# Toyota Motor Manufacturing Canada (TMMC): The Lexus RX 330 Line[1]

On the day of April, 25th 2000, Greig Arnold found himself both anxious and excited as he approached the offices of Toyota's worldwide headquarters in Toyota City, Japan. He was about to meet with the Chairman of global operations, Ikebuchi Nakatani, at the world's third largest automaker. His hope was to convince the Chairman to support his company's bid for the new Lexus RX 330 line, which would be the first of its kind manufactured outside of Japan. This would not be easy. Greig, along with the President of the division, was part of a delegation from the Toyota subsidiary in Canada, the Toyota Motor Manufacturing Canada (TMMC), which was 100% owned by the Toyota Motor Corporation. Although he was the Director of Operations at the Cambridge, Ontario plant, decision-making was very much a consensus-building process at Toyota and involved not only the President but inputs from line employees as well. After all, he was part of a company that was famous for its quality production system and employee involvement initiatives embodied in terms such as Total Quality Management and *kaizen*, Japanese for Continuous Improvement. All of these had originated within the company and were now standard terms in most business schools. Greig knew the strengths of having the global company locate its newest manufacturing venture at his plant but at the same time also knew that he had to act in accordance with the company's values and ways of doing business.

Meanwhile, Ikebuchi Nakatani looked over the one sheet of A3 paper in front of him with intense eyes. The paper took up only 14 inches by 10, but within it was information that helped him cope with making a decision that would be worth multiple millions of yen and could perhaps put the reputation of the company's premier vehicles on the line. As the Chairman of global operations he was one of the highest authorities for making the final decision as to where the new Lexus RX 330 manufacturing line would be located. Ultimately, however, he would have to make his recommendation regarding the global manufacturing location decision to the Chairman, Hiroshi Okuda, and the President, Fujio Cho, of the Toyota Motor Company.

## Toyota Motor Corporation

The Toyota Motor Co. Ltd was first established in 1937 as a spin off from the Toyoda Automatic Loom Works. The Loom Works, then one of the world's leading manufacturers of weaving machinery, was headed by Sakichi Toyoda, heralded by some as Japan's 'King of Inventors'. It was the patent rights to one of his machines that were sold to Platt Brothers in the U.K. that ultimately provided the seed-money for the development and test-building of Toyota's first automobiles.

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[1] Copyright 2003- This case was written by **William H.A. Johnson, Department of Management, Bentley College, Waltham, MA** and is meant for classroom discussion. It is not to be used without permission. It is the authors' interpretation of a business situation and does not reflect the official opinions and policies of the subject company. It is a fictionalized account of a real life business case, based on public data and personal research by the author and is not to be taken as historical fact, although based on these valid data. Persons mentioned in the case are fictional for purposes of confidentiality. The case is meant to be an instructional aid in the classroom as an example of the processes of global plant location decision-making and strategic initiatives in a Japanese firm. It has been prepared as the basis for class discussion rather than to illustrate either effective or ineffective handling of a managerial situation.

In 1947, Toyota launched its first small car, the SA Model. The production of vehicles outside Japan began in 1959 at a small plant in Brazil. Recently, the move to globalization is even more evident. As the company's website stated in the 21st century, 'Toyota believes in localizing its operations to provide customers with the products they need where they need them; this philosophy builds mutually beneficial long-term relationships with local suppliers and helps the company fulfill its commitments to local labor'. Today, Toyota is the world's third largest manufacturer of automobiles in terms of both unit sales and net sales. It is also the largest Japanese automotive manufacturer, producing more than 5.5 million vehicles per year, equivalent to one every six seconds. See Appendix 1 for a list of its guiding principles. Appendix 2 depicts excerpts from the company's 2000 annual report showing their main goals for that year.

The company has 12 manufacturing plants in Japan and approximately 54 manufacturing companies in 27 countries throughout the world. These plants produce vehicles and components under the Lexus and Toyota brand names and employ about one quarter of a million people worldwide. In total Toyota vehicles are marketed and sold in more than 160 countries and regions with the automotive business, including sales and finance of the vehicles, accounting for more than 90% of the company's total sales. Appendix 3 shows worldwide sales and appendix 4 shows the models produced in North American Toyota plants.

## North Americanization of Toyota

Since the late 1980's Toyota had made several moves that showed their commitment to what management called the North Americanization of the company. The idea was to increase car sales in the lucrative North American market by also introducing manufacturing plants that produced parts and assembled whole vehicles for the market. One problem, however, materialized in the success of Japanese car sales in the U.S. while the Japanese market remained closed to American manufacturers due to the rather protectionist policies of the Japanese government. Facing declining sales, which stemmed from such things as a gap in quality and value between foreign and domestic cars, the American manufacturers cried foul. They could not compete in Japan yet the Japanese could easily compete in the U.S. This led to higher tariffs on foreign-made vehicles and started Japanese companies like Toyota on the road to opening foreign manufacturing plants.

The initial foray into manufacturing in North America was undertaken in 1984 with New United Motor Manufacturing, Inc. (NUMMI), a 50% joint venture with General Motors Corp. that went on to spawn the critically acclaimed Saturn line of cars. This was followed by a plant in Kentucky in 1988. Since then, production growth has quadrupled, employment growth at the company has tripled and North American direct investment growth has increased by a factor of five. See Appendix 5 for statistics on the North Americanization efforts. This has translated into almost the doubling of sales with most of the production shifting from Japanese plants to American over the last decade.

effective means of communicating the idea behind the initiative and making visible the problems it is meant to solve. To a large extent, the process also mitigates some of the risks associated with initiatives, for both headquarters and the subsidiary. Greig always explained the idea this way: "Toyota is a process-oriented company and it is the culture of the company to determine what the current process is and to map it out and make it visible. When you map these processes out it highlights where the problem areas are. This is one way to minimize risk to know what the new process is and to map it out in detail. The other thing is something called *Nemawashi*."

*Nemawashi* (literally, "prior consultation" but coming from the original meaning of the word 'to smooth around roots before planting') is a process of consultation. One Toyota manager of the delegation described the process as "a very close cousin of consensus building, but it's not exactly the same thing. In consensus building you try to make everybody happy and you make everybody a little bit **not** happy. But in *Nemawashi* you try to consult with everybody who might be a stakeholder within the process. You listen to them and all the compelling arguments and at the end of the day you make a decision on what you're going to do [even if that makes somebody unhappy]. You then make your recommendation on what you're going to do to the highest authority."

The processes of *Ringo sho* and *Nemawashi* suggest a conservative and risk-averse approach to internal initiative. See Appendix 7 that describes the philosophies and their role in Japanese culture. However, there are similarities in the process to that used by high risk-taking, innovative companies like 3M Corporation, which requires a compelling business case and major presentation to senior management before it will invest in any major initiative. This approach helps to guard against mistakes in investing in highly risky and unlikely initiatives. The flip-side of that is that some opportunities might be missed out on when compared to a more maverick management style. The process is very often slower but it helps to avoid potential mistakes that can be costly and damaging. As such, a Toyota motto for this scenario was 'slow on planning but quick in implementation'.

The use of pilot studies is also prominent in initiatives at Toyota. In this way ideas can be tested and proven before heavy investments are necessary and before the firm is committed to any particular course of action. *Ringo sho*, *Nemawashi* and pilot studies are important elements of managing initiatives at Toyota. These practices are all designed to ensure that the idea behind the initiative is well thought out, that people do their homework and that investment in the initiative is deemed necessary and beneficial to the stakeholders before putting forth ideas for an initiative. While it is to some extent a conservative system, it has been successful in approving the initiatives of various Toyota subsidiaries.

The company also had implemented an infrastructure geared towards supporting the TPS philosophy. North American manufacturers wishing to strengthen their competitiveness through productivity and quality initiatives could also count on assistance from the Toyota Supplier Support Centre (TSSC), located in Lexington, Kentucky. TSSC helps companies that wish to implement the Toyota Production System, recognized as the most efficient production system in the world.

**Toyota Motor Manufacturing Canada (TMMC)**

There are two major subsidiaries of Toyota in Canada. One, Toyota Canada Inc. is a joint venture with Mitsui & Co. Ltd., the oldest international trading company in Japan and is primarily in charge of sales. The other major subsidiary is the 100% fully owned manufacturing firm, TMMC. There are also many joint venture projects as well as the Toyota Credit Canada Inc. but TCI and TMMC represent essentially the sales and production functions, respectively, in Canada. Canada also played host to a cold weather testing site described below.

Appendix 8 provides a table of facts about the TMMC plant. Located in Cambridge, Ontario, the TMMC plant began manufacturing the Corolla in 1988. Over 15 years and 10 months the plant was estimated to have produced 1.5 million vehicles of the total 10 million Toyota vehicles manufactured in North America. Today, it has more than 2700 employees and is recognized for its high quality manufacturing. The plant has won four J.D. Power Awards for Plant Quality, including two Gold awards in 1991 and 1995. In 1998, it became the only Toyota facility in the world to produce the Camry Solara Sports Coupe. Indicative of its commitment to quality, the Cambridge facility was also named the most efficient car assembly plant in North America, according to the 1999 North American Harbour Report. Over its short history, the production facility has earned a well-deserved reputation for quality and proactive initiative.

Toyota has a long history in R&D within Canada. Since 1974 the company has brought teams of factory engineers to the Canadian north each winter ‘to conduct extensive testing which, early on, led to the adoption of comprehensive anti-rust protection, as well as heavy-duty batteries, starters, alternators and heaters’. The cold weather testing center in Timmins, Ontario provided the ideal setting for such tests. Considering the region’s harsh winters, the competency in understanding survival in cold weather for the regional unit was substantial! This cold weather center also illustrated another Toyota practice of *Genchi-Genbutsu*, which refers to scientific testing under actual local operating conditions. As one Toyota document stated, “Toyota builds products specifically for the markets in which they are sold… winter testing confirms things like cold starting, efficient heater/defroster and wiper/washer operation, and tire traction. Driving 500 kilometers a day on highways coated with sand and salt checks for corrosion and chipping. ABS and traction control systems can be fine tuned under severe winter conditions. All data is analyzed and forwarded to Toyota test labs, where winter simulation tests are refined so that vehicles can be evaluated all year round. This ongoing development process is further enhanced by the constant feedback from dealership technicians and Toyota Canada quality assurance specialists.”

TMMC was not the only Japanese foreign automaker manufacturing cars in the Ontario, Canada region. Honda also had a manufacturing plant in Alliston, Ontario, which had been in operation since 1986. It also had a sales arm that was founded in 1969. While neither Honda nor TMMC was unionized, there was a substantial union presence in the other North American ‘Big Three’ automotive manufacturers located in the same province of Ontario. Through 1997 to 2000, motor vehicle and other transportation equipment represented between 20% and 25% of all manufacturing in the country.

In fact, according to the Canadian Vehicle Manufacturers' Association, automotive industries represent Canada’s #1 export, typically achieving an overall

automotive trade surplus of $15 billion (Cdn$). In 2000, Canada was the world's seventh largest automobile producing nation, behind the United States, Japan, Germany, France, South Korea and Spain. In the areas of supply, manufacturing, product standards and trading environment the Canadian automotive industry is highly integrated with the United States by virtue of the Auto Pact, the FTA and NAFTA. The low dollar relative to the US greenback gave some advantages to the Canadian manufacturers.

**The KPI-Cognos: An Example of Initiative at TMMC**

One of the impetuses that lead to TMMC's reputation for quality manufacturing and finally to it being considered for a high profile global mandate like the RX 330 line was the KPI-Cognos project. The process by which KPI-Cognos was implemented turned out to be a textbook case of Japanese management principles in action. The Assistant General Manager of Information Systems at TMMC, Jim Gross, utilized the processes of *Ringo sho* and *Nemawashi* in initiating the KPI-Cognos project. The impetus behind the project was a desire for an integrative Quality Control System that would help TMMC better manage its Key Performance Indicators of quality control. In the past, much time had been spent collecting data on quality control and other facets of plant activity and TMMC wanted to utilize that data as effectively as possible. After investing in the Enterprise Resource Planning system of SAP, which took care of business data on a daily basis, the IT team felt it needed a complementary system that could collect and analyze quality control data at the source for a wide variety of problems. They identified several major concerns. First, information was available within a particular zone of the plant but not necessarily company-wide. They needed a good data warehousing system, which would create ownership of any 'problem' at all levels but could be managed at one level only. This would also solve a second concern of having to deal with many levels in which the problem might apply. Finally, there was a significant amount of reporting work that was still inputted and analyzed manually. Any appropriate solution had to consist of one input step only with the resulting data then used in multiple analyses and integrated into the classic quality-PDCA cycle of "Plan, Do, Check and Act" stemming from the work of Walter A. Shewhart.

The proposed solution was KPI-Cognos, a data collection, warehousing and analysis tool of Key Performance Indicators. It was developed with the guidance and software of Cognos, a vendor of enterprise business intelligence solutions that had a Canadian office located in the Ottawa area. The investment was substantial enough but could be covered by the local subsidiary's budget. The calculated Return on Investment for the project was thought to be quite good, stemming from an increase in productivity and product quality.

Ultimately, the KPI-Cognos project was very successful at attaining its technical goals. While organizational change issues still represented a potential concern in implementing the system company-wide (e.g., it required a significant change from how people worked in the past), the improvement in productivity and elimination of manual data entry were seen as indicative of a successful technical solution. It also surpassed its original business domain, attracting the attention of other Toyota facilities. In fact, TMMC's sister manufacturing firm at North American headquarters in the US bought the system after being impressed by a demonstration of it. Toyota Motor Manufacturing

North America (TMMNA), a coordinating office for all of the North American Toyota manufacturing plants supported the technology transfer. When word of the KPI-Cognos system spread to Japan, it caught the attention of global headquarters management. They then sent managers to be trained on the system at the Cambridge facility, evaluating it over the course of a week.

**The Lexus RX 330 Line**

In 1999, word had spread that top management in Japan, in its desire to continue along with its North Americanization efforts, was considering investing in a new manufacturing line for the Lexus RX 330 of the RX 300 line. The Lexus brand covered Toyota's premier vehicles and the new line would represent the first time that the car was made outside of Japan. As such, it was a very big strategic deal and a potential coup for any subsidiary lucky enough to capture the mandate of manufacturing it.

The Lexus RX 330, specifically, was designed as a hybrid luxury car/sport-utility vehicle. One reviewer in 2000 said of that year's RX 300 model, "The Lexus RX 300 handles well and rides nicely. Exceptional traction on slippery surfaces makes it a good luxury car for people who frequently drive on snow-covered or unpaved roads. The RX 300 provides almost as much cargo space as a Jeep Grand Cherokee, but boasts a vastly superior ride and handling. Inside it looks, feels and drives like a luxury sports sedan."[3] Appendix 9 depicts a page from a brochure showing that the RX 300 was marketed as an all-wheel drive (AWD) vehicle that cold handle snowy and slippery conditions well.

**Alternatives for the Lexus Line**

Beyond the possibility of TMMC as a manufacturing site for the RX 330, there were a number of alternative sites for locating the Lexus RX 330 line that Ikebuchi had to keep in mind when contemplating his recommendation to top management. The most obvious alternative choices, given the focus on the continued North Americanization of the company and the large market in that region, comprised of five U.S. plants and one Mexican plant. In order to coordinate and support these local manufacturing operations and to help streamline expansion activities a new company, Toyota Motor Manufacturing North America (TMMNA) was established in October 1996, with offices in Erlanger, Kentucky.

The major North American plants were:

- Toyota Motor Manufacturing, Alabama, Inc. (TMMAL)
- Toyota Motor Manufacturing de Baja California (TMMBC)
- Toyota Motor Manufacturing, Indiana, Inc. (TMMI)
- Toyota Motor Manufacturing, Kentucky, Inc. (TMMK)
- Toyota Motor Manufacturing, West Virginia, Inc. (TMMWV)
- New United Motor Manufacturing, Inc. (NUMMI)

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[3] See New Car Test Drive.com at http://www.nctd.com/review-intro.cfm?ReviewID=664 (as at Jan. 19, 2003)

Only three of the plants manufactured whole vehicles, though, so that while the others might be useful in supplying parts, final assembly was to be done at TMMK, TMMI, or NUMMI. See Appendix 10 for information on each of these three plants.

The NUMMI plant, previously mentioned, was the oldest of the Toyota plants in North America. It manufactured the joint initiative of the Saturn line with General Motors, as well as, the Corolla sedan and Tacoma compact pickup truck. The plant had been praised with accolades over the years, winning five J.D. Power Plant Quality Awards up to the year 2000, including three Silver awards in 1994, 1999 and 2000; as well as two Bronze awards 1995 and 1996. The plant was granted ISO 14001 Certification in September, 1998. ISO 14001 is a voluntary standard that deals with a company's environmental management system. The certification process verified that the plant had a formal environmental policy as well as a management system designed to track environmental performance and established mechanisms for continuous improvement.

The TMMK plant was located in Georgetown, Kentucky. The huge plant opened in 1988 and manufactured a large number of Toyota products, including the Camry sedan, Avalon sedan and Sienna minivan. Rumor had been going around the global company that the Sienna production mandate might be shifted to the TMMI plant in Indiana and that a new Solara line might begin at TMMK in the autumn of 2003. Like most Toyota plants, it had also been praised with accolades over the years, winning seven J.D. Power Plant Quality Awards up until 2000, including four gold awards in 1990, 1993, 1994 and 2000, one Silver awards in 1991; as well as two Bronze awards 1992 and 1997. The plant was granted ISO 14001 Certification in November, 1998.

Finally, the TMMI plant was located in Princeton, Indiana. It was the newest North American plant, starting production in 1998. It manufactured the Tundra pickup truck and Sequoia full-size sport utility vehicle. As such, it was developing a competence in light utility trucks. This made the rumored decision to transfer the Sienna minivan production all the more likely. Compared to its sister plants, the newer TMMI had not been as honored with quality awards but the Tundra had been named JD Power & Associates #1 Full Size Pickup Truck, Motor Trend’s Truck of the Year as well as the Four Wheel & Off-Road 4x4 of the Year award, all in 2000. The plant was granted ISO 14001 Certification in November, 1999.

**The Struggles for Mandates and the Difficulty in Decision-making for Global Operations Strategy**

Knowing all of the information described herein, Greig Arnold’s concern, as he approached the Toyota head office, was whether the TMMC team had made the appropriate arguments in trying to win the Lexus line. His group, lead by the TMMC president, had faithfully enacted the processes of *Ringo Sho* and *Nemawashi* and was relatively confident that all the major elements of any and all arguments for locating the line at the Canadian plant had been clearly made. TMMC was an award-winning plant with much to offer and clearly had done an excellent job managing the practices of *kaizen*. But their American colleagues at the plants down south were also excellent corporate citizens so the building of consensus towards awarding the line to TMMC would not be easy. While TMMC might have several advantages compared to some

plants it might fail in comparison to others and Greig knew that the philosophy that transcended all decision-making at Toyota was optimizing the whole system or network of plants within the Toyota family of plants.

Meanwhile, Ikebuchi Nakatani's concerns were similar. The Canadians provided an excellent case for locating the line there but he had to take into account the entire scope of global operations strategy when making his recommendation. He had concerns regarding matching plant competencies, present capacity and the potential for growth, location with respect to markets and the other plants within the Toyota network that supplied parts for assembled vehicles. His decision needed to maximize network performance and ensure that the TPS operated properly. Numerous questions pervaded his thinking. How would his suggestion affect the flow of parts and the nature of sales in the region? What was the incentive to locate the Lexus line in Canada? What effects would it have on the American plants down south? Once a decision was made how could management insure that the process went smoothly and resulted in the high quality luxury vehicle that the Lexus RX 330 represented? All of these questions raced in his mind but he was confident that, via the processes of *Ringo Sho* and *Nemawashi* which his company had institutionalized, the best decision (at least for the moment) would eventually be made. The key was never to rest on one's laurels. *Kaizen*, that is, continuous improvement, must always apply for continued success! Or as he liked to state, "continuous improvement leads to continuous success".

## Appendix 1
## Guiding Principles at Toyota Motor Corporation
(Established in 1990 and revised in 1997)

1. Honor the language and spirit of the law of every nation and undertake open and fair corporate activities to be a good corporate citizen of the world.
2. Respect the culture and customs of every nation and contribute to economic and social development through corporate activities in the communities.
3. Dedicate ourselves to providing clean and safe products and to enhancing the quality of life everywhere through all our activities.
4. Create and develop advanced technologies and provide outstanding products and services that fulfill the needs of customers worldwide.
5. Foster a corporate culture that enhances individual creativity and teamwork value, while honoring mutual trust and respect between labor and management.
6. Pursue growth in harmony with the global community through innovative management.
7. Work with business partners in research and creation to achieve stable, long-term growth and mutual benefits, while keeping ourselves open to new partnerships.

(Translation from original Japanese)

Source: Toyota website (http://www.toyota.co.jp/en/ci.html) as at Jan. 14, 2003

## Appendix 2
## Excerpts from Annual Report, Year Ending March 2000:
## Message to Shareholders and Stakeholders

The rising value of the Toyota share is a gratifying endorsement of our strategic commitment to growth and innovation. We have increased our unit sales of vehicles, raised efficiency, and nourished a strong cash flow. That cash flow underlies the rising valuation of the Toyota share, and it funds measures for augmenting shareholder value through dividends and share buy-backs. Over the past four years, we have repurchased and retired nearly 120 million shares, worth ¥366.0 billion ($3.4 billion). We have made the Toyota share more accessible to individuals, meanwhile, by shrinking the trading unit in Japan to 100 shares, from 1,000. That change is effective August 1, 2000.

**Growth**

More than ever, Toyota is a growth company. We want to serve as many customers as possible. We keep finding innovative new ways to win the hearts of customers. And we keep raising efficiency to translate growth in unit volume into growth in earnings and shareholder value. Here is how we performed on those counts in the past year.

People around the world bought 5,182,774 of our Toyota, Lexus, and Daihatsu vehicles in the past fiscal year. That was an increase of 10.4% over the previous year and was our first-ever annual sales total in excess of 5 million vehicles.

Growth in unit volume is absolutely essential to long-term growth in earnings and shareholder value. We will continue to pursue volume gains by expanding our market share in well-established markets and by building a strong presence in emerging markets.

In Japan, we used to talk about restoring our market share to 40%, not counting minivehicles, since we did not make those vehicles. We increased our Japanese market share to 42.2% by that criterion in the past fiscal year. That was up from 40.1% in the previous term, when we reclaimed 40% of the market for the first time in four years. We now concentrate, however, on market share inclusive of minivehicles. That's because we increased our stake in minivehicle manufacturer Daihatsu Motor to a majority holding in September 1998

By that broadened criterion, our market share was 37.5% in the past fiscal year, up from 36.5% in the previous year (adjusted to include Daihatsu sales for the full 12 months). Our sales rose 2.1% over the previous fiscal year (also adjusted to include Daihatsu sales for the full 12 months), to 2,177,524 vehicles, in a sluggish market that grew only 1.1%. We thus are well on our way to increasing our Japanese market share to more than 40%, including minivehicles. Leading our sales growth in Japan was our small car, the Vitz, and its derivative models, and our newly remodeled luxury sedan, the Crown.

Our sales are growing in North America, too. Americans and Canadians bought 1,689,483 Toyotas and Lexuses in the past fiscal year, up 13.8% over the previous year. The Toyota Camry was the best- selling passenger car in the United States in calendar 1999 for the third year in a row.

We also posted gratifying sales growth in Europe. At last, we have put in place the right combination of products and marketing channels to appeal convincingly to European customers. Europeans responded by purchasing 633,879 Toyotas, Lexuses, and Daihatsus in the past fiscal year, up 13.7% over the previous year.

Another gratifying trend was our resurgent sales performance in Southeast Asia, where sales rebounded strongly in Thailand, Indonesia, the Philippines, and Malaysia. Elsewhere in Asia, we recently began producing family utility vehicles in India and will begin making small buses in 2000 in Sichuan, China. We received approval from the Chinese government recently to produce passenger cars in China, and we established a joint venture, Tianjin Toyota Motor Co., Ltd., for that purpose in June 2000. Tianjin Toyota will begin producing a car on the same platform as the

Vitz (Yaris) in 2002. Our partner is Tianjin Automobile Xiali Corporation, a subsidiary of Tianjin Automobile Industrial (Group) Co., Ltd. Tianjin Automobile Industrial is our partner in three joint ventures that already produce engines and other components in China.

**Customers for what?**

You can see from the preceding summary that the number of Toyota customers continues to grow. Our perspective on customers, however, is changing.

We traditionally have regarded customers principally as buyers of automobiles and of a very limited range of closely related products, such as financing and replacement parts. Now, we are deepening our relationships with automobile customers through new products and services, such as innovative packages that combine financing and insurance. And we are diversifying into markets where we develop customer relationships through products unrelated-or indirectly related-to automobiles, such as cellular telephones and credit cards.

A lot of the increased value that we expect to cultivate downstream in our value chains is in financial services. Our global network for providing financing for vehicle purchases has grown to 19 companies in 18 nations. Those nations account for more than four-fifths of the vehicles that we sell worldwide, and we are preparing to establish finance companies in additional markets.

We also are reaching out to customers through credit cards, property and casualty insurance, and-via a new securities subsidiary-brokerage. For example, we have issued nearly 2.9 million Master, Visa, and JCB cards jointly with bank-affiliated credit card companies. We plan to issue our own credit card in 2001 jointly with Master, Visa, and JCB.

…

**Innovation**

Better ideas are the wellspring of growth, and our people unleashed a lot of better ideas in the past year. Some of the best ideas, as ever, unfolded in manufacturing. Virtual-reality computer simulations helped us devise efficient assembly processes for new models while the products were still in development. Jigs and other equipment that accommodate diverse body sizes and shapes helped us offer increased product variety on common vehicle platforms.

Highlighting our product innovations again in the past fiscal year were technologies for reducing environmental impact. Our gasoline-electric Prius, the world's first mass-produced hybrid vehicle, continued to gain converts in Japan with its spectacular fuel economy. And we readied beefed-up versions of the Prius, which we are preparing to launch in North America this summer and in Europe this autumn. We also continue to market electric vehicles, and original technology puts us in the race to put commercially viable fuel-cell vehicles onto the market.

…

Minimizing the environmental impact of our manufacturing operations is another important emphasis in environmental management at Toyota. ISO 14001 has become the chief international standard for environmental management. And we had secured ISO 14001 certifications at all our principal plants worldwide by March 1999-one year ahead of schedule.

…

**Efficiency**

We accompany continuing incremental improvements throughout our organization with occasional blockbusters: structural shifts to place entire functions on a dramatically more-efficient footing. We are tackling three blockbuster transformations that will reorient our company fundamentally.

- One, stepped-up cooperation among the members of the Toyota Group, including strategic autoparts affiliates;
- Two, unprecedented globalization of manufacturing and purchasing; and
- Three, globalization of our human resources management.

We increased our equity holding in Hino Motors, Ltd., to a 33.8% stake in March 2000. Hino is a leading manufacturer of large trucks and buses in Japan.

…

Another important way that we are raising efficiency and strengthening our competitiveness is by pushing ahead with globalization. Amid the vagaries of fluctuating currencies, global production is crucial to keeping our products cost-competitive in every market. "Global" means localizing most-but not all-production in principal markets. Supplementing local production with imports helps us keep markets supplied with products during peaks in demand while moderating the risk of overcapacity in market downturns. Cross-border sourcing thus remains an important cog in our supply strategy. But our primary emphasis in every principal market is on local production. Plants outside Japan produced about 54% of the vehicles that we sold outside Japan in calendar 1999, up from 52% in the previous year.

We began coordinating our North American manufacturing and marketing operations through a holding company in February 2000 to integrate those operations more efficiently. And we are studying ways to coordinate our European operations more efficiently.

In support of our globalization, we are reworking our human resources management to build a multinational team of senior managers. We are blessed with excellent managers at our operations around the world, and we want to benefit more fully from their capabilities. So we are taking steps to provide non-Japanese managers with career paths that lead to the top echelons of our global organization.

That includes putting in place a framework for identifying young managers of superior potential and for providing them with personalized training and advancement opportunities. Part of that training is through a program that we have designed with the Wharton School at the University of Pennsylvania. The program consists of extended, live-in sessions where the participants gain a common understanding of our guiding principles and our business style.

Only when our management team is as international as our manufacturing and marketing networks will we have a truly solid foundation for lasting growth. We have been globalizing on the outside for several years, now. The time has come to begin globalizing from the inside out.

July 2000

Hiroshi Okuda
Chairman

Fujio Cho
President

Source: Toyota Motor Corporation Annual Report- 2000

Appendix 3
Toyota's Worldwide Sales
Actual Sales in 2000 plus Annual Growth

Source: Toyota Motor Corporation Annual Report- 2000

Appendix 4
North American Models and their Production

| | Model | Location | Began | N.A. Production |
|---|---|---|---|---|
| | Camry | Kentucky | 1988 | 3,336,618 |
| | Corolla | California<br>Ontario, Canada | 1986<br>1988 | 3,038,951 |
| | Tacoma* | California | 1991 | 1,365,061 |
| | Avalon | Kentucky | 1994 | 632,309 |
| | Sienna | Kentucky | 1997 | 458,884 |
| | Tundra | Indiana | 1998 | 269,037 |
| | Camry Solara | Ontario, Canada | 1998 | 175,078 |

* U.S.-built truck re-named Tacoma in 1995.

Source: Toyota website.

Appendix 5
Toyota's North American Statistics

**Production Growth-**

| | |
|---|---|
| 1989 | 251,966 |
| 1993 | 551,058 |
| 1997 | 838,069 |
| 2001 (est.) | 1,087,374 |

**Employment Growth-**

| | |
|---|---|
| 1989 | 10,995 |
| 1993 | 18,772 |
| 1997 | 26,084 |
| 2001 (est.) | 32,497 |

**US Parts/Materials Purchasing-**
**(in $billions)**

| | |
|---|---|
| 1989 | 1.9 |
| 1993 | 4.7 |
| 1997 | 8.3 |
| 2001 (est.) | 14.9 |

**Direct Investment Growth-**
**(in $billions)**

| | |
|---|---|
| 1989 | 2.5 |
| 1993 | 4.9 |
| 1997 | 9.1 |
| 2001 (est.) | 13.1 |

**Vehicle Sales Growth-**

| | |
|---|---|
| 1989 | 1,039,958 (~25% N.A. built) |
| 1993 | 1,103,302 (~45% N.A. built) |
| 1997 | 1,336,411 (~60% N.A. built) |
| 2001 (est.) | 1,869,008 (~60% N.A. built) |

Source: Toyota website (http://www.toyota.com/about/operations/numbers/index.html) as at Jan. 14, 2003

## Appendix 6
## Managing Principles of the Toyota Production System (TPS) Philosophy

- **Just in Time production flow**: The flow of materials is done via a pull mechanism in which the material or Work in Process (WIP) flows to the next cell in the production system when that cell has reached a minimum level of activity. I.e., customer demand activates production of the item.
- **Total Quality Management** (TQM): System seeks to eliminate scrap and rework in order to achieve a uniform flow of materials through TQM and statistical process control efforts
- **Continuous Improvement** (*kaizen*): Via constant vigilance and employee participation the system is continually upgraded to ensure TQM and final product quality
- **Employee Empowerment**: Employees are empowered to act in any means necessary to ensure *kaizen* and TQM- to the point where production is halted when a problem is discovered so that it can be rectified and lessons made for *kaizen*.
    - Lean implementation leaders should position themselves *not* as superior to workers, but as *support* for workers.
    - Lean implementation leaders should focus on making the operator's job easier, not on "forcing work."
    - Operators must be *included* in decision making.
- **Automation**: To ensure conformance to quality standards automation is encouraged. Sakichi Toyoda once stated "Whenever there is money, invest it into machinery"

Appendix 7

More on the Philosophies towards Gaining Consensus in the Japanese Company

## Ringo Sho and Nemawashi

The fact that hierarchy is important to the Japanese means that there is a strong emphasis on being deferential to superiors, as well as of being a mentor to those below oneself. In almost all cases, those at the upper levels of business management are the eldest employees. There are not many instances of young talent jumping over older, more experienced co-workers for promotions.

The Japanese, however, also strongly emphasize collaboration and consensus. Decisions are not made by individuals at the top of a hierarchy, but through a long process called *ringi*, which strives for consensus. It first involves an idea being discussed informally. There is then a process of getting information and probing for opinions, which is known as *nemawashi*. Once a proposal is circulated, it must be approved by others at the same organizational level. The proposal moves up the company, with each manager having the chance to put on his *ringo-sho*, or stamp of approval. If a strong consensus is not reached, it is sent back to where it originated with suggestions for more work. A proposal only reaches the president after going through all of the other managers.

In this system, then, the Japanese are able to combine their need for consensus with the hierarchical structure of their society. Nothing is approved without wide agreement, but the upper level managers who give final approval to policies are always the oldest and most senior individuals. There is little top-down management, however. The role of a chief executive is more to build company spirit and to nurture the necessary connections with other companies, banks and associations.

Source: (http://home3.americanexpress.com/smallbusiness/resources/expanding/global/reports/11135090.shtml as at Jan. 26, 2003.)

The Japanese have very different ways of conducting business meeting. Before a formal meeting starts, participants have already drawn conclusions regarding information to be presented at the meeting. This is called *nemawashi* (prior consultation). The original meaning of the word is to smooth around roots before planting.

This system was developed to avoid discrepancies, and gain agreement from everyone in advance, when making a decision in formal meeting. It is also to keep the relationship harmonious.

*Nemawashi* is best used to let people of differing opinions have time to adjust their opinions. When the principles of *nemawashi* are put into effect first, people have the time to adjust opinions beforehand without wasting time. The main fear people have of *nemawashi* is its use in politics. People are worried that decisions are sometimes made behind the scenes, instead of out in the open. It is therefore seen as an undemocratic process.

Source: (http://japaneseculture.about.com/library/weekly/aa080597.htm as at Jan. 26, 2003)

The meaning of *nemawashi* is to maneuver behind the scenes and under the waterline to subtly reach new objectives. *Nemawashi* aims to avoid public confrontation discussing decisions in advance. The idea is to disarm opponents by incorporating their views into the plan or, at least, to anticipate their criticisms and prepare in advance to answer them. The process is time consuming but perhaps not as time consuming as doing nothing at all, if that is the alternative. Institutional and other entrepreneurs must learn to practice this art form- *guerrilla politics or nemawashi*.

Source: (http://www.dramatispersonae.org/EntrepreneurialistCultureFrontPageNemawashi.htm)

Appendix 8
Toyota Motor Manufacturing Canada, Inc.
Location: *Cambridge, Ontario, Canada*

| | |
|---|---|
| **Plant Site:** | 400 acres (2.8 million sq. ft.) |
| **Investment*:** | C$2,328.5 million |
| **Projected Employment*:** | 3200 (including variable workforce of approx. 300) |
| **Annual Payroll*:** | C$237.5 million |
| **Products :** | Corolla sedan, Camry Solara coupe and four-cylinder engines. |
| **Exports:** | U.S. and Puerto Rico |
| **Operations:** | Stamping, die shop, body weld, paint, plastics and assembly |
| **Annual Production Capacity** | 200,000 vehicles; 150,000 engines |
| **Awards/ Achievements:** | • AJAC – Best vehicle built in Canada (1989, 1990, 1991), seven J.D. Power and Associates Initial Quality StudySM awards: three Gold (1991, 1995, 1996), one Silver (1992), and two Bronze (1993, 2000)<br>• ISO 14001 Certification (December 1998) |

* Approximate using most recent figures

TMMC Production Volume

| **Production Volume:** | **1999** | **2000 (Projected)** |
|---|---|---|
| **Corolla** | 147,718 | 133,043 |
| **Camry Solara** | 63,363 | 50,696 |
| **Total Vehicles** | 211,081 | 183,739 |
| **4 Cyl. Engines** | 147,910 | 132,984 |

Source: Toyota Website.

# Appendix 9
# Sample of the Lexus RX 300 Marketing Brochure

DELETED

(This Appendix contains a graphic that does not upload correctly to UMUC's Polaris server hence does not print out smoothly. The information contained is **not** essential to using the TMMC case.)

Appendix 10

Other North American Manufacturing Locations

**New United Motor Manufacturing, Inc. (NUMMI)**

Location: *Fremont, California, U.S.A.*

| | |
|---|---|
| **Plant Site:** | 211 acres<br>5.3 million sq. ft. (facility) |
| **Investment*:** | More than $2.2 billion (nearly $1.1 billion Toyota only) |
| **Employment*:** | 5,506 |
| **Annual Payroll*:** | $351.9 million |
| **Products*:** | Corolla sedan, Tacoma compact pickup truck |
| **Operations:** | Stamping, body weld, paint, plastics, vehicle assembly |
| **Annual Production Capacity:** | 375,000 vehicles |
| **Awards/ Achievements** | Six J.D. Power and Associates™ Plant Quality Awards: three Silver (1994, 1999, 2000) and two Bronze (1995, 1996). Tacoma rated Best Compact Pickup Truck in North America, 1995, 1996 and 1997; National Association of Manufacturers (NAM) 1998 Award for Workforce Excellence; Corolla ranked No. 1 Premium Compact Car in North America in J.D. Power and Associates Initial Quality Survey (1999 & 2000)<br><br>ISO 14001 Certification (September 1998) |

* Approximate using most recent figures

| **Production Volume:** | **1998** | **1999** | **2000** |
|---|---|---|---|
| **Corolla** | 158,180 | 160,759 | 147,741 |
| **Tacoma** | 158,323 | 156,395 | 146,339 |
| **Prizm** | *45,291 | *49,967 | *49,996 |
| **Total Toyota Vehicles** | 316,503 | 317,154 | 294,080 |

(*Prizm not counted in Toyota production totals)

Source: Toyota Website.

**Toyota Motor Manufacturing, Kentucky (TMMK)**
Location: *Georgetown, Kentucky, U.S.A.*

## Production Start-up 1988

| | |
|---|---|
| **Plant Site:** | 1,300 acres (TMMK property)<br>Total facility size: about 7.5 million sq. ft. |
| **Investment:** | $5.3 billion |
| **Employment*:** | 7,490 |
| **Annual Payroll*:** | $484.7 million |
| **Products:** | Camry sedan, Avalon sedan, Sienna minivan, four-cylinder and V6 engines, axles, steering components, machined blocks, cylinder heads, crankshafts, camshafts and rods & axle assemblies. |
| **Operations:** | Stamping, die manufacturing, body weld, paint, plastics, assembly, engine axle machining and assembly |
| **Annual Production Capacity:** | 500,000 vehicles; 500,000 engines |
| **Awards/Achievements:** | • Camry ranked #1 selling car in U.S. (1997, 1998, 1999, 2000)<br>• Eight J.D. Power and Associates Plant Quality Awards: four Gold (1990, 1993, 1994, 2000), one Silver (1991); and two Bronze (1992, 1997)<br>• One Engine Plant Quality Award (1995);<br>• Minority Purchasing Awards<br>• TMMK's Assembly and Powertrain plants ranked #1 in North America for productivity by The Harbour Report<br>• 1998 Top Corporate Contributor Award for the United Way of the Bluegrass<br>• ISO 14001 Certification (November 1998). |

* Approximate using most recent figures

Source: Toyota Website.

**Toyota Motor Manufacturing, Indiana, Inc. (TMMI)**
Location: *Princeton, Indiana, U.S.A.*

## Production Start-up 1998

| | |
|---|---|
| **Plant Site:** | 1,160 acres<br>Facility Size: About 2 million sq. ft. |
| **Investment*:** | $ 1.6 billion |
| **Employment*:** | 2,617 |
| **Annual Payroll*:** | $145.5 million |
| **Products:** | Tundra pickup truck, Sequoia full-size sport utility vehicle |
| **Exports:** | Tundra to Canada |
| **Operations:** | Stamping, body weld, paint, plastics and assembly |
| **Annual Production Capacity:** | 150,000 vehicles (estimated to grow to 300,000 vehicles by 2004/2005) |
| **Production 2000:** | Tundra - 114,724<br>Sequoia - 15,000<br>Sienna - 0<br><br>Total Vehicles - 129,724 |
| **Awards/Achievements:** | • Tundra named JD Power & Associates #1 Full Size Pickup Truck (2000)<br>• Tundra named Motor Trend Truck of the Year (2000)<br>• Tundra named Four Wheel & Off-Road 4x4 of the Year (2000)<br>• ISO 14001 Certification (November 1999) *ISO 14001 is a voluntary standard that deals with a company's environmental management system. The certification process verifies that each Toyota plant has a formal environmental policy as well as a management system designed to track environmental performance and established mechanisms for continuous improvement.* |

* Approximate using most recent figures

Source: Toyota Website.