Enterprise Profit Optimization: The Next Wave in Value Creation

By tightly integrating pricing actions and supply chain actions, EPO provides companies with the tools they require to quickly and effectively achieve optimization goals.

Visionary executives have long dreamed of maximizing the return from their assets through the end-to-end optimization of their business. The development and continued evolution of Supply Chain Management solutions and the advent of demand-side solutions such as Pricing and Revenue Optimization have enabled the optimization of many parts of the value chain, improved their coordination, and brought end-to-end optimization tantalizingly close. It is now within reach.

For the first time, there is a solution that drives profitable growth through the simultaneous optimization of the supply-side and demand-side functions – both within a company and throughout its trading network. Known as Enterprise Profit Optimization™ (EPO), it is likely to create the next wave in enterprise management. Combining the proven power of cost reduction solutions with the revolutionary breakthroughs of emerging Pricing and Revenue Optimization tools, EPO integrates disparate parts of the value chain into a powerful engine of efficiency and profitability.

With corporate profits under intense pressure, such a solution couldn’t come at a more opportune time. Increased business complexity in online and off-line channels, and increased market competition pose continuing threats to profit margins. Investors are forcing eBusinesses to accelerate their plans to reach and enhance profitability. In order to improve bottom-line results in this pressurized environment, companies must drive improvements in operational efficiency and simultaneously find ways to achieve profitable revenue growth.

Moving far beyond uncoordinated attempts to optimize the demand and supply sides of a business, Enterprise Profit Optimization looks across the entire enterprise to enhance profitability. When mismatches of supply and demand occur – as they always do – they should not be viewed strictly as a supply chain problem or a pricing problem, but rather as an opportunity for Enterprise Profit Optimization. By tightly integrating pricing and marketing actions on the demand side with the complex and ever changing conditions of the supply chain, EPO ensures that you make the most profitable use of all of your critical assets. Coordination becomes real synergy because functions across the organization are unified around a common goal: ensuring that the right products are offered to the right customers, through the right channels, at the right price in order to enhance profit – all at maximum efficiency.

**EPO in Action**

In broad outline, EPO encompasses four basic steps:

**Optimizing Prices**

Using powerful pricing optimization applications and techniques, a company determines the optimal prices at which to sell its products and services. This optimization may be done quarterly, monthly, weekly, nightly, or even on an order-by-order basis. The company may also generate only one price for each product or decide to generate prices for each channel, order type (large vs. small, guaranteed vs. non-guaranteed, etc.), or customer segment.

Optimal prices are based on a variety of appropriately weighted factors in a complex environment, including demand, price sensitivity, competitive threat, costs, and strategic objectives. In addition, pricing can now take into account the latest information about inventory position and available product capacity, which is provided from the operational side of the company through supply chain applications. Thus, in the initial pricing optimization, EPO simultaneously harnesses both demand and supply information and converts it into insight to enhance profit on both sides of the supply/demand equation.

**Stimulating Desired Demand**

Through off-line and online selling channels, the optimal prices are communicated to the market, converting the predicted demand into confirmed orders at the desired margin, revenue, or market share targets established in the price optimization.

**Optimizing Fulfillment**

The confirmed orders are captured and routed through the fulfillment system, where supply chain applications optimize manufacturing, supply, and transport. Customer commitments are fulfilled in the most efficient, cost-effective manner. Of course, this is the objective of any well-run supply chain. But in an EPO environment the resulting efficiency and profitability at this stage have already been enhanced by

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Dr. Robert L. Phillips, chief technology officer (CTO), oversees Manugistics’ overall technology strategy, reporting directly to Greg Owens, Manugistics chief executive officer and chairman designate. Dr. Phillips is helping to ensure that the company’s breakthrough Enterprise Profit Optimization™ (EPO) solutions better enable enterprises and marketplaces to increase revenue, lower operating costs, enhance profitability, and accelerate growth.
the initial inclusion of supply chain information in the determination of optimal prices.

**Re-optimizing Prices**
As transactions occur and orders are delivered, the results are used to update the underlying forecasts and price sensitivity parameters while the latest product availability and cost information from the supply side are also fed back into the system. The cycle begins all over again with the re-optimization of prices and another cycle of optimizing profitability across the entire enterprise.

**Two Powerful Technologies Combine**
The revolutionary opportunity that EPO represents has arisen through the combination of two major enterprise management trends: (1) cutting-edge Supply Chain Management technologies and (2) new pricing optimization methods. The first addresses the supply side of business; the second addresses the demand side. EPO addresses both simultaneously.

**Supply Chain Management**
The story of Supply Chain Management (SCM) is reasonably well known. Using successive generations of information technology, manufacturing and operations executives cut costs, reduced cycle times, enhanced manufacturing efficiency, brought ever higher levels of service to customers, and made mass customization a reality.

With the advent of the Web, these technologies were applied to make both intra- and inter-enterprise manufacturing more efficient. In addition, through the use of Web-based collaboration technologies, companies could more effectively interact with their suppliers, customers, and other trading partners.

The full potential of Web-based trading is only now coming into view. Innovative technologies such as Manugistics NetWORKS™ products, WebWORKS™ architecture, and WebConnect™ integration platform are linking trading partners via the Web and transforming trading exchanges and linear supply chains into intelligent e-marketplaces. By adding intelligence to e-commerce transactions such as forecast sharing, procurement, order fulfillment, trading partner analytics, and logistics, and by enabling real-time collaboration, these solutions give both public and private e-marketplaces the global visibility and clarity needed to make intelligent decisions. In the drive for profitable growth, this transformation of the supply chain has opened up a new frontier that will be extended even further by Enterprise Profit Optimization.

**Pricing and Revenue Optimization**
The story and the concept of Pricing and Revenue Optimization (PRO) are somewhat less familiar. Using advanced mathematical algorithms, PRO techniques apply differential pricing strategies and the smart allocation of capacity in order to match supply with demand. The primary goal is to maximize revenue and profits from available capacity and assets. By segmenting the market and predicting the buying behavior of each segment, PRO determines what differing segments are willing to pay for what goods or services and optimizes pricing and product availability accordingly.

Airlines have been employing these techniques for years. Following airline deregulation in 1979, airlines were thrust into a world of unrestricted competition and fare wars. To survive, leading airlines developed and refined ‘yield management’ – the practice of deciding how many seats to sell at what prices and when. ‘Yield management’ soon became ‘revenue management,’ with the sharper focus on revenues that the change in terminology suggests.

Using historical sales information to allocate some seats to price-sensitive, low-paying leisure travelers, while holding others for time-sensitive, high-paying business travelers, airlines continually aim to produce the optimal product mix of variously priced seats, squeezing the highest possible revenue from the fixed capacity of each airline flight. Widespread use of these techniques has produced dramatic improvements throughout the industry. In 1984, U.S. airlines sold only 60% of their seats. By 1998, passengers filled more than 71% of all seats, the highest occupancy rate for U.S. carriers since the 1940s. During that time, airlines doubled seating capacity and cut the cost of air travel by one third.

Recent years have brought further significant advances. Information technology has continually improved demand forecasting – an essential element of revenue management. A far more dynamic marketplace, including the world of e-commerce, in which prices can be adjusted instantaneously, has brought new flexibility to pricing. Most recently, new and ever more mathematically sophisticated software applications have made it possible to optimize prices in order to balance the likelihood of winning business with maximum contribution to profit. As a result, “Pricing and Revenue Management” has become “Pricing and Revenue Optimization,” reflecting these powerful new advances.

From airlines, PRO spread to other reservation industries such as hotels, car rentals, and cruise lines, producing impressive gains in revenue and profits. More recently, non-reservation industries such as electronics manufacturing and distribution, express package delivery, telecommunications, and broadcasting have used PRO to enhance profits quickly. PRO is now spreading to manufacturing industries such as automotive, office equipment, durables, and industrial equipment. In the dynamic world of e-commerce, PRO is a natural fit for companies that sell products and services through the Internet. Retailers and e-tailers alike can benefit, whether they have only one channel or several, whether they sell in stores or through catalogs.

**Balancing Supply and Demand for Improved Profitability**
The merging of these two technologies in Enterprise Profit Optimization has far-reaching implications. Clearly, manufacturers, distributors, and other enterprises can segment their customers along different dimensions: product features, delivery time, volume discounts, financial terms, time, and many others. Just as obviously, orders can be prioritized by profitability, key customers, and the like. The entire supply chain can then be segmented into multiple categories...
with respect to the priorities or prices of the potential orders. When demand exceeds supply and expanding capacity is not an alternative in the short term, Pricing and Revenue Optimization techniques provide the optimum mix of prices and the pre-allocation of the limited pre-existing capacity for order promising. Conversely, when supply exceeds demand, these techniques can be used to stimulate demand in order to rebalance it with supply.

**Mastering Demand Uncertainty and Capacity Utilization**

As mass customization becomes a reality, balancing supply and demand has become harder than ever. Supply chains must be able to tailor products and prices to meet the individual needs of customers and to handle increased product variety, shorter lead fulfillment times, and the demand for increased services around manufactured products. Demand not only fluctuates more than ever, but demand uncertainty increases as well. In addition, in a manufacturing or distribution environment, the management of capacity can be extremely complex, involving hundreds of products, materials, plants, warehouses, and types of equipment and processes. In this environment, micro-market segmentation, flexible and powerful pricing, and nimble capacity allocation are essential for profitability.

EPO provides companies with the ability to segment the market and to create revenue opportunities out of that complexity. The underlying principle is to combine the optimal inventory, production, and transportation planning capabilities of supply chain optimization with the market segmentation and differential pricing of PRO in order to allocate capacity at each point in the supply chain. EPO provides an approach for explicitly handling the dynamic nature of customer demand and provides a flexible mechanism to allocate capacity to customer orders based on their needs and the prices they will pay. To take a simple example, effective EPO can drastically reduce distressed inventory ‘fire sales’ by anticipating conditions where production will exceed demand and proactively lowering prices to increase sales. Similarly, if supply or capacity shortages are anticipated, EPO will proactively raise prices where appropriate in order to maximize profitability and reduce stockouts.

As companies become more sophisticated at EPO, they will be able to segment their customer base and allocate capacity and production to customers according to profitability – adjusting these prices and allocations in response both to market demand and to changing capacity and supply conditions. For example, a manufacturer might allocate a certain amount of supply (the combination of inventory, production capacity, and delivery) for key customers at a particular price. Another portion of supply is allocated at higher prices for ‘spot’ customers, and still other supply is allocated at lower prices to customers who can tolerate long lead times. Using EPO, the capacity allocations as well as the prices would be continually adjusted to ensure that the manufacturer is obtaining the highest possible return from his fixed assets as conditions continually change.

EPO also enables the fine-tuning of the scheduling and marketing of under-utilized or over-utilized manufacturing capacity. Just as hotels cannot easily build more rooms when there is a temporary spike in bookings or sell off some of their property during periods of slack demand, manufacturers cannot easily acquire new capacity or liquidate excess capacity. Market segmentation and differential pricing tied to capacity utilization can help increase the use of under-utilized capacity, generate higher margins on over-utilized capacity, and smooth scheduling throughout. Such fine-tuning represents a real breakthrough in the age-old challenge of capacity utilization, and it is far less expensive than the alternatives of acquiring or liquidating capacity.

**Optimizing Prices and Supply Chain Processes for Profit**

The potential for Enterprise Profit Optimization to optimize prices and supply chain processes simultaneously provides many unique capabilities. For example, it enables a company to answer such questions as:

- How should we price our products to make best use of our manufacturing capacity, raw materials, storage, and distribution capabilities?
- What is the optimal price at which we should commit to an order? And at what price should we be willing to walk away from the business?
- What is the most profitable method of fulfilling the order?
- Should we delay or reject an order in anticipation of more profitable future customers?

**EPO will proactively raise prices where appropriate in order to maximize profitability and reduce stockouts.**

**How Does EPO Work?**

Historically, Supply Chain Management has viewed current and future orders as a given – the job of the SCM system being to determine how best to meet those orders. Under EPO, both supply and demand are viewed as influenceable – that is, price can be used to influence demand while supply chain measures can be used to influence supply. The concept
behind EPO is to look at both options simultaneously in order to find the best combination to enhance profit across the enterprise. This is best illustrated by example:

• Every year, a container-shipping company faces the challenge of moving thousands of tons of salmon from Alaska to the rest of the world during the short salmon fishing season. Preparing for salmon season means shipping hundreds of empty containers to Alaska at substantial cost to the company. Prior to the adoption of EPO, the shipping company viewed this as a typical Supply Chain Management issue – how to move empty containers to Alaska at least cost in anticipation of the demand. But, by explicitly utilizing EPO, the company can begin reducing shipping rates into Alaska and incentivizing its sales force for selling business into Alaska in the weeks prior to the opening of salmon season. This enables it to gain positive revenue for container moves that would have been previously recorded as pure costs. It also enables the company to serve customers better by offering a seasonal deep discount product. The result – increased profits and higher utilization of containers and slots.

• Historically, airlines have practiced yield management on the assumption that the seating capacities of flights would be fixed. If a flight seemed likely to sell out, the airline closed discount ticket sales in order to maximize the yield per seat. If a flight seemed unlikely to sell out, the airline would open discount ticket sales in order to fill more seats. While these techniques have proven incredibly effective in increasing overall profitability, they do not capture the full market potential. Some progressive carriers are beginning to apply EPO to extract even more profitability; in addition to using yield management to maximize the return from each seat, they are adjusting the number of seats available in the market to best meet demand. Thus, if a flight appears likely to sell out, they consider raising the price or changing the aircraft to one with greater capacity or doing both. If a flight seems unlikely to sell out, they consider lowering the price, changing to a smaller capacity aircraft, or doing both. By pulling both the ‘pricing lever’ and the ‘capacity lever,’ they are learning to improve profitability and utilization simultaneously.

• Many high tech electronics goods have short life cycles with highly uncertain demand. Electronics wholesalers have often found themselves drastically overstocked with outdated and obsolete products, which they had to sell at substantial discounts. Using the principles of EPO, some wholesalers are beginning to adjust prices at the first signs that demand may not be materializing. By offering small discounts earlier in the product life cycle, they avoid having to offer large discounts later in the life cycle. The savings – both in increased margin and in decreased inventory holding costs – can be enormous.

What these examples have in common is a simple but powerful principle: to increase profitability you should take a broad look across the enterprise. Instead of addressing imbalances of supply and demand as strictly a pricing problem or a supply chain problem, EPO address both sides of the equation simultaneously. The key is to find the set of integrated pricing actions and supply actions that alleviate imbalances at the highest level of return to the company. And, of course, this type of balancing must be done continuously, every day, for many products through different channels, in a rapidly changing environment.

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A Wealth of Benefits
All companies want to increase efficiency, reduce costs, increase profits, and deliver customer satisfaction. By tightly integrating pricing actions and supply chain actions, EPO provides companies with the tools they require to quickly and effectively achieve those goals. With EPO, companies can realize a wealth of benefits, including the ability to:

• maximize revenue from existing inventory
• maximize revenue opportunity on excess inventory
• stimulate demand to consistently maximize throughput
• enhance margin across the network
• enhance profit across channels and segments
• manage product life cycles effectively
• respond rapidly to competitor actions

Companies that adopt this revolutionary solution will gain even broader operational, organizational, and strategic benefits that will be hard for their competition to match. Operationally, such companies can regularly and consistently apply assets and resources toward increasing revenue. Organizationally, they can become much more responsive to customers. Strategically, they can maintain and extend their position by increasing their ability to deliver quality products by rapidly responding to changes in demand and to competitor initiatives. Above all, they can achieve dramatic gains in the area that continues to drive shareholder value – the bottom line.