

STANFORD

GRADUATE SCHOOL OF BUSINESS

GLOBAL SUPPLY CHAIN MANAGEMENT FORUM

CASE: GS-42
DATE: 3/18/2005

TOYOTA: DEMAND CHAIN MANAGEMENT

INTRODUCTION

The Toyota Motor Co. Ltd (Toyota) was first established in 1937 by Kiichiro Toyoda as a spin-off from Toyoda Automatic Loom Works, one of the world's leading manufacturers of weaving machinery. The Toyoda Automatic Loom Works was established by Japan's "King of Inventors," Sakichi Toyoda, who was Kiichiro's father. The seed-money for the development and test building of Toyota's first automobiles was obtained by selling to Platt Brothers (U.K.) the patent rights to one of Sakichi Toyoda's machines.

In 1950 the company experienced its one and only strike, from which both labor and management emerged firmly committed to the principles of mutual trust and dependence. This corporate philosophy continues to guide the company's growth, so while Toyota employees are unionized, the two parties maintain a good relationship. In fact, Toyota Motor Sales (TMS) U.S. uses the term "associates" in place of "employees," to emphasize the respect for individuals that the company champions.

In the late 1950s Toyota's production systems were improved, culminating in the establishment of the 'Toyota Production System' (TPS) by Taichi Ohno, a system that has become the basis for highly efficient "lean" manufacturing in industries worldwide. Based on the principles of Jidoka (automation with a stop system when the machine finds defects), Just-in-Time (through the tool of Kanban) and Kaizen (continuous improvement), the system is a major factor in the reduction of inventories and defects in the plants of Toyota and its suppliers, and it underpins all the company's operations across the world.

Toyota launched its first small car (Model SA) in 1947. Production of vehicles outside Japan began in 1959 at a small plant in Brazil, and continued with a growing network of overseas plants. Toyota believes in localizing its operations to provide customers with the products they need, wherever they need them. This philosophy builds mutually beneficial long-term relationships with local suppliers and helps the company fulfill its commitments to local labor.

This case was prepared by Hau Lee, Barchi Peleg and Seungjin Whang as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation. The authors gratefully acknowledge the support of Toyota in carrying out this study.

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As of March 2002, besides its own 12 plants and 11 manufacturing subsidiaries and affiliates in Japan, Toyota has 45 manufacturing companies in 26 countries and regions, which produce Lexus- and Toyota-brand vehicles and components (Exhibit 1), employs 264,100 people worldwide (on a consolidated basis), and markets vehicles in more than 160 countries and regions. Besides manufacturing, Toyota also has a global network of design, research and development facilities, embracing the three major car markets of Japan, North America and Europe.

By 2004, Toyota was the world's second largest manufacturer of automobiles, with combined sales of 6.78 million units in the 2003 calendar year (Exhibit 2), and by far the largest Japanese automotive manufacturer (Exhibit 3). Their target is to reach 15 percent market share worldwide by the 2010s, with an annual sales level of 9 million vehicles. Together with its subsidiaries, Toyota produces a full range of model offerings—from mini-vehicles to large trucks. Automotive business, including sales financing, accounts for more than 90 percent of the company's total sales, which came to a consolidated ¥15.5 trillion in the fiscal year to March 2003 (Exhibit 4). Toyota also has a growing portfolio of diversified operations, with ventures in telecommunications, prefabricated housing and leisure boats. Overseas, Toyota sold more vehicles than ever in North America, reaching 2.07 million units in 2003. European sales reached 834,700 units, also a record (see Exhibit 5).

DOMESTIC DISTRIBUTION

Toyota is Japan's market leader with 42.6 percent market share (excluding mini-vehicles) in 2003. It faces two archrivals—Nissan (market share 19.4 percent) and Honda (11.9 percent) (see Exhibit 6-7). Toyota is an independent company, not part of a business group (or *keiretsu*). This has led to a different company mission, as well as a different approach to channel strategy, compared with the other car manufacturers. For example, Toyota in Japan listens closely to the opinions of its dealers and offers a wider line of products in Japan, mostly building on orders from dealers.

Distribution Channels

In Japan, (as of May 2004) Toyota's sales and marketing work is divided into four distribution channels¹: Toyota (mostly high-end, large cars), Toyopet (medium size), Toyota Corolla (compact), and Netz Toyota (compact). Overall, Toyota offers about 60 car models, with each channel offering only 15-25 models. This way, each dealer can develop deep knowledge of all models he has for sale, and can make an effort to sell all car models assigned to him, rather than only the few most profitable ones. About 50 percent of car models are sold as exclusive models for a single channel. The channels and car models were introduced over time, as Toyota expanded the market by more granular segmentation. The Toyota dealers as a whole have approximately 5,000 outlets and 120,000 employees. Altogether, Toyota has 295 dealerships, each with an average of 16 to 17 outlets.

¹ A *channel* at Toyota means a dealer network that sells a certain set of car models. In that sense, it is similar to the *brand* (like Cadillac, Oldsmobile, etc) at General Motors, but the differences are that all channels share the same brand Toyota, and that some model offerings are overlapped at multiple channels. Toyota plans to sell the Lexus Brand in Japan in the summer of 2005.

In addition to the four major distribution channels, Toyota has two small channels: Volkswagen and Rental. The Volkswagen channel was set up by Toyota as part of the efforts by the Japanese government to show that the Japanese distribution market is not closed to foreign cars. Toyota handles the physical distribution and order management of Volkswagen to their dealers, acting like a distributor.

Toyota applies the “Toyota Way” to manage dealers, based on three basic principles:

1. Independence of dealers as outside investors: Dealers are free to make independent decisions, and Toyota can only help them to invest in the right things to improve. Such a strategy motivates dealers to be more proactive.
2. Winning jointly: Both the dealers and Toyota must prosper jointly.
3. Encouraging competition among the channels: Competition is a means to improve.

Toyota measures the performance of dealers periodically, using both a ranking system and a recognition system. The dimensions of evaluation include:

1. Sales of new and used cars (units and market share)
2. Sales from after-sales service (units and market share)
3. Customer satisfaction
4. Number of showrooms, service shops and staff
5. Profitability

Criteria 1 and 2 above constitute around 50 percent of the weight in the evaluation. The normal contract terms with dealers is three years. Dealers who performed poorly in the above evaluation are given a one-year contract term. After this one year, if the dealer continues to perform poorly, then the dealer may be asked to reduce the primary marketing area it is responsible for; or another dealer could be added on to this same primary marketing area. These dealers have to submit plans for improvements to be evaluated by Toyota. So far, no dealers have been terminated due to continual poor performance. The Toyota National Dealers Advisory Council, made up of Toyota dealers nationwide, exists as an advisory group to interface with TMC and to foster dealer friendship.

Dealers are encouraged to invest in improving their showrooms and facilities. Dealers have invested a total of ¥80 billion annually for such improvements, excluding advertising budgets. Advertising is planned by the dealers and Toyota. Toyota is primarily responsible for product-level advertising to create and promote brand image, while dealers are responsible for local sales campaigns. The main competition among dealers involves after-sales service and customer handling.

Domestic Vehicle Ordering and Inventory Management System

In Japan, the customer order process runs like a pull process, with customers placing orders with the dealers, who then transfer the orders onto Toyota. It is not a pure pull process, as dealers—the larger ones in particular—also get stocks based on forecast, so that they could serve their customers better with shorter response time. In the latter case the delivered cars are stocked at a stocking point where the dealers can inspect and install options when the actual customer orders

arrive. Overall, Toyota dealers have about one month's worth of inventory at their lots, which, due to high real estate cost, are usually located separately from the showrooms at remote suburban areas. At the end of the year, the leftover inventory at the dealers is usually sold through the used car channel, or through special sales promotions. The magnitude of such sales is much smaller than in the U.S., due to the primarily pull-based customer order model.

Similarly, while Toyota aims to base all domestic production on dealer or customer orders (that is, a build-to-order process), in reality some cars are built to stock (BTS). The Toyota Sales and Marketing organization prepares order plans based on forecasts and transmits them to Toyota production. Toyota manages this process very tightly, and every month adjusts the plan to ensure that at the end of the year there is minimal finished goods inventory (FGI). Indeed, the record shows that they have done this very well. At the end of a month, they usually have about 5,000 cars of inventory, which amounts to 3 percent of their monthly sales volume. This is equivalent to just below one day of supply, which is quite remarkable. Toyota would often ask their dealers to take extra inventory to reduce Toyota's inventory position. There is no explicit incentive given to the dealers for that favor, but it is understood as part of the culture and partnership between the two parties.

In times of shortages, as was the case with the new Prius model, Toyota would do some allocation of cars to the dealers, based on the order sizes by the dealers. This, of course, could potentially lead to gaming behaviors, where dealers would exaggerate their orders in order to get better allocation. In practice, however, this rarely happens, as Toyota makes it clear that if they find out that a dealer had exaggerated, that dealer would get zero allocation. The trusting relationship between Toyota and dealers also seem to mitigate or eliminate the bullwhip phenomenon².

The ordering process operates in three planning cycles—monthly, weekly and daily.

(a) Monthly Planning

The monthly planning starts one month in advance of production, when the Sales division conducts market analysis and order/sales planning to determine total production volume for the next month. Based on this information, the Sales and Production divisions produce a preliminary production plan for the next three months by series, engine, body type, and major functions. The plan covers global markets and global capacity, and serves as an estimate of production requirements to secure capacity. This preliminary plan is later updated based on monthly production order plans submitted by the dealers, and a Capacity Study conducted at each of the assembly plants.

One week later, the Sales and Production divisions determine the allocation between domestic and overseas sales, and conduct a Production Meeting to set more detailed production plans for the next three months. These plans are used by the Sales division to fix monthly volume and spec forecast, and to determine the quota per dealer. At the end of that week, the Sales division provides dealers with order “guides” for their weekly orders.

² The bullwhip phenomenon is one in which dealers exaggerates their orders and distorts the demand pattern that they actually experienced in their sales. There are many causes to this phenomenon, and dealer gaming to get better allocation is one of them.

At the beginning of the following week, dealers start placing bulk orders for product type. In parallel, Production Division at each site determines the monthly production plan and works with its suppliers to prepare the required parts for the next three months (actual orders are based on a Kanban system).

(b) Weekly Cycle

Every Tuesday, dealers place their weekly orders with Toyota in full car specs, with the order for the first week of the month being placed seven working days before the beginning of the month. Once orders are received, the Sales division makes adjustments between the monthly plan and actual weekly orders. Based on capacity availability, they prepare an estimated delivery schedule, and notify dealers accordingly. Production Division receives a weekly temporary production schedule.

(c) Daily Cycle

Up to three days prior to actual production, dealers can change the order spec as part of the online system. No changes can be made in the number of cars ordered for each engine type, but within engine type, colors and options can be changed for up to 20 percent. However, Toyota does not guarantee that all changes will be met.

It takes on average 20 days for an end-customer to get the car from the time the order is placed. The order lead-time from Toyota to the dealers is 15 days. Only 10 days out of this lead-time are due to production and delivery. The other 10 days are attributed to legal paperwork (registration). Additional time (about 10 additional days) is required at the beginning of the process, before the order is placed, for loan analysis.

Monthly forecast is communicated to the suppliers beforehand, to make it easier for them to prepare their orders. If there are large deviations from the original plan, they will be adjusted as part of the monthly planning cycle. Such fluctuations are most likely to happen, for example, immediately following the launch of a new model. Order levels are distributed more or less evenly throughout the month, and there is no spike in demand towards the end of the month.

OVERSEAS DISTRIBUTION

Overseas Distribution Organization and Markets

Toyota works with one distributor in each country. In the United States except Hawaii, TMS serves as the distributor. The U.S. market has about 1,200 dealers and is divided into 12 regions, with each region subdivided into multiple “districts” so that each district has 10 to 15 dealers. For historic reasons, two U.S. Toyota regions are privately and independently owned by Southeast Toyota Distributors, LLC (covering Florida, Carolina and Alabama, etc.) and Gulf States Toyota (covering Texas, Louisiana, etc.). Between the Toyota owned/private regions and Toyota Motor Sales, transfer prices are set as well as marketing fees, parts costs, and delivery fees, etc. One region covers 70 to 130 dealers in multiple states except California, which is covered by two regional offices. In particular, the Southeast Toyota region is the largest, selling 20,000 vehicles per month through 166 dealers. Each regional office is responsible for coordinating with and monitoring the dealers.

Toyota decides which models to sell and their respective prices in each country, based on market research from distributors and research companies, taxes and the exchange rate. Cars offered in different countries have different specifications, e.g., whether ABS is a standard or not). In Korea they did not introduce any Toyota cars because of stiff competition with Korean brands offering cheaper products and services. However, Lexus is successfully marketed in Korea to fill the gap in the high end of the car market.

Toyota markets cars in about 170 countries through its overseas network consisting of more than 160 importers/distributors and numerous dealers. Overall, China is the highest-growth market. This year the total size of the sales is about evenly divided among three regions—Japan, North America, and the remaining regions.

Local Production

Toyota's basic strategy is to produce the vehicles where demand is. For example, Toyota produces Corolla/Matrix for the North-America market at a plant in Canada. But some units may still come from Japan, depending on the required volume. Local production provides several benefits to Toyota. For example, it offers some stability against fluctuations of currency exchange rates, and a higher degree of speed and flexibility in distribution. As volume increases, Toyota also prefers to have its products more closely harmonized with the customers. Toyota sees benefits in being recognized as a local organization in each region. However, such strategy is not always feasible. Toyota must first verify the availability of suppliers that can provide the required quality, volume, lead-time, and cost. Political issues also have to be taken into consideration. In general, while some parts are delivered to the transplants from local suppliers, other parts—especially the more important ones such as engines, are imported from Japan. .

At the end of 2002, Toyota had a total of 45 overseas manufacturing companies in 26 countries/regions.

North American plants include:

- Indiana, which assembles Sienna, Tundra pickups, Sequoia (SUV)
- Ontario Canada, which now assembles RX330, Corolla, and Matrix
- New United Motor Manufacturing Inc. (NUMMI), in California, which assembles Corolla and Tacoma (small pickups)
- West Virginia, which produces engines and transmissions
- Georgetown Kentucky, which assembles Camry, Avalon and Solara.

European plants are located in the U.K. (Avensis, Corolla), France (Yaris), and Turkey (Corolla). Larger cars are shipped from Japan, since their relatively small volume does not justify local manufacturing. In China, Toyota has a joint venture with a local company for one assembly plant, for one model. A joint venture was required due to Chinese government restrictions. . Other Asian assembly plants are located in Thailand, Indonesia, Philippines, Malaysia, Taiwan, Vietnam, India, as well as Pakistan.

For U.S. distribution, each model is usually produced in only one location (either Japan or local production), except for Camry, Corolla, RX, and Yaris that are made in Japan and the U.S. and/or Europe. For these models, the monthly decision on the quantities to build in each location is made during the Production Meeting, which takes place 12 working days before the beginning of each month. These decisions are flexibly made while taking into consideration the annual plan, which determines overall the number of units to be produced in each location.

Japanese plants are more flexible than U.S. plants, since most assembly plants are located in Toyota City, which means that employees can be moved from one plant to another if demand shifts from one model to another. In the U.S. such arrangement is not feasible, and building a flexible line that can assemble different car models is more expensive. Exhibit 8 shows the market share and production levels across the major different regions.

Overseas Planning Cycles

Toyota operates two planning cycles – annually and monthly. This is in addition to its strategic planning that spans 3 to 10 years into the future, which involves investment in capacity, parts and tooling.

Annual Plan

The annual planning process starts in October, when each country presents three-year sales plans and production requests to TMC. The plan gives the quantities of each series at high-level specs (engines and body types), as well as complex cars. In December, a production plan is created based on production requests, together with supporting sub-plans (such as materials and logistics requirements). This plan is revisited in June of the following year to see if adjustments are necessary.

Monthly Cycle

Actual sales are often subject to internal and external events, such as the introduction of a new car by a competitor, or the greater-than-expected success of a product in the marketplace, e.g., the Indiana-built Sienna model. Consequently, the yearly plan is revised on a monthly basis.

Based on the Production Meeting, domestic (Japan) orders are determined in two steps—Domestic Sales Division only fixes monthly volume (per model) and spec forecast, and dealers determine the exact spec later in the weekly order. For the overseas market, the total volume and full-spec plan for the following month is frozen at the Production Meeting. Once distributors give three-month forecasts based on their own estimates and dealer input, they have limited flexibility to change their orders. In the weekly updates, distributors are only allowed to make between 10-20 percent changes in the specs. They cannot make any changes to the quantity. No daily changes are allowed. Although they can change the quantity on a monthly basis, Toyota may sometimes ask them to take more than they have requested.

The details of the monthly planning process at TMS are as follows. Consider a month in which production is to take place. One month prior to this month, Distribution Operation Department (DOD) aggregates regional inputs to develop final order requests. DOD then sends the three-month-ahead production requests, called PPR (pre-production request) to OPD (Overseas

Planning Department) – PPR1, PPR2, and PPR3. PPR1 is defined in full spec – series, models and color. Then, OPD builds a production plan (volume per line) and sends it to the U.S. DOD also runs area allocation, based on historical sales, current and future pipeline balance, and dealer orders. The allocation rule, especially in cases of shortage, aims at maximizing fairness among regions. In particular, verified performance becomes a main basis of the rule. Given the allocation, each region gains dealer input through monthly meetings.

Finished vehicles are shipped from Japan to the U.S. via four ports in two lines. The West line goes to Portland (covering the Midwest up to Ohio by rail) and Long Beach (covering California, Oklahoma, Nevada, and west of Mississippi). The East line passes the Panama Canal and stops at Jacksonville, Florida (for SET and Lexus South) and New York (covering the NE). The shipping lead-time is 11 to 14 days for West, and one month for East. Heijunka (smoothing or balancing) is continuously applied to shipping, so that shipping equipment remains utilized at an efficient level throughout the year. Given their confirmed build schedule and vessel loading information, regions run the dealer allocation, based on performance and dealer input (via monthly meetings). Dealers can express item-level preferences, but there is no guarantee that they would get them as they want.

Dealers can track their allocated orders through the online system called *Dealer Daily*. They can see the VIN (Vehicle Identification Number) number, the week the product was built, ship ETA (Estimated Time of Arrival), and the worst-case lead-time to customer. Dealers can trade their stock with others via Dealer Daily, which was introduced in 2002 but upgraded over time, and served as the key instrument to communicate and coordinate the activities between regions and dealers. Dealer Daily is a virtual private network (VPN), and is also a means for dealers to access information like inventories, sales, warranties, and financial statements; also process parts ordering and used car transactions.

Matching Demand and Supply

Matching supply and demand is not easy, especially in the overseas market where the resupply lead-time is longer. Moreover, the proliferation of product variety adds to the complexity of this problem. TMS carries 27 series of cars, with each series having multiple models. Model changes and new product introduction create additional demand uncertainties. The same model with a revision can suddenly create a lot of demand—as it did with the Sienna. Toyota introduces new products at rapid pace. Spurred on by consumer interest in the SUV (versus the mini-van five years ago), Toyota introduced the 4Runner, RX/GX and Sequoia. Supply and demand matching for new products is much harder, given the lack of demand history to serve as a guide.

Allocation to dealers is done by regions on a bimonthly basis by incorporating vessel shipments and confirmed domestic production. As with the area allocation, the dealer allocation tries to maximize fairness among dealers within a region. Note that actual production levels can be adjusted upwards or downwards in a limited way. Toyota uses various means to temporarily adjust its production capacity; e.g., more shifts, holiday work, changing the number of job processes for each worker, increasing the number of workers, and higher line speed. Toyota

also recognizes that frequent production capacity changes can have an adverse effect on product quality.

In addition, dealers can swap or trade their stocks using a secondary market running on Dealer Daily. A dealer in search of a specific car to sell has several options:

1. Check the pipeline in the coming month for allocated inventory via Dealer Daily.
2. If none, check the pipeline in the coming month for other dealers via Dealer Daily. Dealers' pipeline inventories are all transparent in Dealer Daily, unless the information has been blocked by specific dealers for special products. Dealers can exchange vehicles, e.g., a red Highlander vs. a white Camry, and settle the difference. They may trade ground stock or future stock.
3. If none, the dealer can "preference" it in upcoming dealer allocation, which would increase the probability of getting the product from the region's next dealer allocation.
4. If there is none in the region's order, the dealer can wait and submit a request in PPR2, which takes 60 to 90 days. Such cases are very rare, constituting less than 1 percent of all orders.

In general, Toyota dealers hold much lower inventory than other car dealers. For Camry it is 35 days of sales, while for Sienna it is a meager 7 days of supply (DOS).

The Supply Chain Process

In North America, local plants could adjust their production levels only upon consultation with TMC, since TMC controls the assignment of production parts (engines, transmissions, etc.), some of which come from Japan, and the coordination of export allotment of produced vehicles.

At the end of the production line after final inspection, the car changes hands from the Assembly to the Logistics Department. In the domestic (Japan) market, delivery to the customer takes place within the same month of production. Payment is due 60 days after delivery, but the dealers incurred the interest payable to Toyota during this time. In the case of domestic production for exports, the cars are delivered to overseas dealers only in the next month after production, and so actual sales to end customers usually take place two months after production.

Toyota ships the cars to the distributors, who then allocate the cars to the dealers. Toyofuji Shipping, which is jointly owned by Toyota Motor Corporation, Fujitrans Corporation, and Toyota Transport Co., is in charge of shipping the cars from Japan. Other shipping companies also provide shipping services from Japan or other production countries. Toyofuji also transports automobiles assembled in overseas local plants to Japan by return ships. It takes about 40 days for a ship to reach a European port from Japan, about two weeks to reach the U.S. West Coast, and three weeks to reach the port in the U.S. East Coast. Volume is much higher in the U.S. compared to Europe, and therefore shipments to the U.S. are more frequent.

Toyota provides car financing via Toyota Financial Services. Dealers can go to other institutions as well. But according to South Bay Toyota (a Toyota dealership), Toyota dealerships usually prefer to use Toyota because, if they use other institutions like Bank of America, they have to

share the ownership of customer relationships with them. Toyota Financial Services allows the dealer to retain ownership of the customer relationship.

THE PRIUS EXPERIENCE

We have described Toyota's demand chain management for its main products like Camry, Corolla and Sienna. Toyota also has three special lines of products—Lexus, Scion and specialty products like Prius—whose demand chains have some distinctive features of their own.³

In the 1990s government and civilian agencies increasingly began to voice their concerns about environmental impacts of gasoline-based vehicles. For example, the California Air Resources Board had begun developing mandates on clean-air emissions from automobiles, and aggressively pushed for the development of electronic vehicles (EVs). It was under such mandates that Toyota sought to develop its EVs in California. Initially, the EVs were sold exclusively to fleets, such as utility companies (PG&E, Southern California Edison), and government agencies. It was felt that selling fleets to agencies that also have environmental concerns, would be the easiest way to satisfy the state government's requirements. Toyota became the first company that met the requirement set up by the California Transportation Board.

The development of Prius (a gasoline-electric hybrid model) actually originated from Toyota itself, i.e., it was not a response to government mandates. Top management at Toyota had wanted to develop a new small car that had superior inside space but also super-efficient fuel economy, for the Japanese market. Mr. Uchiyamada, the chief engineer, was charged to develop a car with a radically new power train. Such an engine would also give rise to significant clean air benefits. Prius was conceived and first introduced in December 1997 in Japan.

Prius, like the EV, has very little in common with regular Toyota models. The EV and Prius do not share the same body configuration, but in the development of the product, some knowledge sharing did go on between the two car groups. For the Prius, a totally new battery had to be developed. To do so, Toyota formed new partnerships with Matsushita. A partnership with Aisin Seiki (manufacturer of engines, brakes and driving systems) was formed to develop the hybrid power train component as well as the electric motor. As for the other key components, Toyota utilized existing supply bases as much as possible, due to the reliability of quality and familiarity of the working relationships with these suppliers.

Prius in Japan

In December 1997, Prius was introduced in Japan. It was a very successful product, and in the first year of 1998, it sold 1,500 units per month. But then sales began to decline in the following years. While Prius was a great product that appealed to people's environmental consciousness, the product's operating features had a number of limitations. TMC surveys showed that, 25 percent of customers who purchased Prius in 1998, had considered other models that were also

³ For Lexus, see "Toyota's Challenge of the U.S. Luxury Car Market (2002)," by Professor Emi Osono at Hitotsubashi University.

environmentally sound (good mileage and low emission). This percentage rose to 33 percent in 2000, and 47 percent in 2002. Honda's Civic hybrid became the number one competition of Prius, followed by Toyota's own models, Allion and Corolla. (Exhibit 9 shows its declining sales.)

The customer base of Prius has only slightly changed over the years. In 1998, 75 percent of the customers were males, while in 2002, the percentage had dropped slightly to 71 percent. In 1998, 35 percent of the customers were between 30 and 40 of age, and 35 percent were 50 or above. In 2002, 14 percent were between 30 and 40, while 57 percent were 50 or above. In 1998, 43 percent of the customers had annual income of over ¥10 million, and in 2002, the percentage was 44 percent.

It was clear to Toyota that Prius had lost some of its luster since its introduction, losing share to Honda and other models of its own. The car was not sufficiently attractive to the 30- to 40-year-olds, the primary target customer group. Customers were demanding, besides environmental soundness, a car with better performance, size, roominess, and handling. Customer surveys offered alarming observations that customers were increasingly critical of engine performance and roominess of the Prius (Exhibit 10).

It was with such background that Toyota launched the new Prius in September 2003. This car continued to meet the needs of environmentalists, but it also had advanced technologies for much higher performance. In the past, Prius was only available in the Toyota channel. But the Toyota channel, with its flagship product Crown, has been considered a channel appealing to older and more established customers. As a result, Toyota expanded the sales outlets for the new Prius by adding the Toyopet channel.

The product launch was based on steering customers to the showroom to test-drive the product, since Toyota believed that, once customers had test-driven the car, they would fall in love with its superior performance. They went all-out to lure customers to the showroom. For example, they partnered with a retailer of imported furniture and home-interior goods that was popular among women in their thirties, to get these customers to visit the showroom. Original mugs and tote-bags were handed out to everyone who visited the showroom and took a test-drive. The product launch was also tied to screenings of some new movies, which were considered to be the hot spots of the 30- to 40-year-olds. In order to widely publicize the high driving performance of the new Prius, the vehicle appeared in the popular Playstation 2 racing game "Gran Turismo." Toyota's sponsorship of the product was announced at special events at popular spots such as Roppongi Hills, and presents were offered to customers who test-drove at the dealer outlets.

The sales target for the Toyota channel of the new Prius was at 8,000 from September to the end of the year in 2003. The sales target for the Toyopet channel was similar. Indeed, the new Prius was a great success. In the Toyota channel, the orders for Prius in 2003 came in at 18,500, significantly higher than their internal target. This resulted in a huge backlog. The order level for the Toyopet channel was comparable.

Most of the sales of the new Prius came from stealing customers from other car owners rather than cannibalizing existing Toyota car owners. (Exhibit 11 shows some statistics of the new

vehicle sales for Prius over the years. Exhibit 12 shows some statistics about new car owners of Prius.)

The new Prius was supposed to penetrate the 30- to 40-year-old market, where the previous Prius failed to do. In reality, although actual observed statistics is not yet available, Toyota indicated that their success in reaching out to the 30-40 year old was only moderate. On the other hand, the sales to the 50 or above segment remained most strong. Hence, the Prius line continued to be best received by the 50+ age group.

Prius in the U.S

Prius was first introduced to the U.S. market in June 2000. The initial U.S. version of Prius was just a small upgrade from the Japanese model, but with a more powerful power train. This was a high-risk venture, as it was not clear how consumers would embrace this clean-air solution. Given the high uncertainties in the U.S. market, Toyota decided to adapt its order fulfillment strategy. The first Prius model had very little customization available. There were basically four color choices. To counter the uncertainties and secure flexibility, Toyota used the Web to take orders, while centrally stocking the Prius. A total of 873 dealers were enlisted to provide order fulfillment using the Web to take orders. If the traditional dealer channel was used, then usually a 90-day pipeline had to be filled to get cars to the consumers. This would be extremely expensive for Prius, given the big demand uncertainty of the product. The huge pipeline inventory, together with the potential imbalance of supply and demand, could lead to heavy discounts to get rid of the surplus, which could destroy the product. This “adapted” order fulfillment strategy worked very well, and the Prius launch was a success. Further, Prius had not experienced a rapid decline in sales, as in Japan.

The same channel was used to introduce the EV (Electric Vehicles) in California, which was again a highly risky venture. This new channel allowed the retail network with 20 dealers to be set up in 4 months. Toyota had to invest in the chargers at the dealers, provide special incentives to leases, and give higher margins for the dealers to sell EVs. So in that sense, Toyota was giving every possible advantage to the EV to make it successful. But in the end, even though the EV had much higher awareness than Prius, the sales outcome was very much in favor of Prius. Most customers who ended up with the EV leased the product, while Prius customers purchased the product. The retail market was clearly showing its preference of Prius over EVs. Of the 795 EVs sold in California from 1998 to 2001, only 200 were sold through retail. On the other hand, the retail public loved Prius. From February to July 2002, Toyota had 213 orders of the EV, while there were 3,262 orders of Prius coming from California. Hence, the retail market favored Prius over EVs by a 15 to 1 ratio. Note that the dealers were given much better margins to sell EVs, but despite that, Prius came up far ahead.

The Internet channel had mitigated the demand risk faced by Prius. In addition, the data collected via the Internet channel on sales and consumers were used to convince the State of California that hybrids were better clean-air solutions than EVs. The success of the Prius model in retail had stimulated the interest of the Air Resource Board in California.

But in the long run, this setup was viewed as not competitive. First, since the regular Toyotas are sold via the traditional dealer channel, maintaining dual channels is not easy. There are duplications of work. Second, Toyota was beginning to feel the heat of the competition from the Honda Civic, which was considered to be the closest competition to Prius. The super fuel-efficient Honda Civic was sold using the traditional channel, and a lot of customers liked that because they did not have to wait for the delivery of their cars. As the market for Prius grew and as demands stabilized (providing better knowledge of where demands were coming from), Toyota decided at the end of 2001 to go back to the traditional channel for Prius.

Nevertheless, the Web channel was used on special occasions. Out of the 20,000 initial customers of Prius, 70 percent had expressed an interest in receiving marketing materials in surveys. Of this 70 percent, Toyota learned that 80 percent of the previous owners of Prius were indicating that they would buy another Prius for their next purchase. Hence, for the 2004 model, Toyota used the Web channel and offered existing Prius owners a time window of a month (June 2003) to place orders for the new model. The 2004 model was expected to be very successful, so that it was likely that demand would outstrip supply. Toyota gave first priority to the existing owners with a chance to get the new 2004 Prius via the Web channel, prior to the product's formal launch to the general public. Of the 18,000 existing owners, 1,200 placed an order for the new Prius. This was considered to be a wild success, especially since there were almost no marketing costs involved in getting these 1,200 orders. Moreover, these customers were likely opinion leaders and could be champions for the new model amongst the general public.

The new 2004 model, introduced in October 2003, has far superior power, less emission pollution (30 percent less), and more fuel economy (20 percent more) than previous models. The 2004 model also received a great reception by customers. It allows much more customization: color-choice has increased to six, and there are other options like side airbags, cruiser control, CD player and navigation systems. The customer base of Prius has changed a lot since its original launch. The first generation of customers consisted of people who "crossed the chasm" (cf. Geoffrey Moore's "Crossing the Chasm" terminology). The group consisted of 80 percent males who were highly educated. In the first launch, 40 percent came from California, with 25 percent came from Northern California (versus 5-6 percent for conventional Toyota cars); 6 percent came from Southeast U.S. (versus 20 percent for the conventional Toyota cars). By 2004, California occupied about 33 percent of the total sales of Prius. Initially, most customers were buying Prius as second or third cars, while many are now buying Prius as their first car. Of the Prius customers, 60 percent were not Toyota owners before, so the Prius has helped to expand the Toyota customer base. As of early 2004, there is a six-month waiting time to get the new Prius. In 2003, 20,000 units of Prius were sold, even though the plan was 12,000 (see Exhibit 13). The backlog in both the domestic and U.S. markets has resulted in both sales organizations becoming involved in a tug-of-war to get more products out.

Currently, Prius owners are captive customers for after-sales service, since they do not have many other alternative options. But the hybrid market is growing. Nissan has decided to license the Toyota hybrid system to develop its own version of hybrid cars, and Ford is working with Aisin to supply some components for its own version. As the hybrid market grows, the volume for some of the components (spare parts) may increase to such an extent that generic parts may

emerge. When that happens, Prius may face competition from other providers for some of the service parts. All Toyota dealers have been trained to service Prius. Today, Prius owners have prepaid maintenance agreements when they purchase the cars, so they would all go to Toyota for service. Again, as the market grows, competition may arise.

The recent lawsuit of the Air Resource Board (ARB), brought by GM, Daimler-Chrysler and a dealer, had been a blow to the ARB. The lawsuit contended that the ARB had exceeded its jurisdiction in setting up emission requirements for automobiles. The Fifth Circuit Court had agreed with the prosecution, and that had led to a change of the ARB position. The success of Prius had enabled the ARB to modify its requirements—automobile manufacturers can now use either hybrids or fuel cells on the road to satisfy the emission requirements. This change of requirement, to many, is a death penalty to the EV. In the future, hybrid cars, which use internal combustion for power generation, and fuel-cell-based cars, which use hydrogen for combustion, have a far brighter future than EVs.

Toyota stands behind Prius. The first 3 years or 37,000 miles maintenance is provided by Toyota as part of the purchase price. Toyota also gives a guarantee of 8 years life or 80,000 miles on the battery. Prius has great resale value. The 2001 model now has a trade-in value of \$13,000, while a comparably priced Camry has a trade-in value of \$11,000.

THE SCION EXPERIENCE (U.S.)

Over the years, Toyota has been very successful in growing the baby boomers' market in the U.S. Nevertheless, it has failed to attract younger consumers. In 1997, the average age of the Toyota customers was in the mid-40s, and by 2004 it has reached 47. Generation Y (those born between 1980 and 1994) represents a population boom that the country hasn't seen in 40-50 years. While they currently represent only 5 percent of the automotive market, they are expected to become 25 percent of the market in seven years. And they are expected to be just as influential a consumer group as their parents were, even though they are making very different choices.

Toyota's first attempt to target younger consumers was through the creation of the Genesis group in 1999, which was largely a marketing function to launch the 2000 Celica, Echo, and MR2 Spyder, three new car models that were believed to have a good chance of attracting younger customers. The goal of the team was to put a flavor of youth on these existing cars through consolidated marketing execution. The cars sold well, but they were not successful in attracting young buyers – in 2000, the median ages for the Celica, Echo, and MR2 Spyder models were 37, 41, and 36, respectively. The lesson was that just marketing was not sufficient, and that an end-to-end initiative, including product differentiation and different dealership experience, would be required to attract the younger consumer group. This conclusion was supported by customer satisfaction data, which showed that on every category, the "below 35" group of customers were significantly less satisfied with Toyota compared with the "above 35" customers.

The Genesis group then expanded its scope to better understand young buyers and their expectations, and on that basis, develop strategies to attract them. As a first step they explored the full range of products offered by Toyota, and eventually selected the model bB of the Japan

market (which later became Scion model xB). They conducted market research using a prototype of the bB, as well as a variety of other studies such as Values and Lifestyle Study to learn what is important to people emotionally and how they live their lives. At the end of 2000, the group also identified the second model to be launched – the xA. A new business with a separate brand called Scion was to be launched.

The Scion business would have some key distinctive elements:

- *Product*: A customized product that stands out, with European feel and unique features that also provide luxury. The goal is to build a premium small car that offers a lot of value for its relatively low price.
- *Marketing*: Customers are not influenced by mass marketing, but rather want to experience the product personally and learn about it from their friends and family. Toyota has to allow consumers to discover the product on their own terms, and spread the message through word-of-mouth and authentic interactions.
- *Dealership experience*: Customers have very little time, and they usually arrive at the dealership well educated with information they have collected from the Internet and from their friends. They want the buying experience at the dealership to be much simpler and shorter than the typical 4 to 5 hours buying process. They also want to feel more comfortable and be in charge of the process, instead of feeling pushed into making decisions. Finally, they want to see consistency between the information available online (price, options) and the product offerings at the dealership.

Offering to the End Consumer

In June 2003, Toyota launched the Scion brand, with two models: xA and xB, in California. Each model has about 40 different types of accessories that customers can choose from, versus about 15 offered for a typical Toyota sedan. Customers can use the detailed information available online or at the dealership to configure the car (color, transmission, exterior, interior, wheels, and sound). Once they place an order with the dealer, the car – built exactly to their specifications – will be ready for pickup (anywhere in California during the initial launch; nationwide as of June 2004) within 5 to 7 business days. Those who want the car faster and are willing to compromise, can choose a car from the dealer's local inventory and have it ready overnight. The non-negotiated price (guaranteed to be identical to the Internet Price) results in significantly shorter time the customer must spend at the dealership when buying a car. Currently about 50 percent and 60 percent of the xA and xB customers, respectively, complete the configuration ahead of time online, and either walk in to a dealership with the order printout or e-mail it to a dealer in advance.

Scion offers much greater number of options with short lead times than others. Other car manufacturers offer a high level of customization only for luxury cars, and then the delivery time is usually much longer, especially when the cars are made overseas. For example, it takes three months to get a custom-made BMW from Germany.

In 2003, 800 out of the 1,200 Toyota dealerships have signed up to represent Scion. A significant up-front investment of about \$120,000 is required to start the Scion business

(including at least 400 sq. ft. of floor space dedicated to Scion, and designed to Toyota's specifications).

Supporting Production and Distribution Network

Production takes place in Japan. All features at the factory level, except for color and transmission (automatic/manual), are standardized (except for side airbags for the xA). That way, even though each car has an extensive spec, the assembly process remains simple. Initially, the Scion group has negotiated a higher degree of flexibility at the factory. Usually, after the initial plan is set in three months in advance of production, there is very little flexibility in changing the total number of cars in subsequent months (about 5 percent). The only flexibility is in colors, which can be determined very close to actual production. With Scion, they were initially allowed to change the quantity ordered by 20 to 30 percent. To get more flexibility, they had to horse-trade for capacity with other models, such as those that share engine components or are on the same assembly line.

From the factory the cars are delivered to a port pool in Japan (with a delivery time of three days), and then shipped to a U.S. port in Long Beach, California. Actual shipping time between the two ports is 10 to 12 days, and total lead-time from the factory to the port in Long Beach is about three weeks. Typically cars are allocated to dealers when they arrive at the U.S. port. Each dealer is allocated 20 to 30 days' supply, of which half is kept at the dealership while the rest remains at the port (when the product was first launched, about two-thirds of the dealers' inventory was kept at the port). Customization of the cars takes place either at the US port or at the dealership, based on actual customer orders. That is, no customization takes place from the time the cars leave the factory in Japan until firm customer orders have been placed. When an order is placed, the dealer will first check if he has in stock a car with the right color and transmission. If the car is available in his local inventory, he will install the ordered accessories and have it ready for the customer. If the car is available in the dealer's stock at the port, the Customization Center at the port will install the ordered accessories based on the specifications received electronically from the dealer. The accessorized car will then be delivered to the dealer. If the dealer doesn't have the desired car in stock, he can exchange inventory electronically with other dealers, usually based on inventory available at the port. Since all cars have mono-spec it is easy to find a match and make the trade. In that case, again, installation of the accessories will take place at the port. No matter from which inventory the car is taken, it will be accessorized and available to the customer within 5 to 7 business days. If the car is accessorized at the dealership, the process is much faster and can usually be completed overnight. Most of the accessories are designed and manufactured in the U.S. To ensure lean delivery, Toyota modified its business processes for Scion cars, including cutting down the delivery time of parts to the Customization Center from two to one day, and priority-processing Scion vehicles at the port.

In undersupply situations, as was the case with the xB, then cars are moved through the system as fast as possible, with priority shipping and processing at the ports. In addition, the xB cars were allocated to dealers in the port on the dock in Japan, to provide dealers with as much visibility to "their" available stock by product. On the other hand, early demand for xA was overestimated by 50 percent. Consequently, production was shut down for four months. Excess

inventory was stored in Long Beach, with only limited quantity allocated to dealers to retain the 20 to 30 days of supply.

The distribution system resembles a multi-echelon inventory network to address demand uncertainties: a very flexible plant; a port pool in Japan; a port pool in Long Beach; and 10 percent discretionary pool that can be shifted between regions based on demand.

For the first time for any Japanese manufacturer, Toyota worked very closely with after-market accessory manufacturers through SEMA (Specialty Equipment Marketing Association), a trade organization with thousands of members all in the production or distribution of accessories. Through their experience with the bB model in Japan, Toyota had learned that demand for after-market accessories would be high. They decided to collaborate with the accessory manufacturers and share with them through SEMA technical information to ensure that the dimensions of the accessories better fit the cars.

Sales Experience

By early 2004, Toyota sold about 1,000 Scion cars a month in California. The plan is to gradually expand geographically to other regions of the U.S., and have Scion available throughout the country by June 2004. During that month Toyota will also introduce a third model, the Scion tC sports coupe. The quantity sold is expected to increase to 5,000 a month in February 2004, and to reach 10,000 a month by June 2004. The distribution network will also be expanded to include three additional ports—Newark, Jacksonville, and an inland port in Houston. For those dealerships that are located far from the supporting ports, the portion of their inventory stored at the port might have to be adjusted downward. The Midwest represents the biggest challenge due to the long distance and transit time between the port of entry at Portland and the final destination. Thus, Toyota considers the alternative of having a local inventory pool (similar to the port, but closer to the dealers) that will help reduce the delivery time. This local facility will include a customization center.

To improve local customization, Toyota may design future Scion cars to be prewired and have snap-on and -off accessories. This will simplify the installation of such accessories as DVDs and will make local customization even more efficient, with higher quality and lower cost to customers.

Toyota has set up an early radar system for customer satisfaction, which has proved to be of much value for Scion. They are the first car company to offer online chat. While at Toyota 97 percent of customer contacts are by phone with the rest through letters, 75 percent of customer interaction at Scion is through e-mail or chat. This makes it easier for Scion customers to interact with Toyota, instead of going through the dealers. Every time a customer contacts them, they open a case, which is not closed until the customer says she is satisfied. They also monitor postings at external sites, to find out about negative customer experiences and to try and resolve the issues raised by the complaining customers. While this strategy significantly improves customer satisfaction, it requires high investment in human resources.

So far Scion has been very successful in attracting young consumers. The average age of Scion buyers is 35 (34 for xB and 37 for xA). Since Generation Y currently represents only 5 percent of the market, Toyota did not expect them to be the only Scion customer group. Total sales levels have also been quite promising: 2003 year-end Scion sales totaled 10,898 vehicles, with about 35 percent xA's and 65 percent xB's. Although Scion had only been offered in California, about 500 cars were already registered outside of California by the end of 2004.

EPILOGUE – DEMAND CHAIN ALIGNMENT

Founded in 1937 as a spinoff from Toyoda Loom Works, Toyota has literally “changed the world” through a series of innovations on the production floor. At the same time, Toyota has implemented a set of innovations in demand chain management such as sales and production integration, product design, use of secondary markets, after-sales service support, compliance with greener environments, and telematics.

Toyota also invests aggressively in next-generation technologies to develop automobiles that are “greener,” safer, and more fun to drive. Toyota is committed to the development of automobile technologies that are friendly to the environment, including hybrid technology and fuel cells. Prius is one of the earliest hybrid models to demonstrate to the world that environmentally friendly vehicles can be commercially viable. Prius is now available in more than 20 countries, and its overall cumulative sales totaled more than 130,000 units worldwide, as of the end of December 2002. In November 2002, the Toyota FCHV became the first-ever market-ready fuel cell vehicle certified by the Japanese government. Leasing of a limited number of Toyota FCHVs began in December 2002, both in Japan and the United States.

As a company that has been widely recognized as an excellent supply chain company, with lean and just-in-time manufacturing practices, strong supplier relationships, and high quality production, Toyota has certainly created a high-performing demand chain—linking production with distribution, and serving customers with efficient channels—as well. But just as the company has a set of central core values while at the same time allowing individual divisions to have localized versions, Toyota has managed its demand chain on the same principle, with a set of basic core values in the design and management of the demand chain. However, when it comes to different geographies (such as Japan vs. U.S.), different products (such as Prius and Scion vs. the standard Toyota), and different times (new product introduction vs. mature products), the company adapts the design and control of its demand chain so that it has the *right* demand chain for the *right* product, in the *right* place, and at the *right* time.

Exhibit 1
Production by Region 1993-2003
(in thousand units)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
North America	532.8	581.3	729.9	783.0	838.3	962.8	1,061.9	1,104.0	1,088.5	1,205.3	1,278.3
Latin America & the Caribbean	2.6	3.7	3.7	3.2	3.8	15.3	16.8	19.6	17.8	28.1	58.1
Europe	49.5	93.5	95.5	124.4	108.8	175.7	181.5	173.3	216.9	344.6	395.5
Africa	81.1	76.7	87.7	85.1	91.2	74.1	68.4	77.5	77.5	79.8	93.3
Asia	161.9	222.7	259.0	255.1	246.7	124.8	182.1	248.4	254.3	345.7	493.1
Oceania	58.7	68.5	54.1	67.6	77.6	100.4	91.0	92.4	94.6	86.6	113.6
Middle East & Southwest Asia	2.1	4.8	23.3	27.7	23.8	14.4	9.4	36.1	31.0	65.1	125.8
Overseas total	888.7	1,051.3	1,253.3	1,346.0	1,390.1	1,467.6	1,611.0	1,751.4	1,780.6	2,155.2	2,558.0
Domestic total	3,561.8	3,508.5	3,171.3	3,410.1	3,502.0	3,165.8	3,118.2	3,429.2	3,354.4	3,485.2	3,250.3
Worldwide total	4,450.5	4,559.8	4,424.6	4,756.1	4,892.1	4,633.4	4,729.2	5,180.6	5,135.0	5,640.4	6,078.3

Sources: TMC, Toyota and Lexus brand

Exhibit 2
Major Manufacturers' Worldwide Vehicle Sales

Make	Total Vehicles (thousand units)	
	2002	2003
General Motors ¹	8,537	8,098
Ford ²	6,980	6,720
Toyota ³	6,168	6,783
Volkswagen ⁴	4,984	5,015
DaimlerChrysler	4,540	4,300
PSA Peugeot Citroen	3,267	3,286
Honda	2,834	2,910
Hyundai	2,751	2,758
Nissan	2,736	2,968
Renault	2,404	2,389

Source: announcement of each automaker.

¹ Includes Vauxhall, Isuzu, Opel, and Saab

² Includes Jaguar, Volvo, Land Rover, and Aston Martin

³ Includes Lexus, Daihatsu, and Hino

⁴ Includes Bugatti, Bentley, Volkswagen, Soda, Lamborghini, Audi, and Seat

Exhibit 3
2003 Domestic (Japanese) Production by Manufacturer

Manufacturer	Cars	Chg.(%)	Trucks	Chg.(%)	Buses	Chg.(%)	Total	Chg.(%)
Toyota	3,082,044	+4.0	403,890	+6.2	34,383	+0.0	3,485,168	+1.0
Honda	1,117,120	-15.9	53,821	-6.8	--	--	1,170,941	-15.5
Nissan	1,242,481	+4.2	220,486	+19.6	8,628	-43.6	1,471,595	+5.7
Suzuki	799,275	-2.2	181,456	-0.8	--	--	980,731	-1.9
Mitsubishi	645,525	-5.8	103,846	-41.9	0	-100	749,372	-13.0
Mitsubishi Fuso	--	--	124,048	--	8,697	--	132,745	--
Mazda	733,295	+2.4	67,789	+18.3	--	--	801,084	+3.6
Daihatsu	493,390	+11.1	147,846	-4.9	--	--	641,236	+7.0
Subaru	363,357	2.2	86,705	+7.1	--	--	450,062	+3.1
Isuzu	710	-91.6	241,511	+9.7	2,354	+1.3	244,575	+5.9
Nissan Diesel	--	--	37,226	+48.9	1,622	-8.0	38,848	+45.1
Hino	--	--	77,732	+58.7	5,390	+4.1	83,122	+53.4
GM Japan	1,012	+319.9	--	--	--	--	1,012	+319.9
Other	119	--	560	-6.5	--	--	679	+13.4
Total	8,478,328	-1.6	1,746,916	+11.1	61,074	-7.9	10,286,318	+0.3

Source: Japan Automobile Manufacturers Association, Inc.

Exhibit 4
Toyota Business Results 2001–2003
(in ¥ billions)

	2001	2002	2003
Net revenue			
Automotive	11,591.0	13,067.4	14,311.5
Financing services	571.1	698.0	724.9
All other	1,019.5	728.9	795.2
Inter-segment elimination	(226.4)	(304.0)	(330.0)
Total	12,955.2	14,190.3	15,501.6
Income before tax	1,107.3	972.1	1,226.7
Net income	674.9	556.6	750.9
Vehicle production (thousand units)	5,275	5,306	5,850
Vehicle sales (thousand units)	5,526	5,543	6,113
Employees (1=1 person)	215,648	246,702	264,096
Capital expenditure ¹	762.3	940.5	1,005.9
Depreciation	784.8	809.8	870.6
R&D spending	475.7	589.3	668.4

¹ Excluding equipment leased to others

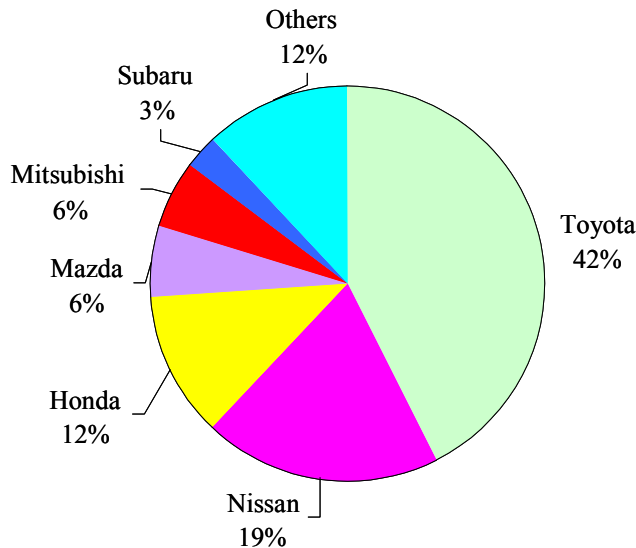
Source: Toyota Annual Report 2003 (http://www.toyota.co.jp/en/ir/reports/annual_reports/03/index.html)

Exhibit 5
Toyota Sales by Region 1993 - 2003
(in thousand units)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
North America	1,116.4	1,174.1	1,169.2	1,251.5	1,356.7	1,516.0	1,631.3	1,766.3	1,893.6	1,940.8	2,072.3
Latin America & the Caribbean	90.3	78.9	96.0	82.2	115.1	125.0	99.9	105.6	107.5	96.9	121.3
Europe	393.8	389.3	384.1	411.9	471.2	540.9	592.3	655.8	666.0	755.6	834.7
Africa	121.7	113.8	136.2	135.5	143.6	129.7	123.2	121.8	126.5	139.8	160.8
Asia	386.3	413.7	433.0	444.8	417.9	229.5	252.9	339.3	342.2	455.0	620.6
Oceania	147.1	152.6	145.0	144.2	148.2	176.5	171.8	176.7	162.2	182.2	215.1
Middle East & Southwest Asia	184.8	159.3	132.8	151.7	185.0	212.4	186.6	217.2	248.6	267.9	330.0
Overseas total	2,440.4	2,481.6	2,496.2	2,621.8	2,837.6	2,930.0	3,058.1	3,382.7	3,546.7	3,838.3	4,354.7
Domestic total	2,065.7	2,040.9	2,060.1	2,135.3	2,005.9	1,711.0	1,664.4	1,771.7	1,715.2	1,680.5	1,715.9
Worldwide total	4,506.1	4,522.5	4,556.3	4,757.1	4,843.5	4,641.0	4,722.5	5,154.3	5,261.9	5,518.8	6,070.6

Sources: TMC, Toyota and Lexus brand

Exhibit 6
Japan Automobile Market Share 2003



Source: Japan Automobile Manufacturers Association, Inc.

Exhibit 7
Total Domestic (Japanese) Market Size 1970 – 2002

	1970		1980		1990		2000		2002	
	Cars	Trucks & Buses	Cars	Trucks & Buses	Cars	Trucks & Buses	Cars	Trucks & Buses	Cars	Trucks & Buses
Daihatsu	142,745	134,151	91,181	196,348	254,975	237,712	163,618	385,553	358,093	146,503
Hino	3	41,943	...	47,180	...	62,374	33,210
Toyota	708,729	401,046	1,064,172	430,178	1,893,422	610,795	547,516	1,216,079	1,325,320	349,893
Toyota¹	851,477	577,140	1,155,353	673,706	2,148,397	910,881	743,489	1,601,632	1,683,413	529,606
Honda	253,075	110,741	166,975	103,950	514,709	164,377	63,882	690,945	834,431	58,437
Nissan Diesel	...	18,362	...	25,688	...	39,775	15,694
Nissan	587,598	339,887	828,158	338,281	1,056,920	346,974	226,826	502,911	544,174	229,567
Nissan²	587,598	358,249	828,158	363,969	1,056,920	386,749	243,320	502,911	544,174	245,261
Suzuki	142,989	124,707	71,555	301,418	247,675	289,354	189,557	424,518	458,091	167,999
Mitsubishi	213,594	197,615	250,706	276,719	314,917	395,849	247,261	296,108	256,734	159,653
Isuzu	19,094	104,036	62,806	132,038	34,619	160,003	68,653	1,196	71	54,656
Mazda	156,994	178,605	196,560	195,492	398,951	192,672	59,791	253,513	217,095	45,986
Fuji	137,503	65,723	77,192	114,042	164,765	172,732	79,532	221,282	170,305	85,070
Imports	16,813	123	44,871	0	221,706	2,217	7,685	267,767	277,040	4,071
Grand Total	2,379,137	1,721,330	2,854,176	2,161,334	5,102,659	2,674,834	1,703,170	4,259,872	4,441,354	1,350,739

¹ Total sales for the group, including Toyota, Hino, and Daihatsu

² Total sales for the group, including Nissan Diesel and Nissan

Source: Japan Automobile Manufacturers Association, Inc.

Exhibit 8
Market Share and Production Levels in 2002

Market	Market share	Total sales ('000)	Japan CBU ('000)	Local Production ('000)
Domestic	42%	1,680	1,680	
U.S.	11%	1,756	753	1,003
Europe	4%	756	411	345
Oceania	20%	182	95	87
APAC	30%	455	109	346

Source: Toyota interviews

CBU = Complete Built-up Units at Japanese factories. CBU are used to cover fluctuations in overseas demand.

Exhibit 9
Monthly Sales of Prius, Japan

Year	Monthly Sales
1997 (Dec)	300
1998	1,500
1999	1,300
2000	1,000
2001	900
2002	600

Source: TMC

Exhibit 10
Percentage of Customers Citing Reasons for Rejecting Prius

Reasons	1998	2002
Price	69%	44%
Engine Performance	13%	42%
Size of Body	13%	43%
Inside Roominess	10%	48%

Source: TMC

Exhibit 11
Breakdown of Prius Sales by Previous Car Ownership of Customers

Source of Sales	1998	2000	2002	Sept-Dec 2003 (Target)
Existing Prius owners	0	50	100	400
Other Toyota owners	400	200	100	200
Other brand owners	1,100	750	400	1,400
Total	1,500	1,000	600	2,000

Source: TMC

Exhibit 12
Breakdown of Prius Sales by Customer Demographics

Customer Segment	1998	2000	2002	Sept-Dec 2003 (Target)
Male, around 20 age	50	0	0	100
Male, 30-40 age	350	200	50	700
Male, 50+ age	350	300	200	400
Female	250	200	100	300
Corporate/Fleet	500	300	250	500
Total	1,500	1,000	600	2,000

Source: TMC

Exhibit 13
2003 Prius Sales in U.S. Market

Monthly Sales, 2003	U.S. Mainland	Hawaii
Jan	1,600	6
Feb	1,963	5
Mar	2,525	7
Apr	1,453	4
May	1,224	9
Jun	1,066	3
July	653	4
Aug	296	3
Sept	111	1
Oct	4,064	21
Nov	5,571	13

Source: TMC