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TOYOTA: SERVICE CHAIN MANAGEMENT

INTRODUCTION

The Toyota Motor Co. Ltd (TMC) was first established in 1937 by Kiichiro Toyoda. 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 (see Exhibit 1), and by far the largest Japanese automotive manufacturer (Exhibit 2). 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 3).

Toyota is well known for its world-class supply chain management. It pioneered innovative lean manufacturing concepts such as Kanban, Just-In-Time, and Kaizen (continuous improvement). The "Toyota Production System" (TPS) has been studied and imitated by leading manufacturers worldwide. In addition, Toyota's supplier management practices, emphasizing strong long-term relationships, integrated planning, and deep collaboration, have also been the envy of the competition. Combining TPS with supplier management, Toyota's supply chain management is one of the competitive strengths of the company.

Toyota's demand chain management, defined as the coordination of information, material and financial flows in the distribution of vehicles through the distribution channel, is also a powerful asset of the company. Toyota designs and operates the right distribution process for the right geography (different markets such as Japan versus the US), product (different products such as Camry, Prius, and Scion), and time (product introduction phase versus mature phase).

Both supply chain and demand chain management at Toyota give rise to a highly efficient network for Toyota to manufacture and distribute its new vehicles. The long-term success of the company, however, depends also on loyal customers who buy and consume services from Toyota, and who would continue to purchase future vehicles from Toyota. The management of this third "chain" is what Toyota has not forgotten, but in fact, excels in. This is the "service

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chain,” which provides products in the form of service parts for maintenance and repair, and services in the form of improving the value that a customer derives from a vehicle. It is one where deep customer satisfaction, strong word-of-mouth, and customer loyalty are based on.

Toyota’s service chain management is based on establishing strong links with its customers, both through the dealer channel and directly. Since most customers are served by dealers in after-sales service needs, Toyota created an efficient network to provide reliable supply of service parts to dealers, and proactively helped dealers to provide excellent service to the end customers. Toyota also made use of advanced technologies, such as e-commerce and telematics, to build a strong relationship directly with vehicle owners.

THE TOYOTA WAY

Toyota has always strived to implement a set of common values, beliefs and business methods to support and guide the continuing evolution of its worldwide operations. The Toyota Way is a set of work approaches that serve as an ideal, a standard, and a guiding beacon for the people of the global Toyota organization. The Toyota Way is supported by two main pillars, namely “Continuous Improvement” and “Respect for People.” “We are never satisfied with where we are and always improve our business by putting forth our best ideas and efforts. We respect people, and believe the success of our business is created by individual efforts and good teamwork.” All Toyota team members, at every level, are expected to use these two values in their daily work and interactions. The Toyota Way also serves as Toyota’s underlying value systems in managing its service supply chain. The following brief description of the Toyota Way is excerpted from Toyota internal documents¹.

CONTINUOUS IMPROVEMENT

Challenge

Form a long-term vision, meeting challenges with courage and creativity to realize dreams.

- Creating Value through Manufacturing and Delivery of Products and Services
- Spirit of Challenge
 - Spirit of Challenge; a Drive for Progress
 - A Sense of Self-respect and Self-reliance, and the Acceptance of Responsibility
 - The Acceptance of Competition
- Long-range Perspective
 - Foresight and Long-range Projection
 - Long-term Planning Based on Facts and a Realistic View
- Thorough Consideration in Decision-making
 - Focus on Concrete Proof / Exhaustive Due Diligence
 - Risk Taking
 - Prioritization
 - Total Optimization

¹ Source: “The Toyota Way 2001”, a brochure distributed worldwide by Toyota in early 2002.

Kaizen

Improve business operations continuously, always driving for innovation and evolution.

- Kaizen Mind and Innovative Thinking
 - Relentless Efforts for Continuous Improvement
 - Soui Kufu (Individual Creativity and Innovation) / Benchmarking
 - Search for Breakthroughs / Elimination of Taboos
- Building Lean Systems and Structure
 - Pursuit of Profit Based on Cost Reduction
 - Elimination of Muda, Mura, Muri (Beyond Capability, No Value Added, Unevenness)
 - Regard for Next Processes / Just-in-Time
 - Revealing Problems / Jidoka
- Promoting Organizational Learning
 - Shared Understanding of Conditions
 - Learning from Mistakes
 - Standardization, Yokoten (Leveraged Transfer), and Establishment of Success

Genchi Genbutsu

Practice Genchi Genbutsu -- go to the source to find the facts to make correct decisions, build consensus and achieve goals at the best speed.

- Genchi Genbutsu
 - Grasp Problems and Analyze Root Causes
 - Thorough Confirmation of Facts
 - Early Study
- Effective Consensus Building
 - Emphasis on Consensus
 - Sharing of Goals / Quantitative Objectives
 - Emphasis on Process
- Commitment to Achievement
 - Commitment to Action / Straightforwardness
 - Achievement in Single Thrust
 - Pursuit of Complete Achievement / Constant Problem-Solving

RESPECT FOR PEOPLE

Respect

Respect others, make every effort to understand each other, take responsibility and do the best to build mutual trust.

- Respect for Stakeholders
- Mutual Trust and Mutual Responsibility
- Sincere Communication
 - Openness and Acceptance of Differences
 - Fairness and Willingness to Listen
 - Self-expression, Self-confidence, and Individual Initiative
 - Accountability

Teamwork

Stimulate personal and professional growth, share the opportunities of development and maximize individual and team performance.

- Commitment to Education and Development
 - Team Member Development
 - Thoughtful Leadership
 - Development through Delegation
- Respect for the Individual; Realizing Consolidated Power as a Team
 - Respect for Humanity and Creativity
 - Mutual Contributions with Emphasis on Individual Creativity and Teamwork

WINNING WITH DEALERS

Overall, Toyota offers about 60 car models, with each channel offering only 15-25 models in Japan. 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. The dealers serve as a distribution and service network for Toyota.

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, indicating the importance of after-sales service to Toyota. But Toyota does not expect the dealers to win the competition in after-sales service on their own. Applying the Toyota Way, Toyota actively helps dealers to improve and provide superior service.

Dealers usually generate the majority of their revenues through sales of new vehicles, used vehicle sales, and service. Toyota tends to develop very strong relationship with their dealers. When needed, Toyota provides financial help to a dealer who experiences temporary financial difficulties. Toyota also assists dealers through knowledge transfer—the Kaizen process. Toyota, with its deep experience in the methodologies of Toyota Production System (TPS), helps dealers apply those methodologies in their operations.

Nagoya Toyopet (NTP), one of the largest Toyota dealerships with 70 stores, is one such example. NTP has won the Toyota Special Award for 35 years straight since 1969. Of the \$1.2 billions sales revenue, 64.6 percent comes from the sales of new vehicles, 15 percent from used car sales, and 13.6 percent from service. The remainder comes from selling cellular products (KDDI products), insurance and marina (Toyota motor boats). Insurance is a growing and important recurring business. Each year, NTP can contact customers for insurance renewals, giving them a chance to interact with customers. In 2003, they sold about \$100 million worth of insurance, giving about \$20 million commission income to NTP.

Toyota helped NTP to streamline the layout of one of their PDI (Preparation Distribution Inventory) yards, which is basically a distribution center to store cars, inspect them, and install options in preparation for the customers at the dealer stores. Consequently, the logistical flows of the PDI were greatly improved, and the storage capacity of the Logistics Center was significantly increased. At the same time, the dealer was able to offer customers a larger selection of used cars, which enhanced sales level.

In the service parts area, TMC does not mandate that dealers buy exclusively Toyota parts. But many of them choose to do so, due to warranty benefits and since they feel that this would be in the best interest of the customers.

Kaizen has also been used to improve the service facilities. One example is the bi-annual car inspection that Japanese car owners have to do in order for them to get car registration with the government. In the past, such inspection took about 2 to 3 hours by one technician, depending on the skill and experience of the technician. The Toyota factory people helped NTP develop a new process, which requires 45 minutes performed by 2 technicians. Moreover, the standardized process now means that the 45 minutes is the duration regardless of the skill and experience of the technician. Hence, both the efficiency and reliability of the process have been improved.

Customers can have their cars serviced by any Toyota store across the channel. At NTP, 60 percent of the customers would go back to NTP for the bi-annual car inspection, which is a high percentage reflecting high customer loyalty. NTP estimated that, after a new car is purchased, and the first inspection point comes up, 70 percent of their customers return to NTP for inspection. This percentage is dropped to 60 percent two years later, and 50 percent another two years later. Also, about 30 percent of NTP customers return to NTP to make their next car purchase, and NTP aims to raise that to 40 percent. In general, 55 percent of Toyota car owners would buy from Toyota when they make their next car purchase.

Similarly to domestic market, Toyota emphasizes partnership and long-term relationship with its U.S. dealers. Personal relationships with dealers are developed through frequent visits of Toyota representatives to the dealerships, to study and help the dealers improve their operations. In return, most dealers are very willing to invest in the relationship as well, for example by funding expansion of their facilities or advertisements. Compared to other auto manufacturers, Toyota is viewed by dealers as much more collaborative.

SERVICE PARTS DISTRIBUTION

Domestic Market After-Sales Service Parts Support

Service parts follow a three-tiered system in Japan. In-house plants and suppliers supply parts to 5 TMC Parts Centers, who in turn supply parts to 34 kyohans (who also handle other manufacturers' parts) and 134 overseas distributors. The kyohans then supply parts to the 308 Japanese dealers, as well as to 4,000 parts jobbers and 6,500 repair stores. Exhibit 4 describes the supply chain of Toyota's service parts in Japan.

TMC manages the parts centers inventory tightly, using a Kanban-like process. The inventory at the parts centers amount to 7.5 days of inventory, or ¥12 billion. The number of SKUs managed by the parts center is 856,000, of which 437,000 are stocked. The stocking rule used by the parts center is that, if an item has a demand greater than two in the past five months, then it is stocked. The kyohans collectively hold about 16.9 days of inventory, amounting to ¥494 million per kyohan (valuation of inventory at kyohans is higher than that at TMC due to sales price of parts to kyohans). The efficiency of TMC parts center can be seen from comparative figures obtained from a 2002 JAMA (Japan Automobile Manufacturers Association) report (see Exhibit 5).

TMC Parts Centers use a very tightly disciplined approach to ordering parts from suppliers. Daily orders, based on order-for-order replenishment, are issued to suppliers. Suppliers resupplied parts on an average of 2.47 days. The fill rate by in-house suppliers to parts centers orders is 97.7 percent, while outside suppliers provide 98.7 percent fill rate. Such high fill rate and short lead-time enable the parts centers to have such low inventory levels.

The kyohans place an order with TMC once a day. But for the parts that they chose not to stock, they would reorder as the requests came in, which were then treated as "emergency orders." TMC is able to provide very high fill rates to the kyohans and overseas distributors. The fill rate (defined as next day domestic or 5-day-or-under overseas delivery shipments) is 95.9 percent for domestic kyohan orders, and 97.5 percent for overseas distributor orders. The lead-time from TMC to domestic kyohans is 1 to 2 days for the daily orders, and 0.5 to 1 day for emergency orders. TMC also measured "defective" shipments, defined as mis-shipping or wrong quantities shipped. Defective rate of was at only 13 ppm (parts per million) in 2002. Damaged items that would result in a claim by customers amount to only 11 ppm.

The kyohans can supply stocks to dealers three times a day, allowing dealers to keep relatively low inventory of service parts, and lessen the need for inventory pooling among the dealers. Centralized stocking of inventory at the kyohans instead of at the stores has the benefit of economies of scale and risk pooling. TMC does not have any formal statistics on how the kyohans serve their dealer customers, but sample surveys showed that the kyohans did a fine job in satisfying their customers. A fill rate of 92.9 percent was observed, with a supply lead time of 260 minutes on average. The mis-shipped or wrong quantity shipments amounted to 1.3 and damage claims amounted to 0.6 in 10,000 shipments.

TMC orders about ¥31 billion's worth of parts inventory from suppliers; and ships a similar amount out to kyohans and distributors (valued at TMC). The domestic and overseas shipments out of the five Japanese parts centers are roughly 50-50.

Sample surveys by TMC indicated that 70 percent of problems with service work at dealers were due to the shortage of parts, and therefore TMC has been concentrating their efforts to ensure efficient parts flow. As indicated earlier, it is also a common practice for TMC to send kaizen teams to dealers to help them apply the principles of TPS and improve their logistics flows so that they can serve their customers better.

U.S. Market After-Sales Service Parts Support

TMS has two central Part Centers (PC), one in Ontario, California, where the parts from Japan and from West Coast North America suppliers are stored, and another one in Hebron, Kentucky, for parts purchased from the Mid-West and East Coast North America suppliers. The North American supply base totals about 400. The central PCs serve 11 regional Parts Distribution Centers (PDC), plus two additional private distributors—GST (Gulf States Toyota) and SET (Southeast Toyota) (Exhibit 6). TMS does not supply parts and accessories to independent repair stations, who can only purchase original Toyota parts through a Toyota dealership.

TMS has about 200,000 active part numbers. Of the total sales volume of parts and accessories in the U.S., 48 percent (in dollars) come from Japan, and the remainder from North America. Total on-hand inventory across the two PCs and 11 PDCs is approximately 40 days of supply (see Exhibit 7). The PCs stock 100 percent of the parts (with the exception of cross-doc parts, which are not stocked but still move through the PCs). PDC's stock anywhere from 50 percent of all part numbers (in the largest PDC) to 12 percent (in the Lexus-only PDCs). The general rule of thumb used for deciding whether to stock a part at the PDC is: if the part has had three “demands” (in order lines, not units) or more in the last 12 months from the dealers who face off that PDC, it is stocked at that PDC.

An electronic inventory control system at TMS determines the optimal inventory level for each part number at each PC or PDC. The system checks daily whether on-hand plus on-order inventory at each PDC is lower than the optimal inventory target. If it is, then the system will order from the PC to bring the inventory up to the optimal inventory target. Exhibit 8 lists the average order lead time, including the time to fill the order at the PC and the shipping time to the target PDC, until the completion of the receiving process at the PDC.

At the PC in Ontario, 93 percent of the parts volume is ordered daily from Japan and suppliers (with 30.5 days lead time from Japan), while the rest are ordered monthly (42.9 days lead time from Japan). At the PC in Hebron, KY, 37 percent of parts volume is ordered daily (with 13.2 days lead time), and 63 percent monthly ordered (with 38.6 days lead time). The optimal inventory level is recalculated monthly, based mainly on order frequency from the dealers, as well as parameters such as supplier production capacity, distribution lead-times, part age, and commonality. Supplier performance is measured based on their delivery due date (DDD). Suppliers get credits only if they deliver the order at the exact specified delivery due date. Currently, actual average DDD for both N.A. and Japan suppliers is 96.3 percent vs. a target of 96 percent.

Although TMS does not have visibility or control over inventory levels at the dealerships, it provides information on part velocity, recommends to the dealers what inventory levels to keep, and advises them to practice one-for-one replenishment. Dealers who are more active in the

wholesale business (selling parts to local repair shops) tend to have a higher level of inventory. The dealers use a variety of commercial inventory management systems, available through external vendors such as Reynolds and Reynolds, UCS and ADP. Lexus dealers tend to use the auto-replenishment process to replenish inventory for about 70-80% of the parts. This acts like a Vendor-Managed Inventory program for these parts. When there is a shortage of parts, TMS controls the allocation of parts to the dealers.

Dealers' performance is monitored through surveys sent to customers whose cars have recently been serviced. The surveys include questions on waiting time for parts, which gives the regional offices an indication of the service level provided. If a problem is identified, TMS will work together with the dealer, get more involved in their inventory practices, and seek improvements. TMS also tracks the number of vehicles that were non-operational due to the lack of a part (Vehicle-Off-Road report).

TMS has no control over the actual parts inventory at the dealership. They do offer the dealers a return policy, which is based on the annual quantity purchased from TMS. Dealers are allowed to return 2 or 3 percent of their annual purchases.

Dealers can place orders with TMS on a daily basis. Dealers usually receive one- or two-day service as long as the part is in stock. In some metropolitan areas, TMS has dedicated, internal trucking services to drop off daily deliveries to the dealerships. For example, in the Los Angeles metro area, as long as a dealer places an order by 4 p.m., the order will be delivered the next day through this dedicated service. To make it work, the dealers have a locked area where the driver can offload the delivery 24 hours a day.

Once a dealer submits a replenishment order, TMS will first try to fill it from the regional PDC. If a part is not available, the order will be referred to a different PDC or to one of the central PCs. If a part is not available in any of the stocking locations, TMS will turn to the supplier for replenishment. The dealers do not have the visibility of actual inventory levels at different locations, but they can send inquiries to TMS for specific parts as the need arises.

For the 2003 calendar year, 95 percent of all dealer orders were filled within 1-2 days (from the regional PDC); and an additional 3 percent were filled within 3-4 days (by referral to another PDC or the PC). The remaining 2 percent were filled by external suppliers within 1-10 days. The dealer pays the same price for the parts regardless of the replenishment time.

Typically, due to the better price and logistics provided by TMS, a dealer who faces a shortage will not try to purchase the required part from other dealers. If they want to, dealers may utilize a third-party service called "part voice," through which a dealer with a part shortage can check the availability of parts at other dealers. Dealers are required to pay a monthly fee to register for this service. Participation to this service is voluntary, and the part price is negotiable. Usually, however, dealers who have built their reputation on customer service and have invested a lot in inventory are reluctant to use the "part voice" service.

Some of the TPS philosophies have been applied in a dealer service department—scheduling appointments with customers, facility layouts, etc. TMS has helped dealers on how parts should be stocked. Traditionally, parts were stocked based on the parts' identification number. Instead,

TMS helped dealers to change it to stocking fast-moving items at the front of the stock room. In addition TMS educates dealers with the concepts of “Lean Distribution,” and advises dealers to reduce their inventory as they can depend on the reliable supply from Toyota.

To be more competitive in the after-market, Toyota started the “Supplier Brand” program three years ago, working more closely with the after-market manufacturers of accessories. Toyota takes its off-the-shelf item, evaluates it, and determines how it interfaces with their vehicle. Toyota then worked with the manufacturer to make modifications of the items to meet Toyota’s needs. Toyota then purchases the item from the supplier, sells it to the dealers or installs it on the vehicles, and warranties it. This program only takes place for Toyota cars, not for Lexus. For Lexus, Toyota gives dealers access to a database consisting of all the vehicle purchase history and the repair record of the vehicle. This helps dealers determine their best stocking list and stocking levels for the service parts.

Toyota is very committed to providing the best support for its dealers. During the Longshoremen’s strike at the Los Angeles port in 2002, Toyota air-shipped parts in to ensure that the dealers got enough parts for service. They reserved twenty 747 jumbo-jets, and their swift actions resulted in other manufacturers not being able to get any 747s for similar use.

CUSTOMER LINKAGE THROUGH E-BUSINESS AND TELEMATICS

Internet at Toyota

Toyota has found that the Internet is useful for used car trades, supporting other Web providers such as Carpoint or Autobytel, allowing customers to do research (75 percent of customers did Web research before coming to the dealerships), shortening the negotiation time, and getting customers from further away geographically (mostly used cars). The South Bay Toyota dealer in the U.S., for example, has found that, by the time that the customers came to the dealership after they had done Web research, the competition tended to be with other Toyota dealers, and not with Honda or other cars.

The e-Toyota Division in TMC manages all consumer-oriented Web sites. It also plays an essential role in CRM (Customer Relationship Management). Web sites include:

- **Gazoo.com:** A Web site for company members to search for vehicle information (new and used vehicles, etc.); also introduces outlets, in addition to non-vehicle related functions such as virtual communities.
- **Toyota’s official Web site:** New vehicle information, corporate IR (investor relations) information, etc.
- **G-Book.com:** A Web site that presents G-book related services.

Telematics at Toyota

G-Book was developed as a “new network service to link people, cars, and society” in anticipation of the arrival of a ubiquitous network society in the 21st century. G-Book is a total mobility service and enables car-drivers to receive various types of information via the Gazoo² network. G-Book falls under the category of telematics, but it is not limited to vehicles, and can provide customers with services by being lined to a wide range of interfaces, such as PCs, cellular phones, and PDAs.

G-Book includes the following services:

- *24-hours Road Assistance Service:* An information center can identify the location of a vehicle if trouble occurs during driving, and dispatch rescue vehicles to the site.
- *Car Search:* The position of a vehicle can be identified using a cellular phone, and the vehicle can be traced down in case of an emergency.
- *Remote Maintenance Service:* The status of a vehicle can be checked via a network, and outlets and others can be linked to provide appropriate maintenance advice. Future plans call for fault diagnosis to be carried out for some vehicles.
- *Live Navigation Service:* Information related to cities, trips, hobbies, and recreation can be provided, together with a car navigation system to steer the user to a specified location.
- *Information Service:* Information concerning general topics, sports, economy and show business, weather reports, traffic condition, and stock market information can be read out.
- *Entertainment:* Karaoke songs, background music and games can be downloaded using a SD memory card, to be played back later.
- *Communication Service:* e-mails can be sent and received. Message and bulletin boards are provided. Groups of drivers can use this service to locate each other on the car navigation map.
- *E-Commerce Service:* Online purchases of products from the Gazoo shopping mall can be made, and G-Book's paid contents can also be obtained.
- *Operator Support Service:* Operators respond to requests from customers, and carry out services for them that include searching for information from the information center or setting destinations in the car navigation system.

This system is used to connect with customers, so as to build stronger relationships. Dealers can use the system to send customized e-mails directly to customers' vehicles, e.g., service notifications. When customers start their cars they can check their e-mail and with just one touch have their e-mail read out loud. This offers an interactive service that makes it possible for customers to carry out operations such as making reservations for maintenance work via return e-mail.

² Gazoo began in 1996 as a tool for dealers to use in listing online advertisements for used vehicles. It took approximately 20 days from the time the traded-in vehicle was repaired and then displayed in the outlet. The aim of the outlets was to use this tool to carry advertisements about traded-in vehicles from the moment they were received. This system was called UVIS (used car visual information system), but later information related to new vehicles, maintenance, insurance, etc. was added and it was developed into a system called Gazoo. The infrastructure and know-how built into this system have been used in G-Book.

The G-Book service started off in Japan with a single vehicle (Will Cypha), but it has been expanded to 50 domestic models. The G-Book service is also being developed for vehicles produced by Daihatsu and Subaru, and plans call for the service to be offered also in Mazda and Mitsubishi vehicles. The future plan is to develop G-Book on a global scale.

The Toyota Way captures the underlying business philosophy that is already in action in every dimension of the business. Under this philosophy, Toyota emphasizes partnership and long-term relationship with all stakeholders. The company invests in personal relationships with dealers, spending time to study and help them improve their operations. The company has also invested in building strong customer relationships directly with the end-customers.

What more can the company do to further strengthen its service chain? As a company that is known for creating and championing the Kaizen practice, where else can Toyota invest in continuously improving the service chain? How can Toyota make use of the advances of new technologies to further its competitive position in its service chain?

Exhibit 1

Major Manufacturers' Worldwide Vehicle Sales

Make	Total Vehicles (thousand units)	
	2002	2003
General Motors ¹	8,537	8,098
Toyota ²	6,168	6,783
Ford ³	6,980	6,720
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

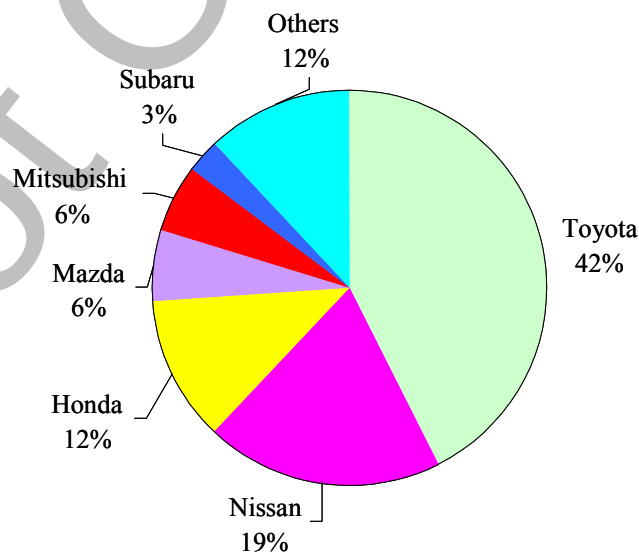
² Includes Lexus, Daihatsu, and Hino

³ Includes Jaguar, Volvo, Land Rover, and Aston Martin

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

Exhibit 2

Japan Automobile Market Share 2003



Source: Japan Automobile Manufacturers Association, Inc.

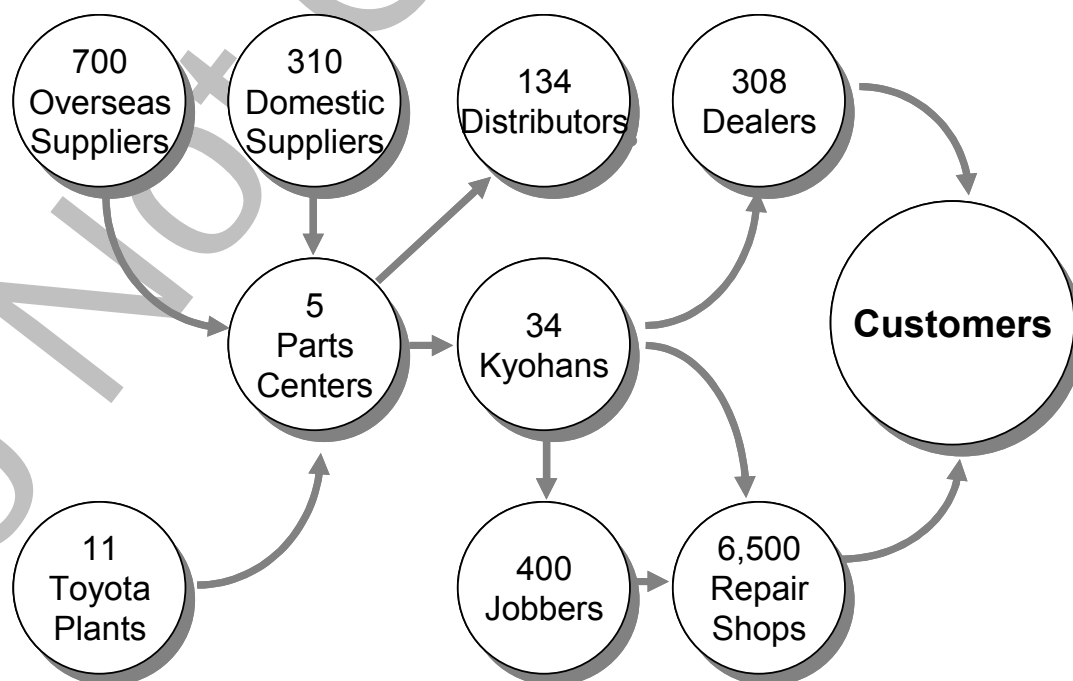
Exhibit 3
Toyota Business Results 2001–2003
(1 = ¥1 billion)

	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 4
Toyota's Service Supply Chain in Japan



Source: Toyota interviews

Exhibit 5

Service Parts Inventory Level in Japan, 2002

Manufacturer	Parts Inventory in Japan
Toyota	7.5 days
Nissan	1.23 months
Honda	3.7 months
Mazda	2.9 months
Mitsubishi	1.8 months

Exhibit 6

Toyota North America Distribution Map

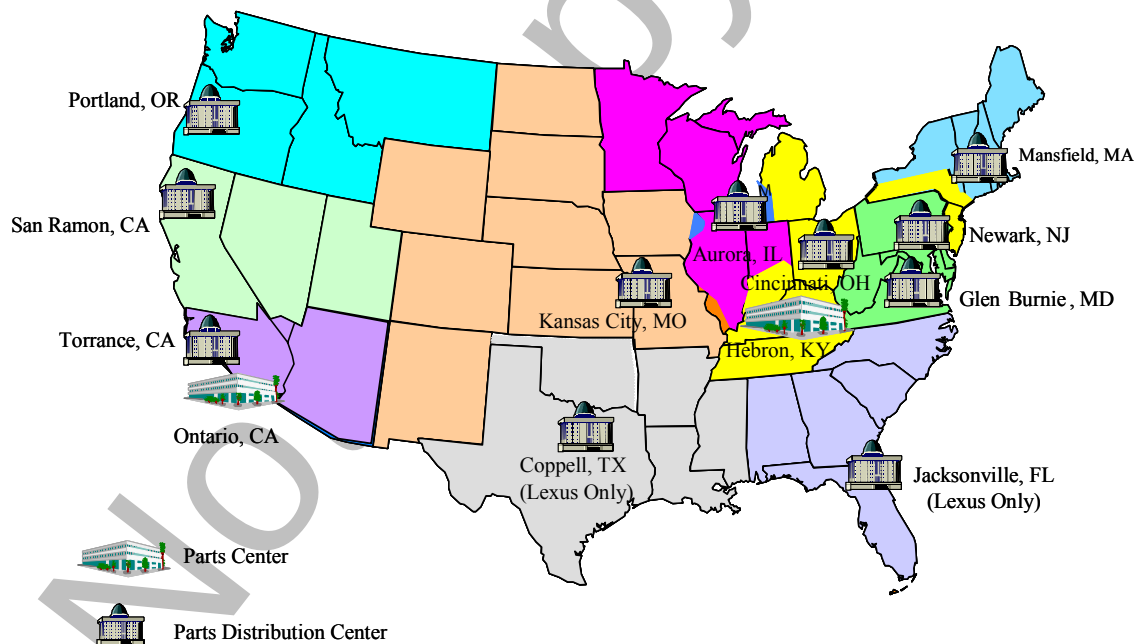


Exhibit 7
Actual inventory levels per PC / PDC (as of 4/10/2003)

Part Center or PDC	Inventory (\$US millions)	Months of Supply
Ontario Ca. - PC	110	2.1
Hebron Kentucky - PC	57	1.6
LA PDC	25.3	1.7
SF PDC	15.7	2.0
Portland PDC	7.9	3.0
Chicago PDC	14.4	2.1
Cincinnati PDC	10.3	1.4
Kansas City PDC	9.4	2.7
West Caldwell PDC	19.8	2.1
Baltimore PDC	14.2	1.9
Boston PDC	11.3	2.3
Dallas PDC	5.9	2.1
Jacksonville PDC	6.1	1.8

Exhibit 8
Average Order Lead times (in Days)

PDC	Lead time from Ontario, CA	Lead time from Hebron, KY
Jacksonville, FL.	13.1	14.2
Dallas, TX.	10.1	11.9
Los Angeles, CA.	6.7	13.2
San Ramon, CA.	7.3	13.7
Portland, OR.	7.2	12.2
West Caldwell, NJ.	15.9	15.9
Boston, MA.	15.0	9.1
Baltimore, Md.	16.6	7.4
Chicago, IL.	12.2	7.8
Cincinnati, OH.	13.3	6.6
Kansas City, MO.	12.0	8.0