Lean Launch: Managing Product Introduction Risk Through Response-Based Logistics

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New product launch research has identified four strategic issues that involve activities essential to introduce a new product to its target market. The sum of these decisions is critical to new product success. Substantial research has focused on decisions guiding the proper product, price, and promotion mix to favorably impact market goals. Considerably less research has centered on determining how place capabilities such as logistics and supply chain relationships impact launch performance.

Logistics and supply chain collaboration—the processes involved in planning, implementing, and controlling the efficient, effective flow and storage of goods, services, and related information from the point of origin to point of consumption for the purpose of conforming to customer requirements—can greatly reduce risk associated with new product launch. They combine to provide a structure to facilitate rapid response to developing demand by location and intensity. In this article, an effort is made to fill the gap in extant knowledge regarding new product launch strategies by reviewing relevant literature and comparing traditional launch strategies based on anticipatory demand forecasts with alternative lean launch strategies based on the principles of response-based logistics. The result is a lean launch model for continued empirical testing and managerial review.

The article contrasts traditional logistics support of new product launch with an emerging logic called lean launch strategy. The traditional launch strategy is forecast driven and is based on anticipatory logistics (push). The lean launch strategy is formulated on principles of postponement and is based on response-based logistics (pull) and supply chain management. Response-based logistics systems provide flexibility that enables better management of inventory levels. Improved replenishment times and in-stock availability of products from a centralized inventory allows managers to rapidly react to actual demand. Lean launch enhances successful introduction by allowing greater flexibility in product variant selection while minimizing out-of-stock potential. Lean launch also can cut losses in product launch failures by reducing launch inventory exposure. Finally, lean launch can improve chances of new product success by helping...
Introduction

Successful new product development is particularly challenging in an environment characterized by escalating product choices and shortened product life cycles. To be viable, new products must succeed both technically and financially. Technical success means consumers accept the product. Financial success is gauged by the product’s ability to generate sufficient revenue to cover startup costs associated with design, marketing, manufacturing, distribution, and inventory, plus contribute to profitability. Failure rates of 50% to 67% of all U.S. new product introductions are not uncommon.

New product introductions involve two major activities: product development (conceptualization, design, promotion, and pricing) and product launch (physical positioning in the market/channel). Product launch activities consume a significant amount of total new product costs, often exceeding the combined expenditures in all previous development stages. Mistakes, miscalculations, and oversights in planning launch activity can become fatal obstacles to new product success. However, despite the costs involved and the likelihood of problems, little empirical research has been reported on new product launch.

The limited research available focuses on identifying the primary components of a launch strategy. These launch components represent a combination of strategic and tactical decisions. Strategic decisions involve planning activities necessary for market entry. Tactical decisions include the level, mix, and allocation of effort related to price, promotion, and place. Consideration of tactical issues generally has focused on price, promotion, and neglected place, resulting in a significant gap. Research has been directed to channel decisions in new product introduction, but issues related to logistics and supply chain relationships have been largely ignored.

The Council of Logistics Management defines logistics as the process of planning, implementing, and controlling the efficient, effective flow and storage of goods, services, and related information from the point of origin to point of consumption for the purpose of conforming to customer requirements. The Council notes the definition includes inbound, outbound, internal, and external movements, and return of materials for environmental purposes. The role logistics plays in effective competition is widely recognized as enabling superior customer service performance. Achieving logistics value by virtue of high-quality service and exacting cost control is a critical dimension of business, which focuses on improving customer purchase/repurchase behavior. Fine-tuned logistical processes serve to synchronize product delivery with market demand. The goal is to give customers what they want, when they want it, and at the lowest possible total cost.

Supply chain relationships extend a firm’s logistical capabilities by coordinating operations with other channel members. Channel-wide cooperation fostering collaborative planning, forecasting, and replenishment (CPFAR) is a growing way to leverage cost-effective value for customers. In an integrated supply chain, coordination of logistical activities is effectively extended to encompass source, make, and delivery processes in collaboration with channel partners and suppliers. Intrafirm coordination of sourcing, production, and logistics activities enhances the ability to respond to market volatility by eliminating redundant activities.
and reducing response time by facilitating seamless flow of demand information, supply materials, and finished goods. The interfirm cooperation engendered in a supply chain perspective shifts channel arrangements from loosely linked groups of businesses to a coordinated effort focused on efficiency improvement and increased competitiveness through lead-time reduction [8,16]. The resulting organization is capable of rapidly responding to actual demand rather than attempting to predict sales.

Logistics and supply chain collaboration can greatly reduce risk associated with new product launch. They combine to provide a structure to facilitate rapid response to developing demand by location and intensity. In this article, an effort is made to fill the gap in extant knowledge regarding new product launch strategies by reviewing relevant literature and comparing traditional strategies based on anticipatory forecasts with alternative lean launch strategies based on the principles of response-based logistics. The result is a lean launch model for continued empirical testing and managerial review.

**Background**

New product development research over the last 20 years has significantly enhanced understanding of success factors [13]. A conceptual model proposed and tested by Cooper [18,19] classified new product success factors into four categories that determine product survival. They are the competitive environment, the firm’s internal environment, the new product development process, and product competitive advantage.

Empirical research based on this model has focused on the identification of various determinants of new product performance in a wide variety of settings. A meta-analysis of research on determinants of new product development success identified 47 studies [34]. The determinants examined in these research studies were classified into four broad categories, which contained 18 factors. Table 1 presents the categories.

Each factor was identified as having had a significant influence on new product commercial success in at least one of the 47 individual studies. Sixteen of the 18 factors were determined to have significant correlational effects across multiple reports. Only development costs and market competitiveness effects were insignificant. Of the significant factors, product strategy and development process factors emerged as key determinants [34].

More recent research examining the determinants of Japanese new product success revealed similar results. Competitive and market intelligence, cross-functional integration, marketing proficiency, marketing synergy, product competitive advantage, technical proficiency, and technical synergy were found to have significant effects on new product success as measured by subjective performance items [46].

New product launch, an expensive, risky, and time-consuming phase of the overall new product development process, has received only limited research attention. Launch research has identified four strategic issues that must be addressed: (1) what to launch; (2) where to launch; (3) when to launch; and (4) how to launch [4,46]. These decisions involve activities essential to introduce a new product to its target market. The sum of these decisions is critical to new product success [14,15,52].

Strategic launch decisions take place early in the new product development process. A series of important tactical launch decisions occur after conceptual and physical development of a new product is complete. Tactical decisions guide the specifics of product launch by determining the proper product, price, promotion, and place mix to favorably impact market goals. Substantial research has focused on advertising expenditures [29,32,52], price [5,15,32], breadth of product assortment [5,32], product development cycle

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time [20,36,43], and market testing and forecasting techniques [27,44,45,52]. Considerably less research has centered on determining how place capabilities such as logistics and supply chain relationships impact launch performance. When logistics variables have been examined, the focus has been on channel arrangements and expenditures and not on logistical processes [30].

**Traditional versus Lean Launch Strategy**

The following narrative contrasts traditional logistics support of new product launch with an emerging logic called lean launch strategy. The traditional launch strategy is forecast driven and is based on anticipatory logistics (push). The lean launch strategy is formulated on principles of postponement and is based on response-based logistics (pull) and supply chain management.

**Anticipatory Launch Strategy**

A typical new product development process for new products is portrayed in Figure 1. As shown, firms usually conceptualize a number of unique discontinuous, “really new” products or continuous, incremental product variations during the design stage. Working prototypes are developed to test technical design and customer acceptability. Next, more extensive market feedback is obtained using various research methods including beta tests, experimental test markets, focus groups, lead group testing, and quantitative simulations such as analysis of past sales of similar products and pretest market modeling. Based on this feedback, a decision is made to launch what appears to be the most popular variant [27,44,51].

In traditional new product introductions, projected sales are fully supported in terms of pre-introduction inventory deployment. Operationally, full support means firms load the channel with inventory in anticipation of expected sales. Inventory plans to support introduction typically are based on demand forecasts tempered with knowledge concerning promotional campaigns planned to stimulate demand. It is common for channel members such as retailers and wholesalers to be given slotting and stocking allowances to allocate warehouse and retail shelf space to the new products. Firms introducing the product often guarantee sales and/or reclamation of inventory to their retailers and wholesalers if the product is a complete or even partial failure.

The appropriate inventory stock level and deployment plan to support anticipatory launch is extremely difficult to predict. Because the product is new, forecasts and inventory deployments are “flying blind.” The entire process is driven by forecasts that are based on limited information beyond knowledge regarding sales penetration needed to ensure financial success. Although predictive ability can be improved using multiple market testing methods, such forecasts are subject to market volatility and competitive action [38].

Getting accurate demand assessment becomes progressively more difficult as the degree of uncertainty surrounding a product increases. Meanwhile, forecasting efforts become more costly in terms of time and resource commitment [38,45]. Conventional wisdom

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**Figure 1. Traditional new product development process.**
holds that the way to cope with increased uncertainty is to improve forecast accuracy; however, the volatility of demand associated with new product launch makes it highly unlikely that forecasting methods that can consistently and accurately predict sales will ever be developed [16]. Operational effort to support anticipatory launch requires manufacturing ramp-up and forward inventory positioning to ensure product availability. This high degree of anticipatory inventory reduces the capability to accommodate forecast variance following initial launch. As a result of the great uncertainty involved, new product managers often restrict anticipatory launches to one product variation.

Three possible outcomes of traditional anticipatory launch are portrayed in Figure 2. In instances where a product is both technically and financially successful across a broad range of market segments (Case 1), unplanned out-of-stock problems are likely to materialize. Even when a product has widespread success, product popularity and adoption rates are likely to vary between market segments. Replenishment inventory needed for markets experiencing rapid penetration may not be available due to pre-introduction inventory commitment to other segments. When products are highly successful, manufacturing and logistics capacity may not be able to keep up with demand because of scheduling lead time and material procurement inflexibility. If inventory is available in the aggregate, product may still be out of stock on retail shelves in specific markets while it is overstocked in others. For at least the time it takes to reposition inventory to where it is needed and to ramp up manufacturing support, launch success may be in jeopardy.

For products that are neither technical nor financial successes (Case 2), pre-allocation of inventory results in overstock. In this case, inventory is positioned forward in the channel resulting in excess reclamation expense. In either outcome—whether a product is a runaway success or attracts a limited customer base—anticipatory logistical commitment can negatively impact financial and marketing results.

New product introductions, however, are seldom clear-cut successes or failures. Products may initially only appeal to a narrow segment of the target market, such as a specific geographic region or usage group, as contrasted to the broader market to which they are presented. Financial success depends on sufficient penetration to cover manufacturing, inventory, and promotional start-up costs. Therefore, products that experience limited technical success, but have a potential for achieving broader appeal over time, may fail at launch due to the inability to focus resources, including logistical support, to generate sufficient segmental revenue to cover market rollout costs (Case 3).

A recent launch of a new cracker product by Nabisco provides an example of the pitfalls of anticipatory launch strategies. Two variants of a new thin Triscuits cracker were introduced prior to the 1997 holiday season. One variant was flavored similarly to regular Triscuits, while the other was onion-flavored. The manufacturing process for the products involved production of the regular-flavored cracker with an additional flavoring process for the onion-flavored variant. Significant inventory of each variant was sold to retailers and forward deployed for the expected holiday sales. The market enthusiastically received the regular-flavored cracker. The onion-flavored version, however, was not well received and sales lagged those of the regular variant by a considerable margin. Unfortunately, Nabisco was unable to fully replenish the regular-flavored version, which resulted in out-of-stock situations while high levels of onion-flavored stock remained on retail shelves until after the holiday season.

Lean Launch Strategy

Utilization of response-based logistics and supply chain capabilities offers an alternative way to support successful new product launch as well as contain loss when products fail to meet expectations. This new conceptualization is called “lean launch strategy.” Lean launching new products involves a limited commitment of inventory during introductory rollout supported by a flexible logistics system capable of rapidly responding to early sales success. Flexible logistics
systems are characterized by coordinated source, make, and deliver operations that drastically cut raw material to consumer cycle times and enable the firm to respond to actual market needs rather than anticipate demand with inventory. Procurement and production techniques such as concurrent engineering and design, supplier partnerships, and agile manufacturing create flexible processes that enable firms to accommodate actual market needs rather than rely on anticipatory forecasts.

To improve overall operating performance, an expanding number of firms are adopting a response-based logistical posture [7,17]. In place of manufacturing and positioning goods based on forecasts, these firms are developing competencies that facilitate quick response inventory replenishment to support market needs. Trying to manage uncertainty and risk by timely response to demand is a long-standing concept. Wroe Alderson [2] addressed the issue in 1950 and labeled it “postponement.” Costs and risk are directly related to decisions concerning finalization or differentiation of goods. Differentiation can be achieved by physical modification of product and/or the timing of its geographical dispersion and placement [12]. As Alderson noted, “the most general method which can be applied in promoting the efficiency of a marketing system is the postponement of differentiation...in form and identity to the latest possible point in the marketing flow; and postpone change in inventory location to the latest possible point in time” [1, p. 424].

The increased availability of affordable information technology has created a growing strategic interest in the principle of postponement. Through development of flexible and responsive delivery capabilities, based on postponement principles and supported by upstream supply chain coordination, firms are avoiding anticipatory inventory deployment and reducing risk associated with forecasting demand variations. As Fisher [26] notes, uncertainty can be reduced by “cutting lead times and increasing the supply chain’s flexibility so that it can produce to order or at least manufacture the product at a time closer to when demand materializes...” (p. 114). The volatility of demand for new products can be managed by reducing lead times, which shorten the forecasting horizon and lower the risk of error [16].

There are two general types of postponement [53,54]. The first type of postponement is time related. In time postponement the key differential is the timing of inventory deployment to the next location in the distribution process. In contrast to anticipatory shipment to distribution warehouses based on forecast, the goal of time postponement is to ship exact product quantities from a central location to satisfy specific customer requirements. The practice of shipping exact quantities to specific destinations greatly reduces risk of improper inventory deployment and eliminates duplicate inventory safety stocks throughout the channel.

The second type of postponement is form related. Form postponement involves activities associated with assembly, packaging, labeling, and manufacturing. Form postponement reduces risk related to manufacturing an incorrect product mix. Assembly, packaging, and labeling postponement are options in which firms initially manufacture products to an intermediate or neutral form with the intent to delay customization until specific customer orders are received. This postponement of product differentiation reduces the need to stock inventory of all product variations. For example, computers are often assembled, packaged, and labeled to meet specific configurations during customer order processing. In fact, third-party logistics service companies merge some computers into integrated systems as components are being shipped to customers.

Firms making international shipments that necessitate language-specific labels and support materials, such as instruction manuals, frequently practice form postponement. Such products are shipped in bulk quantities to a distribution center with labeling and packaging completed as customer orders are processed. The practice of postponing label application can reduce risk by allowing the same base product to serve many different customers. For example, labels can be applied to “bright” cans of foodstuffs, allowing the same base product to serve many different private label requirements.

Form postponement also may involve forward deployment of materials or components to support final customized manufacturing to specific customer requirements. The shipment of house paint to retailers as a neutral base with subsequent mixing to customer-specified colors is the classic example of postponing until time of end-consumer purchase.

Although it is a powerful strategy, postponement has not been widely implemented because of the need for timely and relevant customer information, a high degree of dependence on exacting transportation, and, most of all, the need for high levels of collaboration among supply chain partners [10]. Each of these barriers has been reduced over the past decade. The
attractiveness of postponement is being driven by the availability of sophisticated and economical information technology, greater coordination of internal source, make, and deliver operations, improved transportation performance capability, and increasing recognition of the economic and service benefits all channel members can gain from sharing sales information specifics. Postponement is now viewed as a highly viable strategic option [17,25,50,53]. Postponement is the basic principle driving the development of response-based operating strategies. Leading-edge firms increasingly use postponement-based strategies as the logic for flexible operations that enable quick reaction to customer needs and actual market demand [6,23,47]. In fact, the attribute of flexibility has been identified as a key to achieving “leading-edge” status among competitors [9].

Undoubtedly, developing inventory management and replenishment programs for established products is easier than applying response-based logistics to a new product launch. However, logistical responsiveness can be applied to support new product launch. The expectation is that launch firms will achieve superior results by developing flexible, responsive logistics and supply chain competencies that enable quick replenishment as compared to continuing the practice of driving anticipatory inventory deployment based on forecast.

Figure 3 presents a conceptual model of new product lean launch based on the principles of response-based logistics. Early stages are the same as in the traditional new product development process. A number of potential products are conceptualized, working models are developed, and market-testing input is utilized. In lean launch, however, it may not be necessary to withhold market introduction of product variations that are pre-judged to have promising potential for technical success but are uncertain in terms of financial expectations. A range of product variations can be launched simultaneously using time and form postponement. A lean launch strategy may even be orchestrated to introduce different variants to different market segments to test customer acceptability. Initial market reaction can be closely tracked with products being modified to finalize product differentiation based on market acceptance.

In a lean launch, principles of time and form postponement supported by agile supply and manufacturing operations enable two types of flexibility. Time postponement provides inventory-positioning flexibility by alleviating the need for forward deployment of inventory to cover total forecasted sales. Positioning flexibility allows firms to strategically position only limited inventory in the market and selectively replenish stock based on closely monitored sales information. Benefits from time postponement may be realized regardless of whether one or multiple new product variants are launched.

Form postponement provides product variation flexibility by alleviating the need to lock in feature design prior to gaining some understanding of a product’s market appeal. Application of form postponement can minimize risk by delaying assembly, packaging, labeling, and/or manufacturing activities until inventory replenishment is required. Demand variations from forecasted volumes for each product variant can be

![Figure 3. New product development process with lean launch.](image)
accommodated without the out-of-stock or overstock risk associated with traditional anticipatory launch strategies. Benefits from form postponement become significant when introducing multiple product variants.

A response-based strategy requires real-time information support. Electronic data interchange (EDI) is most commonly used to achieve such information exchange. When EDI implementation is cost prohibitive or unavailable, the Internet may offer an economically feasible way to exchange information [28]. Both EDI and the Internet allow businesses to quantify sales, define requirements, and trigger production and inventory replenishment 24 hours a day, 7 days a week. Rather than relying on forecast sales, inventory replenishments are driven by precise sales information regarding specific stock items in the market.

Illustrations of Response-Based Logistics

Innovative firms have utilized the principles of response-based logistics to customize product and service offerings without increasing manufacturing capacity or stock levels. The following examples illustrate how these principles have been applied in two diverse industries.

Computer Industry Illustration

Dell Computer’s approach to manufacturing and distribution has become the PC industry source model. Dell assembles computer systems as end consumers order them, thus reducing or eliminating anticipatory inventory commitment. As a direct marketer Dell uses no resellers. In contrast, most PC vendors build, test, package, and ship systems to resellers. The reseller holds products in inventory in anticipation of customer purchase. Historically, that stocking period averages 6 to 8 weeks. At the time of sale, the system is opened and modified to meet the purchaser’s specification [31].

Dell takes a very different approach to marketing its product. Dell’s strategy has been to focus almost exclusively on corporate customers. In contrast, most of their competitors have committed substantial resources to reaching consumers through conventional retail distribution. Dell also developed flexible manufacturing techniques that allow the company to virtually build computers to order [39]. To support this made-to-order strategy they run a lean manufacturing operation. By working closely with suppliers, component and material inventories are minimized. The close relationships and support of suppliers have allowed Dell to operate with nearly no work-in-process inventory. In fact, Dell averages less than 1 day’s inventory and component parts stock supply. They “pull” parts from suppliers just as they are needed for production [33]. Fax or phone messages with replenishment requirements are forwarded to suppliers based on actual orders.

Building systems to order means there is no finished inventory in the channel to manage. Transitioning from a finished-goods inventory model to a build-to-order with channel-assisted computer system configuration is now becoming the industry model. IBM, Hewlett-Packard (HP), Compaq, Gateway 2000, and other competitors in the PC industry are moving to emulate Dell’s direct sales model [31]. For example, Compaq’s new build-to-order manufacturing strategy is expected to dramatically reduce the time it takes the company to deliver product to corporate clients [35]. Compaq believes the new approach will provide efficiency through the use of a direct channel and will allow flexibility. By postponing build to stock and moving final assembly forward in the channel, Compaq hopes to avoid problems associated with forecasting demand and holding extensive inventories. HP is working with its resellers to set up a channel assembly program. The intent is to leave assembly in the hands of resellers so that HP has no finished goods inventory. IBM also has a channel assembly program in place [24]. Gateway 2000 is developing a program that allows components to be merged while in transit. Transportation carriers complete the merging prior to final delivery. All of these examples are forms of response-based logistics based on postponement principles. In a sense, they are also lean launch formats for new products.

Apparel Industry Illustration

Well-known apparel manufacturer Benetton has relied heavily on information support capabilities and the principle of postponement to enhance competitiveness [11,41]. Benetton’s agents in various countries utilize EDI to transmit orders to Italy on a daily basis. Based on this market information, Benetton is able to precisely track sales and react to demand by manufacturing only those garment styles, colors, and sizes being sold [22].

The key to Benetton’s success is their use of market information to drive manufacturing. In effect, the fac-
tory is directly linked to customers. Computer-aided design and computer-aided manufacturing have made their manufacturing operation fast and flexible. From the time a garment is designed to when it is actually manufactured can take as little as a few hours. State-of-the-art software allows designs to be created in-house and be quickly fed to computer-controlled garment cutters and knitting machines.

The implementation of market-paced dyeing of fabric and garments provides an excellent example of form postponement. Traditionally, manufacturing of clothing starts with dyeing of the yarn, followed by knitting into garments. The traditional anticipatory process had the potential to result in excess inventories of unpopular colors while increasing risk of out-of-stocks on popular colors. Because of the short cycle associated with seasonal clothing sales, it is difficult to restock retailers with the right color and size assortment. The traditional approach to anticipatory deployment historically resulted in lost sales opportunities or overstocks, which required extensive markdown. Benetton’s postponement of garment dyeing and demand-based inventory replenishment has improved market responsiveness. They manufacture garments from bleached yarn and delay dyeing until market information on color preferences is available through their EDI linkages with market-based agents.

Benetton’s sophisticated manufacturing system is supplemented with a highly responsive logistics system. Their distribution center is highly mechanized. To the largest extent possible, all work processes are standardized. For example, garments are packed in one of two standard sized boxes; barcoding and pre-addressed customer labels are utilized to speed processing. To facilitate logistics, Benetton entered into a joint venture with a service company to manage international forwarding and customs clearance. EDI technology is used to transmit documentation before actual shipments arrive at entry ports, thus facilitating speedy clearance through customs and routing on to retail outlets. The new system resulted in a 55% reduction in physical distribution costs and a reduction in lead times to U.S. markets from 22 days to 7 days [22].

The Limited is another apparel firm that has capitalized on the ability to respond to emerging market needs by minimizing new product time to market. The Limited specializes in the design and release of new fashion ideas from around the world through a computer-linked global supply chain. Teams of scouts send images of hot fashion trends to corporate headquarters in Columbus, Ohio, where computer-aided design is used to bring the cut and color of the design in line with North American fashion preferences. These designs then are transmitted electronically to suppliers in Asia, where agile manufacturing techniques enable rapid production of small quantities in assorted colors and sizes. Finished goods are consolidated in Hong Kong and air freighted directly to a central distribution center in Columbus, where labeling and pricing for specific North American retail outlets are accomplished. The goods arrive on retail shelves in the next 2 to 3 days. The entire process takes approximately 3 weeks from new product design to in-store display as compared to the nearly 9 months for an average department store operating under traditional anticipatory principles. If the new line fails to sell, The Limited has only committed resources to the initial pilot stock. If it takes off, agile suppliers are standing by to produce more. Similarly, if one variant (color) sells better than others do, the supply chain is geared to support those sales [16].

Because of the extremely short product/fashion life cycles, concentrated selling seasons, and generally erratic nature of the apparel industry demand, Benetton and The Limited must constantly deal with new product introductions. As illustrated, they have effectively used a combination of postponement and response-based logistics to meet this challenge.

**Tactical and Strategic Implications of Lean Launch Strategies**

The preceding illustrations highlight examples of how risks associated with product assortment may be reduced using response-based logistics. Lean launch logic applied to new product logistics has the potential to reduce financial risk and increase market relevancy. Figure 4 presents a detailed portrayal of new product lean launch and inventory replenishment.

Response-based logistics systems provide flexibility that enables better management of inventory levels. Improved replenishment times and in-stock availability of products from a centralized inventory allows managers to rapidly react to actual demand. Information systems that provide real-time sales data facilitate the rationalization of supply with demand. Minimizing inventory deployment during new product introduction lowers startup costs and reduces the sales threshold required to attain profitability. A new product may more rapidly achieve success because lower sales volumes may recoup startup costs. In the case of an
outright product failure, lean launch results in lessened inventory exposure.

Gaining lean launch-related benefits requires close coordination among supply chain participants. New product introductions must be accomplished within time and resource constraints. In many situations, it may not be feasible to simultaneously launch a product nationwide. Regional rollouts and introductions are common. Introducing a product variant through limited retail channels or even through selected retail accounts is an alternative to nationwide launch. For example, Wal-Mart, Kmart, and Target dominate the mass merchandiser market. Circuit City and Best Buy account for nearly two-thirds of the consumer electronics sales [3]. In the retail food industry, the top 20 retailers account for 70% of all sales [48]. Limiting initial market introduction to mega-retailers that are willing to collaborate in launch planning may reduce risk and provide the information necessary to facilitate a lean launch. Rollout in selected markets with very large accounts offers the additional advantage of providing an early read on a product’s success.

Figure 5 presents a lean launch strategy. The ability to postpone initial inventory deployment allows market success to drive operational support. Such response-based logistics increases the chance of financial success and helps contain risk independent of the degree of market success. In Case 1, lean launch enhances successful introduction by allowing greater flexibility in product variant selection while minimizing out-of-stock potential. Lean launch also can cut losses in product launch failures by reducing launch inventory exposure (Case 2). Finally, lean launch can improve chances of new product success by helping limited volume technical successes achieve profitability.

Further research is needed to provide support for the proposed benefits associated with lean launch strategies. Empirical testing in a range of industries and product types is required. For example, new product launches of non-durable consumer products (clothing, food items, etc.) is considerably different from launches involving more expensive, durable goods such as appliances. Do the principles of lean launch

1. Plan lean and neutral inventory requirements for product selected variants.
2. Achieve system flexibility and responsiveness to demand through agile supply and manufacturing and form (labeling, packaging, assembly and manufacturing) and time postponement supported by real time information.
3. Target replenishment of successful variants/segments based on Point-of-Sale data transmitted via EDI/Internet communications.
4. Focus in-stock position to support product successes (Case 1), reduce stock of product failures (Case 2), enable managers to better manage start-up costs to enable partial or niche successes (Case 3) to achieve meaningful yield wherein sales cover overhead and increasingly contribute to profit.

Figure 5. Potential results of new product lean launch.
apply equally to durable versus non-durable goods? Also, identification of differences in lean launch effects and application for discontinuous or really new products versus continuous or incremental new products are needed.

A starting point would be to develop case histories of traditional and non-traditional product launches. Few, if any, organizations are using full-scale lean launch approaches. What is likely to be revealed, therefore, is a continuum of new product launch strategies ranging from total forward deployment of anticipated inventory needs to variations and modifications that approach lean launch. Review of empirical data focusing on the success of various strategic approaches can identify primary determinants of success to this point. Greater insight, however, can be gained from tracking new product introductions that embrace postponement and response-based logistics as part of an overall supply chain strategy in order to achieve lean launches.

References