
Learning From Toys:

LESSONS IN MANAGING SUPPLY
CHAIN RISK FROM THE TOY INDUSTRY

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California Management Review Reprint Series

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CMR, Volume 43, Number 3, Spring 2001

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Think of an industry where time to market and product turnover are vital; where most products have a very short life and are sold in brief, well-defined selling seasons; and where few products last for two seasons and many experience significant markdowns at the end of product life. Finally, add the fact that much of the manufacturing is in Southeast Asia, with long transit times and information lags between manufacturing and the target markets in Europe and North America. While these features could describe many high-tech products or fashion apparel, the subject here is toys.

Toys are one of the world's oldest consumer products. Over the past four decades, the toy industry has steadily matured from a cottage industry into a global market of over \$50 billion. Excitement over *Star Wars* and *Pokemon* along with good showings from longtime favorites like *Barbie* helped the industry beat its typical 5% growth rate to propel 1999 U.S. sales well past \$22 billion.¹ Yet with this relatively stable growth, investors know that the industry is far from tranquil.² A year after their big success, action figures from *Star Wars* litter the bargain shelves of discount retailers and *Pokemon* struggles to hold children's imaginations. In their place, razor scooters and video games fill the 2001 must-have lists of parents and children—this is life in the toy business. Key features that have long characterized the toy business are its rapid change and uncertainty. Demand for fad-driven products can move from tepid to boiling overnight and then suddenly evaporate as the next hot product sweeps the market. Constant product innovation, short life cycles, and high cannibalization rates are typical. Supply chains that span the globe and include many emerging countries add currency and political risk that can disrupt supply and change cost structures with little notice. If these risks were not enough, sensitive product safety issues send many industry CEOs to bed with burning stomachs.

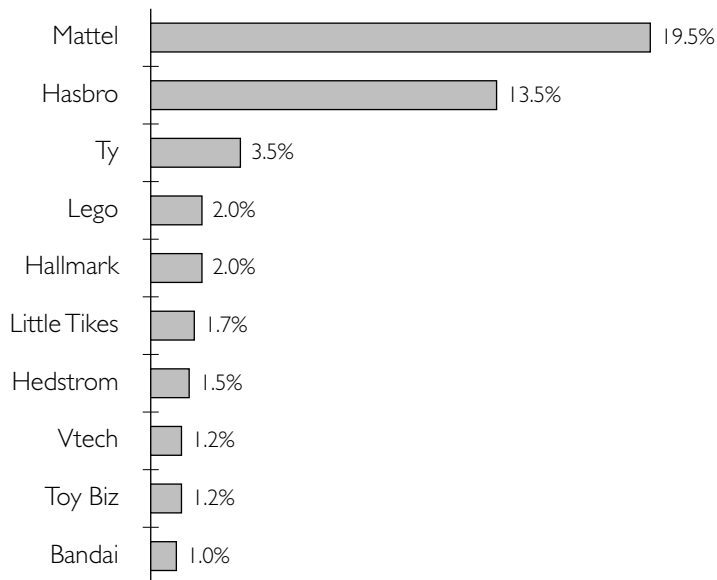
Confronted by a world of risk, some toy makers have evolved and thrived, bringing joy to the world's children while making handsome returns. Other not-so-fortunate companies have watched their stock suddenly plummet, have gone bankrupt, or have been acquired shortly after a big success turned to failure. For industries that face similar risks, there are lessons to be learned from toys. I have spent much of my career working on supply chain problems faced by high tech companies. Almost by mistake, I stumbled into the toy industry five years ago and found some striking parallels between laptops and Furby's; printers and Barbies; Zip Drives and Hot Wheels. I quickly realized that managers in many industries could learn *again* from toys.

Managing the cash, material, and information flows in any supply chain with short-lived products is challenging.³ For example, personal computers decline in value from the day they leave the factory. Fad-sensitive fashion apparel reaps high margins but regularly experiences significant markdowns.⁴ Toys also experience significant markdowns when left on the shelf. However, in the toy industry, oversupply not only leads to markdowns and write-offs, but oversupply itself can also kill demand for fad-sensitive products. Scarcity can be a powerful selling feature during the must-have Christmas season, yet large-scale shortages mean missed opportunity. With long product lead times, inventories for peak seasons are a necessity. However, with those inventories comes risk. Making supply just meet demand while dodging financial risks of global supply chains is an ongoing feat of careful management.

As shown in study after study of short-life products, managing the variability of product demand often represents the biggest opportunity for supply chain improvement.⁵ Not surprisingly, toy makers have spent decades honing their skills on managing demand. However, during that same time period, the challenges of managing supply increased as domestic production of toys in Europe and the U.S. moved swiftly off-shore to low wage rate countries. Thus, toy makers learned that managing supply required new approaches as well. There are two central challenges: *managing supply* and *managing demand*.

Toy Industry

The toy industry faces many of the ailments found in any maturing industry. Only 2% of the world's children reside in the U.S., yet those kids consume nearly half of the world's toys. While adults make the bulk of toy purchases, fickle and changing children are the toy industry's primary consumer. Throughout the western world, demographic changes over the 1990s have not been encouraging for toy manufacturers. In the U.S., the Census Bureau forecasts show that the size of the industry's core group—children 14 years old or younger—will only grow by 3.5% from 1995 to 2010. In much of Northern Europe, the number of children is shrinking. Fortunately, kids' purchasing power is growing. A 1996 study showed that U.S. children between the ages of 5 and 14 spent \$27 billion and directly influenced spending of \$117 billion.⁶

EXHIBIT I. Top Ten Manufacturers by 1998 \$ Share

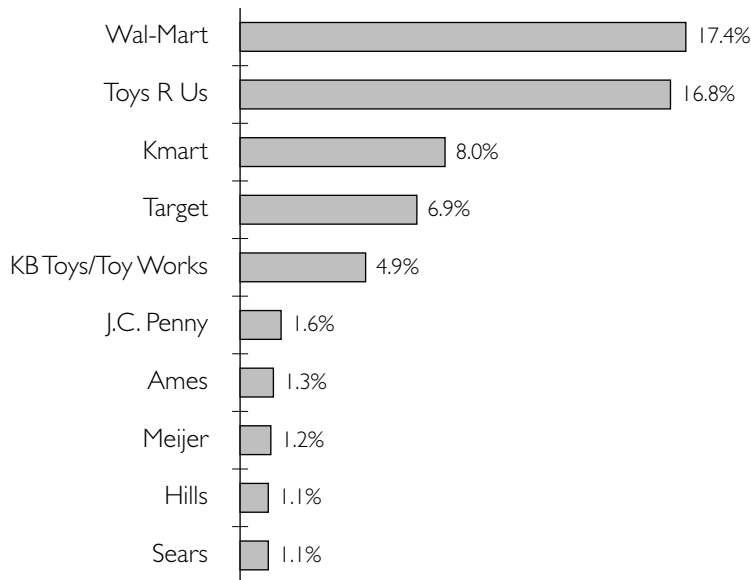
Source: E. Roth, *The NPD Group*, 1999 TMA Summer Conference.

Recent estimates indicate that kids' personal income will grow to \$67 billion by 2001, and they will influence \$144 billion in spending. This rise has been attributed to increasing disposable income in the average U.S. household and the fact that nearly 15% of toy sales are funded by grandparents and other adults.

While slow demand growth is one sign of a maturing industry, concentration of manufacturers is another clear sign. In 1984, the two industry leaders accounted for 21% of U.S. retail toy sales. Fifteen years later, Mattel and Hasbro own over 33% of the market with the next largest player controlling only 3%. As the toy industry has matured, relentless market dynamics have slowly created a polarized industry. At one end of the market, two large firms manage a collection of familiar brands that dominate the industry. At the other end of the spectrum, a host of small toy companies, whose success is typically tied to a single unique toy idea or theme, drive product innovation and diversification (see Exhibit 1). Those small companies that have been successful are steadily gobbled up by the market leaders. In the last five years alone Hasbro completed deals with Tiger Electronics (maker of Furby), Galoob (of Star Wars fame), Oddzoo and Cap Toys (makers of Koosh balls and interactive toy candy) and game makers Atari and Microprose, while Mattel moved (disastrously) into software with the acquisition of The Learning Company and Purple Moon, along with long-time doll maker the Pleasant Company and Tyco (maker of Matchbox cars).

Many of the trends in the industry favor the big players. They benefit from economies of scale, brand recognition, and the resources necessary to secure licensing agreements. The minor players must compete on new product development, hoping to stumble upon a hit. Smaller companies typically have higher manufacturing costs and struggle to bring their ideas to market. They lack the clout to secure shelf space and to market their products effectively through mainstream channels. Often they are forced to sell through independent retail stores rather than large, highly visible chains. Without the marketing leverage of a resource rich company, the smaller firms have only a slim chance of making it big. However, in an industry with rapid change and fickle customer preferences, small companies often have speed advantages that can make the difference between bankruptcy and a hit product. Brand share has seldom determined consumer preference in the toy industry, especially when the consumer is a 5-year-old child. Small companies can make a big splash with a single hot product and that lure keeps entrepreneurs coming back. For example, few would have predicted blockbuster sensations like Ty's Beanie Babies or Larami's Super Soakers. Nevertheless, the reality of a polarized industry dictates much of the competitive behavior.

During the same fifteen-year period of steady consolidation for manufacturers, change was also occurring in distribution. Like many industries, changes in the retail channel have redefined the toy supply chain. In the past fifteen years, department stores have lost 16 market share points largely to discounters and national toy chains. In 1999, over 40% of all toys sold in the U.S. were sold through discount stores. Wal-Mart alone sold over 17%, surpassing national toy chain Toys "R" Us to become the market leader (Exhibit 2). The shifting channel structure and associated market power also favors the industry leaders. Gaining shelf space at Wal-Mart requires more than a good toy concept. Likewise, independent toy retailers have dwindled. In their place, national specialty toy chains have blossomed throughout the United States. Retailers like Zany Brainy, Noodle Kidoodle, and Learning Express offer educational and specialty toys not shelved by the mass retailers. They also offer space to risky new products. Finally, e-tailing is showing great promise for toys—both in reducing the hassle of traditional shopping and offering the possibility of finding specialty toys. The web has also opened direct access to customers for companies too small to gain shelf space for their products. Yet selling toys on the web has proved to be more difficult than many e-marketers had hoped. Upstarts, like now defunct eToys, frightened giant Toys "R" Us into embarrassing defensive actions after e-fulfillment flops in the 1998 and 1999 holiday seasons. Now with many of dot.coms gone, even the biggest players, Toys "R" Us and Amazon, have been forced together to find success in the e-channel.

EXHIBIT 2. Top Ten Retailers by 1998 \$ Share

Source: E. Roth, *The NPD Group*, 1999 TMA Summer Conference.

Managing Risk

While few of the risks faced by toy makers are unique to the industry, the combination of risks is daunting. When viewed as a whole, the risks fall into two major categories. There are risks associated with *product demand* including seasonality, volatility of fads, new product adoptions, and short product life. The public's perception of safety and toy company ethics (such as the use of child labor) are also elements of demand risk (not to mention the risk of litigation). Then there are the risks of *product supply* such as manufacturing and logistics capacity during crunch periods. With supply chains that extend into Asia, there are also substantial currency and political risks that can change product cost or disrupt supply. Moreover, the long lead times between demand and supply exacerbate all of the risks (see Exhibit 3).

Managing Demand

Two key features that define many of the challenges in the toy industry are the seasonal demand and short product life. Toy sales and volumes grow exponentially the last few days before Christmas. Industry wide, November and December alone represent nearly 45% of toy sales (Exhibit 4) with the last week before Christmas driving nearly half of those sales. For many companies, these two months can represent more than 70% of annual sales. Shipments from

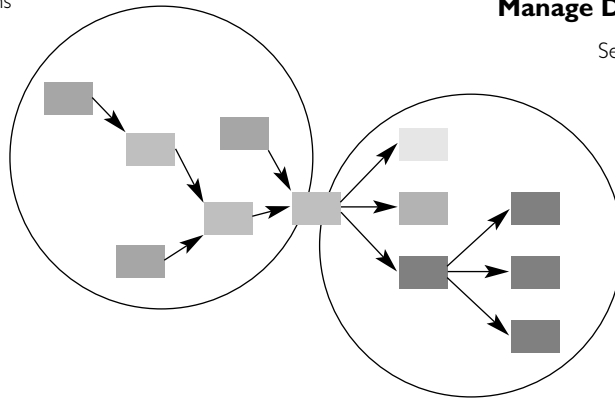
EXHIBIT 3. Managing Supply Chain Risks

Manage Supply Risks

- Capacity Limitations
- Currency Fluctuations
- Supply Disruptions

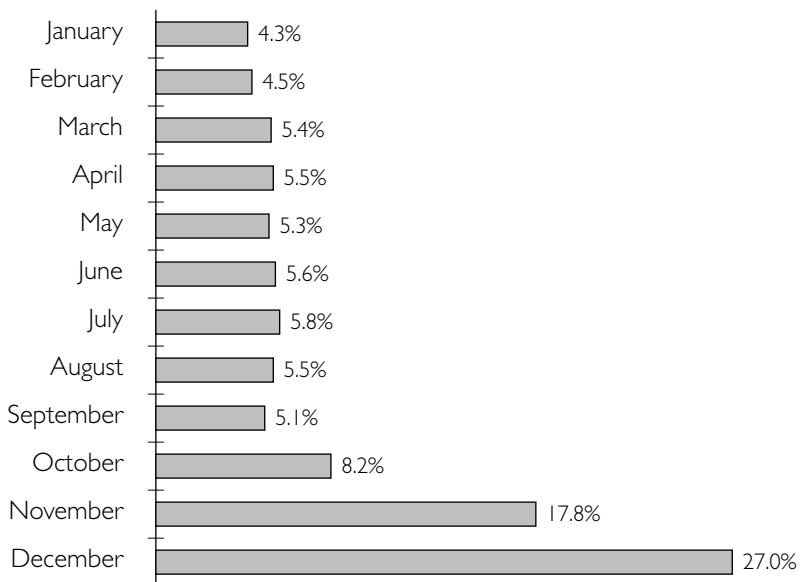
Manage Demand Risks

- Seasonal Imbalances
- Volatility of Fads
- New Product



Note: Managing supply chain risks requires focus on managing supply and demand.

EXHIBIT 4. Dollar Sales for Traditional Toys



Source: E. Roth, *The NPD Group*, 1999 TMA Summer Conference.

manufacturers to retailers follow the same lop-sided activity. As retailers have reduced inventories in their own supply chains, fourth quarter shipments have steadily grown over the past ten years. The end result for toy makers is exacerbated service level requirements at a point in time when all available distribution resources are overloaded.

Strong seasonal demand is only one component of the toy makers' challenge. While thousands of toys are brought to market every year, only a small fraction of them succeed. Even fewer have what it takes to last longer than one or two years. Classics, such as Hasbro's Mr. Potato Head or Mattel's Barbie are examples of products that have stood the test of time. For Mattel, 70% of sales are generated from new products. As John Handy, vice president of product design at Mattel Inc., observed, "We're just one good idea away from going out of business."⁷

There are several ways in which players in the toy industry choose to manage demand uncertainty and risks.

Reducing Seasonality and New Product Adoption Risk through Licensing

In 1955, Mattel's founders, Elliot and Ruth Handler, made a gamble that forever changed the industry. In what seemed like a risky investment at the time, they signed a 52-week contract with ABC Television to sponsor a 15-minute segment of Walt Disney's Mickey Mouse Club at a cost of \$500,000—a sum equal to Mattel's net worth. Prior advertising had occurred only around the holiday season. The popular daily kids show made the Mattel brand well known among the viewing audience, translating quickly into *steady* sales throughout the year. The success of the Handlers pact with kids TV started a marketing revolution in the toy industry and made advertising a key tool for controlling demand volatility. With enough advertising, toy makers found that inventory of any product could be liquidated. While advertising has remained a stalwart tool in managing demand, recent years have clouded the formula. Children, and for that matter adults, are harder to find on the airwaves. With the proliferation of cable channels along with competition from other entertainment options like videos or the Internet, network TV no longer delivers the audience that Saturday morning cartoons did in the 1970s. More importantly, the cost of mass promotions and the public's wariness of unrestrained advertising to children became clear drawbacks to brash campaigns.

With the 1974 agreement by the National Association of Broadcasters to reduce commercial time on children's programs, toy makers were forced to seek alternative methods for assuring that customers would be familiar with their products. To build on familiarity of other products or forms of entertainment, toy makers began experimenting in earnest with Hollywood partnerships. Licensing agreements—with anything from movies to sports—proved to be an even more effective tool to ensure product performance. Movie and toy releases could be coordinated to deliver consistent, off-peak demand. Toy makers found that licensed properties were particularly effective because children established

play patterns for the toys long before the product was ever purchased. Best of all, Hollywood and the toy makers could carefully time product releases around big events, like the release of *Star Wars: Episode 1*, to ensure maximum impact.⁸ For toy makers, this timing often translated into demand during traditionally slow selling months.

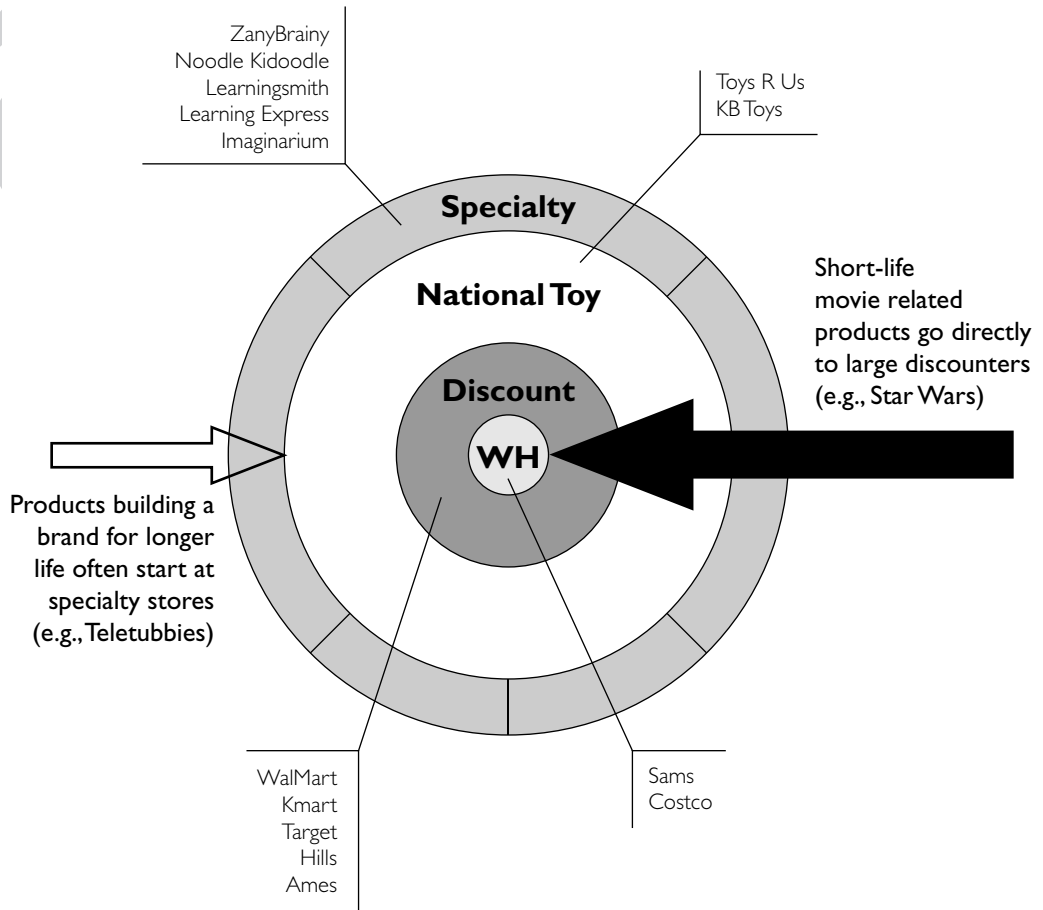
Because licensed products based on movies typically produce intense sales for short periods, timing is everything.⁹ Being “license late” is one of the most feared mistakes.¹⁰ Merchandise that flies off the shelves during the first few weeks of a new movie release suddenly flattens out and then completely stagnates when the movie reaches bargain theaters. Inventory left on the shelves after the movie stops playing, often can’t be moved even with significant discounts. Sometimes inventory can be diverted to other regions of the world where the movie is still playing. Otherwise retailers and manufacturers stuck with excess inventory can only hope for the video release to create one last chance to move related toys.

For mass release of movie tie-in products, supply chain execution is critically important. Production must be completed and the channel filled and ready when the movie hits the theaters. Since production occurs in one large push, manufacturing must be prepared for high volumes for a short period. Since there is rarely time for replenishing supply during the selling period, up-front inventory planning must be flawless. Maximizing sales means finding every available channel in advance and loading it for a consumer strike. While large-scale stockouts mean missed opportunity, clearing the shelves before the interest in the movie fades is desirable since rumors of shortages can often boost sales. Most importantly, placing products in mass retail channels like WalMart is the only way to reach many customers in a short time period.

The release of *Star Wars: Episode 1* is an excellent case study in license timing. While toy makers were hoping for years of sales from the Star Wars license, its release was a near flawless execution of a mass, short-life product. The primary license holder, Hasbro and its subsidiary Galoob, carefully controlled every aspect of the product release. Starting with limited early viewing of the products to increase public curiosity, industry reporters were allowed to see, but not photograph, selected products only a few weeks before the release. The drama reached a crescendo when WalMart and Toys “R” Us opened at midnight two weeks before the film release. First day sales exploded and hung on to deliver a 53% increase in quarterly net revenues with a six-fold increase in net earnings.¹¹ Best of all, the May event was well placed during a slow time for toy sales.

Licensing entertainment-related properties successfully creates demand for many consumer products from electronics to apparel and groceries. As with toys, licensing reduces new product introduction risk and can alleviate seasonal slumps. However, in every case, timing is critical—being license late is disastrous.

EXHIBIT 5. Matching Channel Release Strategies to the Product Life



Note: Short-life products require intensive distribution through “big five” discounters while longer life products benefit from a slower, structured release starting with specialty stores and slowly building into national toy chains and discounters.

Increase Product Life and Lifetime Sales by Matching Product and Channel Strategies

While licensed products for short-lived selling opportunities like movies often follow a saturation strategy, licenses based on longer-lived kid’s television series are managed quite differently (Exhibit 5). For long-time hit shows like “Sesame Street,” product sales and brand value were built slowly and lasted for years. For such series, too much merchandise too early can often spell doom. Rag Doll productions, the British creator of the popular preschool series “Teletubbies,” learned this lesson well. As the kids show gained hit status in England, Rag Doll rushed to sign up licensers to create a multitude of products.¹² With little control of quality and channel distribution, the products turned up every-

where creating an initial splash, but quickly overwhelming the markets. Soon quality issues and product discounts eroded the value of the brand and sales plummeted.

Vowing not to make a similar mistake in the U.S., Rag Doll and its U.S. agent, itsy bitsy Entertainment, planned a new strategy. Rather than flood the market early with releases to Wal-Mart and other discounters, they licensed only a few products and contained their distribution to a smaller set of specialty stores, such as The Learning Smith and Zany Brainy, known for high-quality, education-oriented products. As demand for the products grew throughout 1998-1999, they slowly added products and channels. This strategy allowed the brand to grow steadily in value with the goal of producing years of sales. Similar channel strategies have been very successful for shoemakers such as Nike (start at Nike Town and move slowly toward dicounters) and in fashion apparel.

Building such long-standing brand products requires a different supply chain strategy. With the gradual ramp-up of volume, developing manufacturing partners who can deliver quality products over a longer time horizon is important. With more time available, decisions can be data-driven and distribution channels can be expanded slowly to fulfill increasing demand. New and replacement products can be released slowly with the goal of maintaining shelf space for the category and stable visibility with the consumer.

Reduce Seasonality by Increasing Number of Channels

Another strategy for building off-season demand and reducing new product adoption risk is to develop alternative channels. From Avon hawking Barbie dolls to gas stations selling toy cars and trucks, the toy industry has found many avenues for putting their product in front of the customer. Many of these alternative channels create demand in times when few toys are sold. For example, recent McDonalds' promotions based on movies, sports heroes, or toy fads like Ty's Beanie Babies, create demand in spring and summer months when toy sales are slow. Since toys are often impulse purchases, finding creative ways to put merchandise in arm's-reach of the customer is the only way to generate off-season demand. Like Coke and Pepsi's strategy of always being near thirst, toys find their way into customer view at checkouts, at entertainment venues, and in restaurants. Often these alternative channels not only sell specialty or limited release toys, but also promote other toys sold through traditional channels. For example, McDonald's promotion of teenie-Beanie Babies not only helped McDonalds sell hamburgers, but also promoted Ty's original Beanie Baby products. With growing collector interest for many different toys, even nontraditional toy companies are tempted to join in the business. For example, Chevron has found a strong and growing market niche for its plastic toy cars. Originally intended to help drive traffic to its service stations and sell more gasoline, the toy cars themselves have become a profitable business venture.

Smoothing Demand and Building Longer Life Products through Variety Strategies

Novelty and toys have always been linked in the mind of the consumer, yet some industry watchers would argue that there are few truly new toys. In fact, many new toys are simply new versions of tried and true themes.¹³ Many more are merely extensions of current products. Toy makers have learned that introducing a new product based on a successful toy platform is one of the most reliable techniques to reduce risk. Mattel used this approach to build Barbie into a billion-dollar product line. Again, by building on familiarity, extensions are a natural way to develop evergreen brands that deliver growth with less risk. Companies like LEGO have been very successful in introducing many different products—all based on the same concept. Whether it is a submarine, airplane, or licensed Star Wars action set, the box contains LEGO building bricks that have entertained kids for generations. On the other hand, Larami created a category of its own by reinventing the old concept of the squirt gun. With a small technological improvement, Super Soakers were an instant smash hit from their introduction and Larami quickly built the product into a \$200M business through a rapid series of product extensions.¹⁴

Product extensions reduce many risks from customer acceptance of a new product to supply chain planning. With established channels and product awareness, gaining shelf space typically requires less effort than selling a completely new idea. In fact, extensions are often the key to building and holding shelf space at coveted discounters like WalMart and Toys “R” Us. Product extensions can leverage valuable market research from earlier products, making forecasting and inventory planning less risky. The effective distribution channels are known and understood as are the manufacturing skills needed to bring the product to life. With so many benefits, the biggest risk of extensions is being lulled into a false sense of security that variety can drive limitless growth.

The most interesting and successful variety strategy is the rolling mix. The basic idea of the rolling mix is to increase product variety by continually introducing slightly different versions of the same product. Mattel was one of many companies to see the value of the rolling mix. Prior to 1994, sales of die-cast cars, including Mattel’s Hot Wheels, were relatively flat. However, demand for individual styles was hard to predict and highly variable. Starting in 1994 Mattel incorporated a new marketing strategy to sell die-cast cars. Mattel determined that variety was the key driver of sales. If customers saw new products every time they went in the store, they were more likely to buy. The company implemented a rolling mix strategy that changed the physical 72-car assortment mix by 7-8% every two weeks. Over the course of a year, the product line changed over two times entirely. This strategy developed an organized, non-reactionary method of new product introduction and old product obsolescence. By rolling the mix, Mattel was able to market a much broader range of SKUs without requiring any additional retail shelf space. The strategy created urgency among consumers to buy the products while they were available. Over the

course of the next three years, demand for Hot Wheels skyrocketed while the demand for many competitors, such as Matchbox, remained flat. The retailers loved the rolling mix because it increased sales and customer traffic without requiring more shelf space.

Besides boosting sales, the approach provided many supply chain dividends. Through its rolling mix strategy, Mattel no longer had to rely on point-of-sale data to forecast market demand for replenishment of specific SKUs. Rather, they used the information to plan the changes to the mix. Products could be moved into and out of the mix based on current sales and historical performance of related styles. Since Mattel could assure its retailers that the mix would sell, the retailers' stocking problems were simplified to merely purchasing assortment packs and stocking the store shelves. Moving back the supply chain, distribution's job was also simplified since they no longer had to keep inventories of individual styles—the mix came prepackaged from the factory. Back at manufacturing, factories built around mass production had to learn how to produce a wider variety of products, but also benefited because the planned mix reduced last-minute production changes. Rather than constantly reacting to replenishment requests from marketing, mix strategies provided stability.¹⁵

Many other manufacturers have had similar success with the rolling mix. Possibly the most successful and visible products to benefit the mix strategy were Ty's Beanie Babies. The approach not only created a frenzied collector's market, but also nearly eliminated the need to forecast the performance of any particular style. Hasbro also used the mix strategy in its line of Star Wars action figures.¹⁶ By limiting the supply of certain figures, they created a white-hot market among collectors and kept consumers coming back to the stores. The recent Pokemon craze proved once again that variety and shortages build strong collector markets and generate seemingly insatiable demand. Shortages that a casual observer may view as marketing mistakes and lost opportunity actually boost overall demand and sales. In the end, managing supply for the rolling mix requires walking a fine line between large-scale shortages and saturation. Of course, not all toys are collectable or can benefit from many small extensions found in a rolling mix. In cases where customers expect and hope for enduring products, change can be alarming. For example, for classic games like Monopoly, customers may like small design changes, but expect the game rules and basic features to remain stable.

While rolling mix strategies may seem limited to toys, many other products have benefited from rapid release of product extensions. Obvious examples are stamps, sports apparel, and event-related merchandise. Even broader categories of fashion apparel and shoes benefit from rolling mix strategies in very much the same way as toys. However, even in cases where collector markets do not appear, ideas from the rolling mix can be successful. For example, while no one would collect personal computers, the consumer retail channels for PCs now operate much more like a rolling mix than a traditional replenishment supply chain. Most PCs destined for store shelves are made in one large production run

with no replenishment. For example, Hewlett-Packard's Home Products division makes many derivative products (configured for Walmart or Best Buy) that are sold in very brief bursts. HP produces a specific set of derivatives for three to four weeks, filling the channel with product, and then moves on to new configurations. There is little chance for retailers to replenish the same configuration. The key idea is a constant push of new products with very short lives. With technology moving quickly, consumers do not collect products but are induced to upgrade as they see their products aging. However, for some products, too much change can alarm customers and erode brand image. Durable products with long lives, like luxury cars or furniture, may never benefit from rolling mix strategies since customers value stability and hope to be able to buy matching or replacement products for years to come.

Managing Supply

Since WWII, toys have been the first step on the manufacturing ladder for many developing economies. Being easy to produce and with relative low quality requirements, toys were ideal products to chase cheap labor. First in Japan and then onto Hong Kong, Malaysia, Thailand, and China, toys closely followed manufacturing development in low wage rate countries. As manufacturing moved to Asia, toy companies quickly lost flexibility in managing supply. Production quantities had to be specified months before key holiday seasons. Long transit times, customs delays, quota restrictions, and communication barriers, have long made managing the supply of product flowing from Asia a challenge. With the demand risk exhibited by most products and the challenges of building operations in Asia, few makers could afford the gamble of dedicated plants. Thus outsourcing became another key to success.

Reducing Capacity Risks by Outsourcing and Building a Flexible Web of Partners

In the toy industry, both the smallest and largest companies employ outsourcing. For example, much of Hasbro's \$3 billion in sales are generated through products manufactured by contract partners, as are the products of Nashville-based Kidpower (whose sales are around \$30 million).¹⁷ In many cases, both Kidpower and Hasbro may share the same manufacturing partners. Outsourcing enables smaller companies to enter the toy business with little manufacturing experience or up-front investment. It provides larger companies with a way to manage a portfolio of unpredictable products. In a fashion-driven industry like toys, new ideas and the engineering necessary to bring them to life are the foundations of a firm's core competencies; the actual manufacturing function is often not. Toy companies view outsourcing as a strategic solution rather than as a defensive technique to fix problems.¹⁸ Strategic outsourcing emphasizes the importance of recognizing core competencies and preserving them. For example, while Hasbro outsources most of its production, it continues

to manufacture its board games because they are strategic, long-life products that enjoy relatively low demand volatility.¹⁹ Today, toy companies have enlarged the definition of outsourcing to include an emphasis on supplier relationships and, more importantly, on learning capabilities. Beyond outsourcing manufacturing, many toy companies also outsource much of the logistics services. By preparing retail ready products (assortments of products that can be placed quickly on the shelf) shipments from contract manufacturers are sent directly to retailers with little toy company involvement. Even those companies who manage their own distribution resources often turn to third-party providers to help manage the huge seasonal volumes.

The path to Asian outsourcing was a gradual one starting in the 1960s. Today there are 2000-3000 toy factories scattered throughout Southern China.²⁰ Most are financed and managed through Hong Kong business ventures. Toy makers have learned the importance of building a strong web of key vendors.²¹ For example, Hasbro maintains about 20 key vendors. By closely managing a select group, Hasbro fosters a strong, yet competitive set of vendors.

Mattel became serious about outsourcing a decade ago when it created a new division, Vendor Operations Hong Kong (VO).²² Today VO manages a network of about 30 suppliers, a handful of which are strategic partners accounting for most of the outsourced volume.²³ The suppliers (or vendors) are registered Hong Kong companies with manufacturing facilities and political expertise in Mainland China. For each new toy product, VO has a vendor selection process based on expected time to market, level of quality, and price. VO enables Mattel to produce a diverse line of toys with short product life cycles and to avoid traditional capital commitments required by internal manufacturing. By outsourcing, Mattel is able to capitalize on the varying expertise of its vendor network. Mattel is also able to use the vendors as overflow capacity, keeping its own plants at a full-level production while outsourcing the surplus, more volatile, demand.

Toy companies with retail sales under \$100 million (which represent over 90% of all toymakers) commonly use third-party manufacturing for all of their production. Companies with sales greater than \$100 million are more inclined to use a combination of wholly owned and outsourced manufacturing. In either case, toymakers pay a premium for the outsourcing service, but they avoid a multi-million dollar investment in plant, property, and equipment. Outsourcing offers “surge” capacity, the ability to quickly increase manufacturing capacity in response to market changes. It also pushes some of the risk of demand uncertainty, onto the supplier. This is critical when considering entry into the toy industry. Just-in-time inventory management by retailers continues to push manufacturers’ shipments later in the year.²⁴ The key strategic issue in outsourcing versus insourcing is whether a company can achieve a sustainable competitive advantage by performing an activity internally on a continuing basis.²⁵ By outsourcing products with high demand variability, toy marketers are able to optimize capabilities and bring more products to market.

On the other hand, the contract manufacturers diversify their risk across many products marketed by different toy companies. Thus for plush manufacturer Kam Toys, if Hasbro's stuffed Barney is losing sales, a strong performance by Kidpower's Little Bear can take up the slack. Large marketers like Hasbro are also careful to spread products around within their vendor pool, quickly replacing poor performers to keep the vendors strong. In another toy category, die-cast manufacturer Zindart produces small metal and plastic cars for many different marketers, including giants Mattel and Hasbro along with specialty marketer Ertl and retailer Hallmark. They also produce related zinc figurines that experience different demand trends. This diversification gives them the volume and stability to achieve economies of scale within their manufacturing core competence.

Using Information, Air Freight, and Warehouse Consolidation to Improve Supply/Demand Matching

Given the seasonal nature of toys and the long leadtimes for manufacturing, chasing the demand for hot products during the holiday season is difficult. Recent initiatives by toy retailers to reduce inventories and place just-in-time orders have pushed even more inventory risk back on manufacturers. Even compared with fashion apparel, the crunch period for toys is shorter and more intense. For example, ski ware manufacturer Sport Obermeyer uses the early demand information to improve their forecasts for hot products.²⁶ By producing low risk products first, they use the improved forecast to produce the riskiest products very close (or even during) the selling season. Unfortunately for toys, the key holiday selling season is so short that such supply/demand matching is more difficult. However, improvements in cash register scanner data and EDI links to large retailers have enhanced the electronic supply chain, giving toy makers more opportunities to respond to sudden changes in demand. For example, Mattel uses airfreight late in the fall season to rush hot Barbie styles to areas of shortage. Hasbro was successful in rushing hot Furby products into the stores when Thanksgiving demand was surprisingly strong. Also, with information about retail sales, product in transit can be diverted to Europe or the U.S. depending on inventory needs. To further benefit from last-minute diverting and risk pooling, Lego and Mattel have both reduced the number of warehouses they operate worldwide. For example, Mattel consolidated several European warehouses into one central warehouse. In cases where early fall demand starts to grow, manufacturers can use early sales indicators to quickly increase production volumes. For example, razor scooter popularity during the summer of 2000 provided Huffy and Razor the confidence to increase holiday product quantities.

Reducing Currency and Political Risk through Operational Hedging

The late 1990s have taught managers around the world about the benefits and risks of global supply chains. Enjoying the benefits of global markets and cheap manufacturing in less-developed countries, many companies were lulled into a false sense of global euphoria. They forgot that the environment could

change overnight. For those operating in Asia, the summer of 1997 was one few will forget. Starting with South Korea and spreading quickly throughout the region, plunging currencies and stockmarkets turned the fast-growing Asian economies on their ears. It happened so quickly that most companies were caught by surprise. Reflecting on the rapid changes, the *Economist* lamented,

If anybody had predicted a year ago that Indonesia, South Korea and Thailand would have to go cap in hand to the IMF, they would have been thought mad. This was, after all, the East Asia whose economic policies the international financial community was forever applauding: a world away from Latin America or Africa, where trouble was always on the cards.²⁷

By the end of the year, many of the East Asian currencies had been sharply devalued.

Rapid changes in financial markets present both opportunities and crises. For toy makers operating in the Asian region, the financial crisis dramatically changed the cost structure of their labor-intensive products (Exhibit 6). While cheaper labor might seem like something to celebrate, some toymakers found their supply chain partner failing and unable to pay debts for materials and equipment accumulated in now more expensive currencies.

To take advantage of a currency change or to avoid the latent risks of operating in volatile economies, smart toy makers operate and source in several different countries. By diverting the origin of their product they reduce their exposure to sudden changes. Moreover, they may be able to exploit currency changes by maintaining the flexibility to quickly move product sourcing.²⁸ For example, Mattel has operations in U.S., Mexico, China, Malaysia, Indonesia, Thailand, and India. Die-cast cars (Hot Wheels and Matchbox) alone are manufactured in China, Malaysia, Thailand, and India. Thus when Indonesia's political volatility slows production of Barbie dolls, volume can be moved to other countries. Again, building a strong, flexible web of internal and external sources reduces supply risk.

Summary

One need not look far to find lessons for products as diverse as high tech, consumer electronics, and apparel. With products in many industries becoming more fashion driven and experiencing the pain of short product life and seasonality, there are many lessons in managing demand and supply to be learned from toys (Exhibit 6). Strolling through the industrial parks of China, Malaysia, and Thailand one finds factories building Hotwheels cars next door to ones producing Zip drives, printers next to dolls, Furby's next to cell phones—all experiencing the benefits and risks of operating in low-wage countries. While Iomega and Hewlett-Packard may not find collectors hoarding their products, both companies are finding their products becoming more fashion sensitive; designs and colors more important than functionality; branding and image more important

EXHIBIT 8. Summary of Risk Management Lessons

Risk	Alternative Means of Managing Risk	Example
Product Demand		
Seasonal Imbalances	<ul style="list-style-type: none"> • Licensed Products • Alternative Channels • Develop Collector Market\ 	<ul style="list-style-type: none"> • Off-season events (movies and sports) • McDonalds spring promotion • Beanie Baby collectors buy year round
Fad Volatility	<ul style="list-style-type: none"> • Channel Release Strategies for Licensed Products • Shortage Strategies • Collector Markets 	<ul style="list-style-type: none"> • Controlling channels protects image (Beanie Babies in specialty stores) • Keep store inventories lean to prevent over saturation (e.g., Furby) • Matchbox collectors less likely to substitute for other die cast car offerings
New Product Adoption	<ul style="list-style-type: none"> • Match Channel and Product • Product Extensions and Branding • Licensing 	<ul style="list-style-type: none"> • Start long life products in specialty channel • Barbie extension is less risky than new doll • Awareness through movies (Star Wars)
Short Product Life	<ul style="list-style-type: none"> • Manage Product Variety with Rolling Mix 	<ul style="list-style-type: none"> • Building collector markets creates long-life brand
Product Supply		
Manufacturing Capacity	<ul style="list-style-type: none"> • Outsourcing Strategy • Combine Off-Setting Seasonal Products 	<ul style="list-style-type: none"> • Outsourcing improves economies of scale and asset utilization • Snow sleds and swimming pools
Logistics Capacity	<ul style="list-style-type: none"> • Consolidation • Supplemental Outsourcing • Electronic Supply Chain • Product Diversion • Channel Coordination • Retail Ready Products • Air Freight 	<ul style="list-style-type: none"> • Larger volumes create economies of scale • Surge capacity during peaks outsourced • Knowledge of channel inventory ensures product is supplied to those with true need • Moving excess products to alternative or overseas channels • Predistributed products reduces time to shelf • Expensive air freight used only for late replenishments
Currency Fluctuations	<ul style="list-style-type: none"> • Financial Hedging • Diversify Supply • Operational Hedging 	<ul style="list-style-type: none"> • Contracts in stable currency, forward contracts • Several suppliers in different countries • Several plants in different countries
Supply Disruptions from Political Issues	<ul style="list-style-type: none"> • Diversify Supply 	<ul style="list-style-type: none"> • Several suppliers/plants in different countries

than technological superiority. Marketers in diverse industries are looking to entertainment tie-ins to build awareness or reshape the image of their products. Furthermore, few consumer goods companies are finding that their products are experiencing longer life cycles. As life cycles shrink, new product introduction and rollover become an ongoing challenge.²⁹ Even for automakers, variety strategies that continually roll out new products may begin to look more like a rolling mix than the traditional product launch. For managers in these industries, and many others, lessons in managing *supply* and *demand* can be learned from toys.³⁰

Notes

1. Toy Manufacturers Association, Press Release, February 10, 2000.
2. "Mattel: Some (Re) Assembly Required," *Time*, October 25, 1999, pp. 58-59.
3. H. Lee and C. Billington, "Managing Supply Chain Inventory: Pitfalls and Opportunities," *Sloan Management Review*, 33/3 (Spring 1992): 65-73; M. Fisher, "What Is the Right Supply Chain for Your Product?" *Harvard Business Review*, 75/2 (March/April 1997): 105-116.
4. M.L. Fisher, A. Raman, and A. S. McClelland, "Rocket Science Retailing," *Harvard Business Review*, 78/4 (July/August 2000): 115-124.
5. T. Davis, "Effective Supply Chain Management," *Sloan Management Review*, 34/4 (Summer 1993): 35-46; M. Fisher, J. Hammond, W. Obermeyer, and A. Raman, "Making Supply Meet Demand in an Uncertain World," *Harvard Business Review*, 72/3 (May/June 1994): 83-93.
6. TMA-Toy Industry Factbook 1997-1998.
7. J. Brandt, *Industry Week*, April 21, 1997.
8. "More Toys, More Tech, Lots More Money," *USA Today*, May 3, 1999.
9. Interview, Maureen Taxter, VP of Licensing, Nickelodeon.
10. Interview, Lori Plager, Manager of Entertainment and Licensing, Mattel.
11. Hasbro 10-Q Filing Date: 8/11/99.
12. Interview, Janet Rummer, Ragdoll Productions.
13. Interview, Fern Mendelbaum, Founder, Sky Line Design.
14. "Toys: Kid's Weapon Has Developed into a \$215-million Business," *Los Angeles Times*, July 29, 1999.
15. Interview, Arun Kochar, VP Mattel Malaysia and Thailand.
16. Interview, Jim Harris, Sales Manger, Hasbro.
17. Interview, Randy Raggio, Director of Marketing KidPower.
18. R. Venkatesan, "Strategic Sourcing: To Make or Not to Make," *Harvard Business Review*, 70/6 (November/December 1992): 98-107.
19. Interview, John Chandler, VP Hasbro Games.
20. Interview, Harris Lee, President, Kam Toys.
21. J.H. Dyer, D.S. Cho, and W. Chu, "Strategic Supplier Segmentation: The Next "Best Practice" in Supply Chain Management," *California Management Review*, 40/2 (Winter 1998): 57-77.
22. Interview, Joe Gandolfo, President Worldwide Operations, Mattel.
23. Interview, Ron Montalto, VP Vendor Operation Asia, Mattel.
24. "The Rise of Jill Barad," *Business Week*, May 25, 1998.
25. J.B. Quinn and F. Hilmer, "Strategic Outsourcing," *Sloan Management Review*, 35/4 (Summer 1994): 43-55.
26. Fisher, Hammond, Obermeyer, and Raman, op. cit.
27. "Frozen Miracle," *Economist*, March 7, 1998.

28. M.A. Cohen and A. Huchzermeier, "Valuing Operational Flexibility Under Exchange Rate Uncertainty," *Operations Research*, 44 (1996): 100-113.
29. C. Billington, H.L. Lee, and C.S. Tang, "Successful Strategies for Product Rollovers," *Sloan Management Review*, 39/3 (Spring 1998): 23-30.
30. Special thanks to Tom Clock for research assistance.