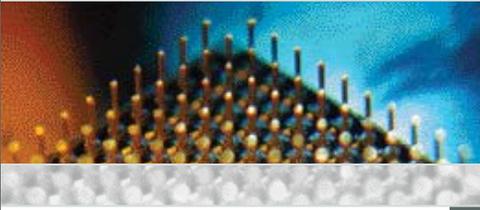


**The Adaptive Supply Chain:
Postponement for Profitability**



APICS



ORACLE

Is Postponement Right for Your Company?



With rising customer expectations and companies less willing to hold finished goods inventory, industry and market leaders are struggling to find ways to improve efficiency while remaining agile enough to respond to changes in the global marketplace.

One innovative response to this challenge is postponement, also known as “delayed differentiation.” Postponement is an adaptive supply chain strategy that enables companies to dramatically reduce inventory while improving customer service.

What about your company? What are the benefits and challenges of implementing a postponement strategy, and how do you know if your company is a prime candidate for it?

As part of our joint commitment to supply chain excellence, Oracle Corporation and Cap Gemini Ernst & Young are pleased to present this study, which examines postponement and the role it will play in the next generation of supply chain strategies. This in-depth study is the first of its kind to address emerging trends in postponement. Through a combination of surveys with experienced practitioners and supply chain specialists and research on the latest trends, we have identified the emergence of postponement as an underutilized, but increasingly viable and effective strategy within the supply chain.

This extensive study is meant to answer your questions about postponement and help you decide whether or not it’s the right strategy for your company.

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STUDY OVERVIEW

During August 2003, Oracle Corporation, Cap Gemini Ernst & Young, and APICS—The Educational Society for Resource Management—launched an extensive study focused on understanding postponement as a supply chain strategy.

The objectives of the study were as follows:

- Examine the key drivers and enablers that have transformed postponement into a viable supply chain strategy over the past five years.
- Identify the critical success factors and benefits resulting from successful postponement implementations.

WHAT IS POSTPONEMENT?

Postponement, also known as "delayed differentiation," is a supply chain strategy that delays product differentiation at a point closer to the customer. This involves designing and developing standard or generic configurable products that can be customized quickly and inexpensively once actual consumer demand is known. Postponement also entails the implementation of specific inventory strategies to deploy inventory farther away from the customer while fulfilling service level objectives and reducing inventory costs and minimizing risks i.e., strategies for holding the right inventory, at the right place, in the right form.

KEY FINDINGS

- Over 75% of respondents implementing postponement derived significant benefits and consider their implementation a success; and 91% of respondents noted significant improvements in customer satisfaction and inventory costs. A large majority of respondents agreed that their customers are seeing significantly improved order fill rates with decreased lead times.
- The primary reason companies have not considered a postponement strategy is a general lack of understanding of postponement.
- Key inhibitors of postponement are the perception of risks associated with uncertainty of value realization and technology limitations to support implementation.
- Increased difficulty to forecast demand and customers demanding higher levels of customization are the primary drivers for implementing postponement.
- Key challenges for successfully implementing postponement are organizational alignment and implementation complexity. Postponement often involves the changing of decade-old manufacturing processes.
- Without consistent top-down sponsorship and support, from design through implementation, a postponement implementation is destined for failure.
- Smooth execution of postponement requires product design modularity and appropriate business process reengineering.
- Internal and external collaboration across the supply chain is crucial for postponement success. Without adequate collabora-

tion, companies will be less likely to reap the full benefits of postponement.

- Advances in information technology now allow companies to have enterprise visibility and collaboration across their supply chains and better decision support regarding postponement.

THE NEED FOR AN ADAPTIVE SUPPLY CHAIN

Our business environment is undergoing significant change. Consumers are demanding higher levels of customization, yet are unwilling to pay more or wait longer. Meanwhile, interactive media and technologies have increased the number of customer interactions and product configurations, presenting even greater challenges.

As a result, organizations are facing increasing cost pressures and shortened product life cycles, often resulting in products becoming obsolete within a couple of months of their introduction. To meet this demand while maintaining customer satisfaction, companies have historically targeted improving the efficiency of the supply chain, with the twin objectives of minimizing the costs of production and holding enough inventory to ensure high order fill rates.

A new wave of managers has developed innovative supply chain solutions to address these changes more effectively. These leaders are recognizing the need to develop "adaptive supply chains" aimed at improving flexibility while also improving efficiency.



Postponement is one of the supply chain strategies now gaining momentum. By pushing the point of product differentiation closer to the customer, postponement can improve customer service levels, reduce inventory costs, and increase top-line revenue.

AVERSE TO POSTPONEMENT?

A number of misperceptions exist in the marketplace regarding the risks, costs, and benefits of implementing postponement strategies. Half of our respondents noted the general lack of understanding as the driving reason for not considering a postponement strategy.

Those managers who have considered postponement strategies struggle in assessing the risks associated with postponement design and execution.

Making postponement a reality involves fundamental changes to a company’s manufacturing processes and internal operations. Most

companies have not had sufficient levels of management support to effectively address this degree of change. Not only that, but making the right decisions—*where* to postpone, *when* to postpone, and *how* to postpone—requires adequate visibility into the supply chain. Companies that lack adequate information technology resources are less likely to entertain a postponement strategy.

REASSESSING POSTPONEMENT

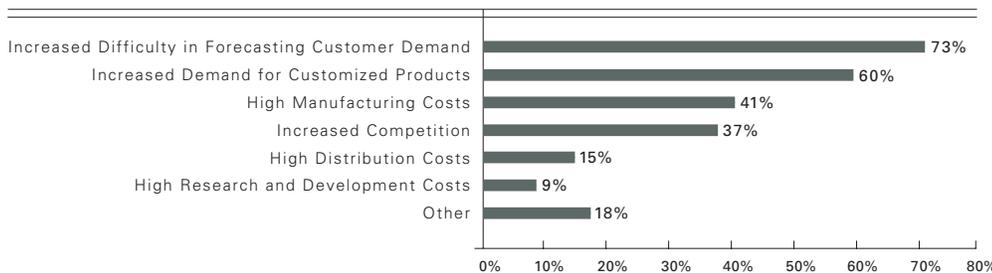
While postponement is not new, recent trends in the supply chain arena are driving companies to reconsider postponement as a supply chain strategy.

To reduce the chance of a lost sale, companies have traditionally invested in demand forecasting methods or have boosted inventory levels. But, now, companies are recognizing that increasing finished goods inventory can be inefficient, and forecasting methods are often unreliable.

**EXAMPLE OF POSTPONEMENT:
Point-of-Sale
Paint-Color Mixing**

Rather than house an infinite number of paint colors for customers, paint vendors stock tint bases and colorants and mix them to match customer demand. As a result, customers get the opportunity to select from a variety of colors and have their paint mixed at the store within minutes. While vendors must invest in paint mixing equipment and training, they benefit from higher order fulfillment, higher customer satisfaction, lower inventory costs, and decreased floor space devoted to paint.

What Catalysts Are Driving Companies to Consider Implementing a Postponement Strategy?



Source: APICS Membership Internet Survey, August 2003

EXAMPLE OF POSTPONEMENT in the High Tech Industry

Within the semiconductor industry, there can be as many as 20 different assemblies for a basic circuitry, which can make it at least twice as expensive to warehouse finished chips as it is to hold them in an undifferentiated die batch state. By postponing the development of finished chips and maintaining inventory at its "lowest common denominator," manufacturers can make their operations more economical and efficient, realizing benefits such as significantly reduced inventory costs, higher order fulfillment rates, and increased customer satisfaction.

Changes in the global market place and advancements in information technology have driven companies to reassess the applicability and feasibility of postponement.

Technological advancements, specifically in supply chain software developed in recent years, have minimized and often eliminated many of the risks and concerns traditionally associated with the implementation of postponement. Advanced supply chain technology now enables and supports decision making about *where* to postpone, *when* to postpone, and *how* to postpone. It also enables companies to connect with trading partners quickly and easily, allowing for visibility across the entire supply chain.

In addressing changes to the global market place, forward-thinking managers are finding innovative ways to increase demand for customized goods. One such example is the evolution of warehouses into advanced fulfillment centers to perform customization of goods at a point closer to the consumer.

DECISION-MAKING PROCESS

When developing a postponement strategy, successful companies create cross-functional teams and invest in information technology in order to redesign their business processes.

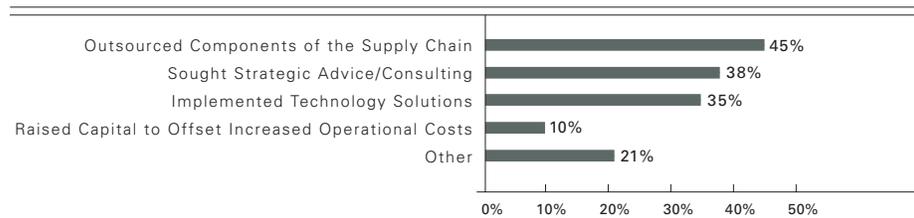
Increased visibility in the supply chain, enabled by technology, allows these decision makers to determine how changes in one area of the supply chain will affect other areas. This data also allows decision makers to model multiple postponement strategies in order to identify the optimal scenario.

IMPLEMENTATION

To address the complexities of change associated with a postponement implementation, many companies are looking for external help.

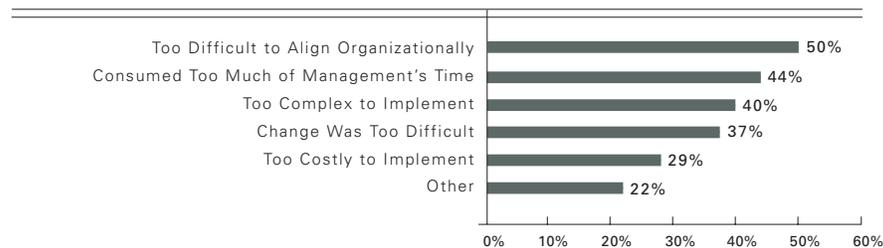
Outsourcing components of a company's supply chain is becoming popular. Some vendors, for example, offer specialized efficiencies in packaging, labeling, assembly, delivery, and

What Solutions Were Used to Address the Challenges of Implementing Your Postponement Strategy?



Source: APICS Membership Internet Survey, August 2003

What Were Some Challenges Your Company Faced in Implementing Postponement?



Source: APICS Membership Internet Survey, August 2003

manufacturing at a point closer to the consumer. By leveraging the capabilities and processes of logistics service providers, companies can rapidly acquire postponement competencies.

Companies are seeking strategic advice and consulting in order to facilitate the transformation of processes, technology, and management.

CHALLENGES

Since postponement often involves a fundamental redesign of decade-old manufacturing processes, its implementation can be challenging. However, this can be accomplished through an incremental implementation strategy.

Ensuring proper alignment across the organization, as well as with suppliers and customers, is one of the most significant challenges companies face when implementing postponement.

CRITICAL SUCCESS FACTORS

To overcome these challenges, our survey identified a series of critical success factors that drive successful postponement strategies.

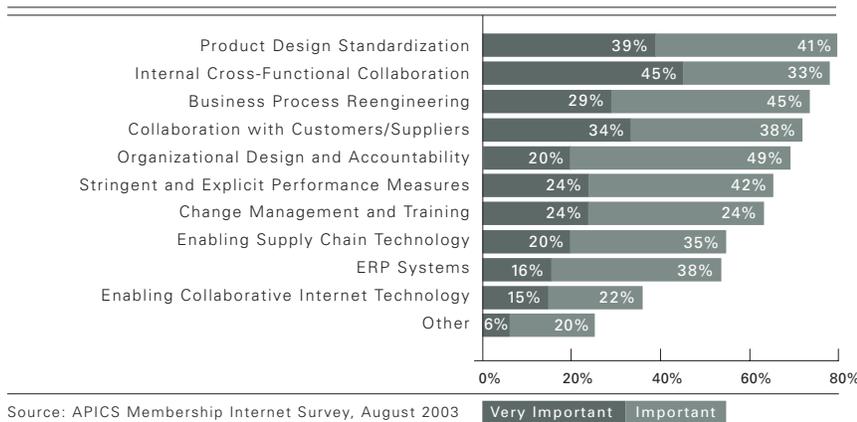
The keys to a successful postponement strategy are to produce standardized products and to incorporate customization at the most advantageous point in the supply chain.

Resolving the competing interests within a company’s supply chain is also essential. Without collaboration, including changes in the rewards and metrics structures of a supply chain, the changes associated with postponement often result in poor execution.

In addition, external collaboration with suppliers and consumers is critical. If suppliers cannot respond to the changes as a result of postponement, and if product design is not tailored to customer requirements, postponement can result in cost overruns and increased lead times.

The foundation of every successful postponement implementation is organizational buy-in. If management is not willing to take risks, implement significant changes, and monitor adjusted metrics, they will be less likely to reap the benefits of postponement.

What Do You Consider Critical Success Factors of a Postponement Strategy?



Source: APICS Membership Internet Survey, August 2003

Very Important Important

BENEFITS

Successful postponement implementations improve customer satisfaction while minimizing inventory costs. By improving their ability to respond to changes in demand from local and global markets, companies are better able to compete on time while remaining cost competitive.

Improvement in Customer Satisfaction

- Increased ability to offer a wider range of customized goods
- Reduced lead time for orders

Reduction in Inventory Cost

- Inventory costs shift upstream to less expensive generic products, which also reduces inventory obsolescence costs
- Enables better planning and allocation of resources by reducing the forecasting horizon
- Reduces inventory costs by as much as 30% to 40% in successful implementations

Improvement in Order Fill Rates

Since finished products are manufactured from generic components, companies are better able to deliver finished goods on time as a result of postponement.

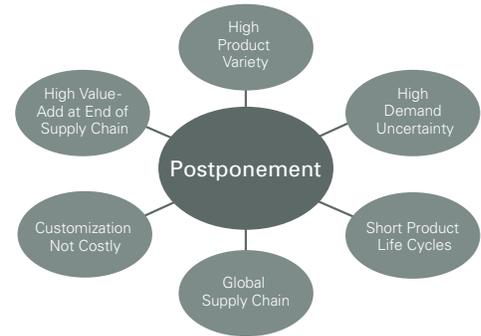
Bottom-Line Benefits

Overall, postponement’s primary benefits are to reduce the effects of market uncertainty and to meet customer needs, while effectively managing supply chain costs. In many cases, lower overall supply chain costs were achieved by respondents.

IDEAL POSTPONEMENT CANDIDATE

While many industries and companies are prime for postponement, there are certain business conditions that position a company for a more successful postponement implementation. Prominent among these are companies that produce a significant variety of products with short product life cycles and which have a supply chain able to support mass customization.

What Makes a Company Prime for Postponement?



What Are the Top Benefits You Realized from Postponement?



Regardless of business conditions, effective postponement implementation still requires collaboration, organizational buy-in, concerted effort, and the right information technology backbone.

SUMMARY

The constantly changing business environment will force all of us to address some aspect of postponement in order to remain competitive. Fortunately, recent trends, including advances in technology, are improving the ease and effectiveness of implementing postponement. Technology alone, however, will not solve all of our problems. A wide range of factors must be addressed to ensure successful postponement design and implementation.

SUMMARY OF FINDINGS

DRIVERS OF POSTPONEMENT

Organizations are facing continued pressure to minimize cost without sacrificing customer satisfaction:

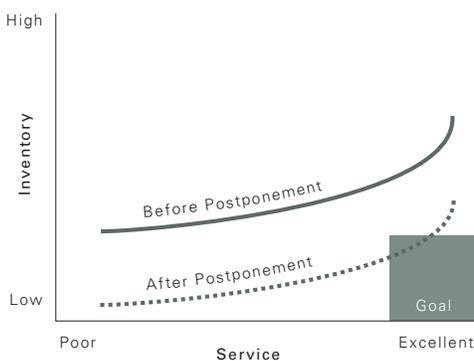
- 73% noted the increased difficulty to forecast demand as a primary driver.
- 60% noted customers demanding higher levels of customization as a primary driver.
- As companies compete globally, customization of goods is often required on a country-by-country basis.
- Inventory costs, including inventory obsolescence, are rising as companies attempt to meet customer demand.
- A new wave of managers is addressing the supply chain with strategic solutions.

INHIBITORS OF POSTPONEMENT

The primary reason companies have not considered a postponement strategy (56%) is general lack of understanding regarding concept, benefits, costs, and so on. Additional key inhibitors are the risks traditionally associated with implementing postponement:

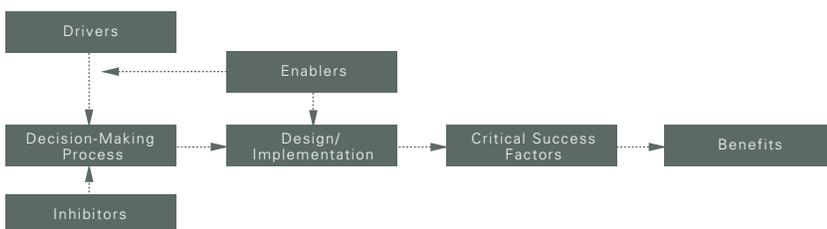
- Inability to recognize where postponement is most effective
- Inability to quantify benefits
- Belief that technology does not support implementation

Tradeoff Curve for Inventory and Customer Service



Source: Supply Chain Performance Metrics, Warren Hausman, June 2002

Framework Used to Explore the Dynamics of Postponement





ENABLERS OF POSTPONEMENT

A number of market leaders have begun to view effective supply chain management as a top priority and are more willing to take calculated risks.

- Advances in information technology allow companies to streamline their business processes and to gain a degree of visibility into the supply chain that was previously unavailable.
- Advanced inventory optimization technology from companies like Oracle now allows for decision support regarding *where* to postpone, *when* to postpone, *how* to postpone.

DECISION-MAKING PROCESS

Companies are employing cost benefit analyses and forecasting methods to determine the optimal postponement strategy.

- Innovative software applications have enabled accurate targeting of inventory and service levels based on company policies.
- Nearly half of the respondents have not considered implementing a postponement strategy. However, of those who did, 75% followed through with postponement.

DESIGN AND IMPLEMENTATION

Of those who implemented postponement, over 75% considered their postponement implementations a success. Organizations are using a variety of external solutions during the design and implementation of postponement strategies:

- 45% outsourced at least one component of the supply chain.
- 38% sought strategic advice.
- 35% implemented technological solutions.

CHALLENGES OF IMPLEMENTATION

- 50% of respondents found lack of organizational alignment as the most significant challenge of implementation.
- 43% found postponement consumed too much management time.
- 40% found it too complex to implement postponement, since it often involves changing decade-old manufacturing processes.
- Only 29% found postponement too costly to implement.



CRITICAL SUCCESS FACTORS

- Organizational buy-in and support is the primary critical success factor.
- Implementation of appropriate inventory deployment strategy is critical.
- A postponement strategy is destined for failure without consistent top-down support from design through implementation.
- Product design modularity (80%) and business process reengineering (75%) are critical to ensure smooth execution.
- Collaboration among all internal functions of the supply chain (78%), as well as with suppliers and customers (72%), is crucial for postponement success.
- Proper metrics and incentives (66%) are also important.

BENEFITS OF POSTPONEMENT

- 91% of respondents noted improved customer satisfaction and decreased inventory costs as the most important benefits.
- The increased flexibility resulting from postponement enables an organization to cost-efficiently offer a wide range of customized products.
- As a result, customers are seeing improved order fill rates (83% noted this as an important benefit) with decreased lead times.

- Improvements in top-line revenue often result from postponement, since companies can provide a large number of SKUs, with high order fill rates and shorter lead times, to a global customer base.

METHODOLOGY

Two streams of primary research were executed for this study.

The results from these surveys, in combination with secondary research, formed the basis for the findings highlighted in this report.

1. An internet-based survey

- Sent to 16,000 APICS members
- 358 members responded
- Survey timeframe:
Three weeks in August 2003

2. A detailed telephone survey

- Questions were geared toward gaining an in-depth understanding of postponement's catalysts, inhibitors, enablers, critical success factors, and benefits.
- Respondents were experienced supply chain executives, practitioners, or academics.





RESPONDENTS

Industries represented in the study include the following:

Aviation/
Aerospace

Automotive

Biotechnology

Chemical

Computers and
Peripherals

Consumer Products

Education

Electronics

Food/Beverage

Industrial
Manufacturing

Life Sciences

Machinery

Medical

Metal Fabrication

Pharmaceuticals

Plastics

Retail

Software

Telecommunications

Transportation

RESPONDENTS

The majority of respondents represented the manufacturing sector, specifically in consumer packaged goods, high technology, and healthcare.

Nearly half of the survey respondents were employed with the supply chain/logistics and distribution area within their organization.

More than half of the survey respondents worked in departmental management, and 13% were involved in senior management.

Half of the survey respondents came from companies with less than 1,000 employees, and approximately 60% were from companies with less than \$500 million in annual revenue.

WHAT'S NEXT?

Here are four critical questions you should be asking about postponement:

1. Is my company a good candidate for postponement?
2. How can my company profit from postponement?
3. What steps can we take to ensure successful postponement implementation?
4. How can we reduce inventory and improve customer satisfaction?

To learn more about postponement and how it can impact your organization, please call or e-mail the following people:

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Oracle's integrated supply chain planning solution helps organizations become more profitable by allowing them to make better decisions and to optimize the flow of materials, cash, and information across the supply chain. Companies can build and execute from a single unified plan, reduce inventory costs, improve predictability of demand, respond better to unforeseen events, and make accurate delivery commitments. Oracle's planning solution, part of the Oracle E-Business Suite, not only provides visibility and real-time supply chain intelligence but also enables collaboration across the extended supply chain. By accounting for uncertainty in the supply chain and recommending inventory postponement, Oracle's inventory optimization software can allow companies to reduce inventory costs by up to 25%, increase delivery performance by up to 35%, and reduce safety stock by up to 50%. Oracle's integrated applications allow organizations to know more, do more, and spend less. Learn more about Oracle's supply chain solutions at oracle.com.



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Cap Gemini Ernst & Young's Supply Chain Transformation services utilize the Networked Value Chain® (NVC®) solution as the core foundation to build more adaptive supply chains. NVC shortens engineering-to-delivery cycles and improves product quality. This unique approach improves the supply chain from end-to-end to maximize efficiencies and profitability. Strategies such as postponement often require changes to fundamental business models and operating approaches. New management processes and technologies must be combined effectively. Strong collaboration with customers and trading partners is also needed in many cases. Learn more about Cap Gemini Ernst & Young's wide range of global consulting services at www.cgey.com.



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