and planning & forecasting. When it comes to managing activities, information is key to making decisions about production, inventory, location, and transport mechanisms in the supply chain. This information allows businesses to determine supply and demand requirements and, in turn, to decide on production schedules, inventory levels, transportation routes, and stocking locations.

When it comes to planning & forecasting, CFOs can use information to make projections that help in setting more accurate production schedules and timetables for a given time. It can also be used to make planning decisions related to business expansion, such as whether to build new facilities or enter new markets.

SUPPLY CHAIN BASICS

TABLE 1: **RESPONSIVENESS VS. EFFICIENCY ACROSS THE SUPPLY CHAIN**

	RESPONSIVENESS	EFFICIENCY
PRODUCTION	• Excess capacity • Flexible manufacturing • Many smaller facilities	• Very focused • Little to no excess capacity • Few central facilities
INVENTORY	• High inventory levels • Wide range of items	• Low inventory levels • Small range of items
LOCATION	• Several branches close to customers	• Fewer centralized branches that serve wider areas
TRANSPORTATION	• Frequent shipments • Fast and flexible modes	• Fewer but larger shipments • Cheaper and slower modes
INFORMATION	• Collect and share data in a timely manner	• Cost of information reduces while costs of technology rises

INVENTORY OPTIMIZATION: AN OVERVIEW

INVENTORY REFERS TO RAW MATERIALS AND/OR FINISHED GOODS IN A COMPANY'S STOCK.

Companies hold onto inventory, in order to balance out any uncertainties related to supply and demand. Businesses must decide what to stock at each stage of the supply chain, including how much to stock and in what format, in order to better control inventory.

Business success is largely dependent on the ability to provide customers with the right type of product—at the right price—and at the right time. Here, the right goods are the products that customers want, the right place is in the business' inventory, and the right time is immediate. This is especially true in today's world where there is very little differentiation between products of the same type. Inventory management allows managers to coordinate the actions of all business parties—including sales, marketing, and production, in order to provide the correct level of stock to satisfy customer demands.

Inventory optimization takes inventory management to the next level by allowing managers to assess relevant signals in the supply chain, in order to further reduce inventory levels—all while improving customer service and maximizing on capital investments. There are three types of inventory to consider, each of which will impact the production and storage of inventory:

- **BASIC STOCK:** The exact quantity of an item required to satisfy a demand forecast
- **SEASONAL STOCK:** A quantity buildup required to satisfy an anticipated demand forecast
- **SAFETY STOCK:** A quantity in addition to basic stock that serves as a buffer against uncertainty

The practice of inventory optimization is centered on maintaining minimum basic and safety stock levels, in order to ensure a greater degree of protection from unforeseen problems. However, since the premise of safety stock is to hold onto inventory in excess of demand, there is a percentage of capital that is tied up in this inventory type. Inventory optimization allows businesses to minimize the amount of safety stock carried, in order to release capital for enhancing business operations.

THE ROLE OF CFOs IN INVENTORY OPTIMIZATION

THE SUPPLY CHAIN IS AN OBVIOUS FOCUS FOR CFOs AS IT DETERMINES WHERE A LARGE AMOUNT OF CASH FLOW WILL BE DERIVED AND CONSUMED.

However, with escalating customer demands, economic volatility, rising costs, and the increasing complexity of managing global businesses, CFOs face significant challenges in transforming supply chains into a source of competitive advantage.

CFOs also struggle with decentralized supply chain leadership, which causes issues for strategic alignment and provides no clear picture of a company's total costs and sources of value. Recent research has shown that inefficient inventory management can reduce cash flow by up to five percent, and cost as much as ten percent more working capital than necessary.[2]

ADDITIONALLY, IT CAN ALSO LEAD TO:

- Reduced sales and lost revenue, as a result of sub-optimal inventories
- Slower order fulfillment, which results in extending the cash-to-conversion cycle
- An increased risk of penalty payments due to poor order fulfilment
- Higher interest expenses on inflated working capital
- Negative impact on the ability to budget, forecast, strategize, and effectively allocate resources

2 Genpact, 2013, "Inventory Optimizer: Taking Stock: How Can Inventory Optimization Improve Financial Performance?"

THE ROLE OF CFOs IN INVENTORY OPTIMIZATION

INVENTORY OPTIMIZATION PROCESSES CAN HELP DRIVE FINANCIAL IMPROVEMENTS THROUGH:

- Reduced inventory and interest on short-term borrowings—both of which result in increased net income
- Increased inventory turnover, which reduces inventory days outstanding and results in shorter cash-to-conversion cycles
- Improved forecast accuracy
- High order fulfillment and on-time delivery
- Clearer view of potential future issues and areas of waste, within the supply chain

AT A MORE STRATEGIC LEVEL, INVENTORY OPTIMIZATION ENABLES:

1. **BUSINESS AGILITY:** The ability to respond quickly to short-term changes in customer demands, and manage external disruptions more effectively
2. **ADAPTABILITY:** The ability keep the supply chain flexible enough to meet market shifts
3. **ALIGNMENT:** The ability to create shared incentives to ensure all aspects of the business are focused on achieving corporate goals

STEPS TO INVENTORY OPTIMIZATION

FOSTER STRATEGIC ALIGNMENT

According to a recent study, two of the main causes of failure in implementing supply chain strategies are company culture and a lack of leadership by senior management.[3] As such, CFOs must recognize that striking a balance between agility and adaptability requires an improvement in organizational strategic alignment.

In particular, CFOs must acknowledge that different departments associated with the supply chain have different perspectives, when compared to business executives. While CFOs may respond to issues through a financial lens, operations managers think in terms of service levels and lead times. By creating an environment where supply chain teams can communicate operational complexities openly and honestly, CFOs can help translate this information into a holistic overview of the various factors impacting the value chain.

CFOs must bring together different parties across the business to participate in inventory optimization discussions. Here, CFOs can foster strategic alignment by:

- Defining and communicating common business objectives
- Getting stakeholders to agree to common objectives
- Allowing stakeholders to discuss how they can best strategize and plan to meet these objectives
- Enabling stakeholders to measure themselves collectively against the plan

In doing so, CFOs can help set-up successful inventory optimization processes, by establishing it as a critical business process.

3 Cranfield University School of Management, 2010, "Supply Chain Strategy in the Boardroom: Interim Findings"

STEPS TO INVENTORY OPTIMIZATION

IMPROVE FORECASTING

Cost control is at the top of the agenda for most CFOs. They should, however, take caution to ensure that cost-cutting efforts neither diminish product value and the corporate brand, nor impact customer service levels. Operating costs can be effectively reduced with the following steps:

1. **STOCK ANALYSIS:** Prior to any forecasting activities, managers must understand the relationship between stock codes and key issues of profit, revenue and service levels. CFOs can help by creating an effective system to analyze stock codes for importance based on their profitability, revenue, or service frequency as well as, their behavior—in order to identify demand frequency and seasonality.

2. **FORECASTING:** An effective forecast process allows the business to determine the main drivers of inventory planning processes. This allows the CFO to generate the best possible estimate of demand, in order to reduce operating costs and maximize business process efficiency.

3. **MODELLING AND SELECTING STOCK POLICIES:** Stock policies outline rules to determine how much stock must be held to meet expected demand. Modeling the effect of a policy helps CFOs determine the optimum balance between customer service and inventory investment—to meet expected demands. CFOs can spearhead an appropriate inventory optimization policy by first gathering input data, which includes desired service levels, historical demand data, historical forecast accuracy, and historical supplier reliability. They should then use this data to identify a set of possible inventory policies and test these policies using different limits. They must finally select a policy appropriate to service and investment targets.

4. **REPLENISH TO THE PLAN:** Finally, an often-overlooked component of inventory optimization is the process of replenishing stock in a timely manner, according to the forecast and stock policy.

STEPS TO INVENTORY OPTIMIZATION

SUPPORT TECHNOLOGICAL ADVANCEMENTS

CFOs can accomplish a lot with a simple Excel spreadsheet. However, by implementing the most appropriate technological processes for the business in question, CFOs can maintain a more automated and accurate view of the supply chain. According to Gartner, key technical issues to address when aiming for supply chain excellence are data accuracy and timelines.[4] An appropriate Enterprise Resource Planning (ERP) system will eliminate issues of data accuracy. It will also help synchronize master data to allow for the improved extrapolation and manipulation of data.

4 Gartner, 2010 "Supply Chain Excellence: Sales & Operations Planning Best Practices".

CONCLUSION

AS CUSTOMER SERVICE IS INCREASINGLY BECOMING THE FOCUS OF BUSINESSES ACROSS INDUSTRY, MEETING CUSTOMER DEMANDS AND INCREASED DEMAND VOLATILITY ARE THE TOP CONCERNS FOR FINANCIAL EXECUTIVES.

Inventory optimization can help CFOs transform an organization's supply chain performance, drive financial improvements, improve customer service levels and satisfaction, provide visibility across the supply chain, and deliver greater profitability.

CFOs play a key role in boosting inventory optimization processes and must consider how to adopt demand-driven approaches, in order to enable greater business agility.

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