The Toyota Approach to Quality Management:

A Guide to Understanding and Implementing the Toyota Way

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Abstract

The "Toyota Way" has become synonymous with the highest level of quality in production. Despite a recent recall scandal, Toyota's systems for quality and, more importantly, its deeply ingrained culture, which supports that system, have proven that their methods lead to successful companies. This manual is for other production-based companies that wish to benefit from the lessons Toyota has learned along the way. First we discuss, the history of the company and the philosophy that has led to its high quality. Then we will move on to the specific steps and mathematical models that support them. Finally, we will discuss the recall sandal, how Toyota has recovered so far, and how it will continue to repair the damage.

By using examples as well as explicit rules, this guide will hopefully convince you of the success of the Toyota way and give you a solid foundation on which to build your own version of quality management.

"The Toyota Way"

Toyota has had much success with quality based on fourteen principles (made explicit by Jeffery Liker) that have become standard when referring not just to Toyota's production practice, but also to the culture of the organization. They make up what is referred to as the Toyota Production System (TPS), the main goals of which are lean manufacturing and continual improvement. In fact, the summarizing principle of Toyota is to constantly find ways to reduce waste in all its forms. Below are the Principles that have been apparent in Toyota's rise to success over the years.

Long Term Philosophy

1. Base your management decisions on a long-term philosophy even at the expense of short-term financial goals.

The Right Process will Produce the Right Results

2. Create a continuous process "flow" to bring problems to the surface.
3. Use "pull" systems to avoid overproduction.
4. Level out the workload.
5. Build a culture of stopping to fix problems, to get quality right the first time.

6. Standardized tasks and processes are the foundation for continuous improvement and employee empowerment.
7. Use visual controls so no problems are hidden.
8. Use only reliable, thoroughly tested technology that serves your people and processes.

Develop and Challenge your People and Partners through Long-Term Relationships

9. Grow leaders who thoroughly understand the work, live the philosophy and teach it to others.
10. Develop exceptional people and teams who follow your company's philosophy.
11. Respect your suppliers by challenging them and helping them to improve.

Problem Solving and Continuous Improvement Drive Organizational Learning

12. Go and see for yourself to thoroughly understand the situation.
13. Make decisions slowly by consensus, thoroughly considering all options; implement decisions rapidly.
14. Become a learning organization through relentless reflection and continuous improvement.

In order to implement these steps in your own company, it is important to understand them and see how Toyota has created tools and systems to support them. However, just as Toyota's list is not a list of those tools and processes explicitly, neither should the examples

be steadfast rules to follow. The reason Toyota has been so successful is that they have a cultural and philosophical approach to management. Details change, but the approach to problem solving, improvement, relationships, and learning does not have to if it is a proper method. Consequently, an important tool that is specific, yet generally applicable is the Shewhart-Deming cycle, Plan-Do-Check-Act (PDCA). William Edwards Deming was an American-born statistician, who conducted extensive work in Japan on quality management. He shaped the Japanese production industry and is responsible for the philosophies of companies such as Toyota. The PDCA is a continuous process that focuses on eliminating waste of all kinds, specifically 9 types:

1. Work-in-process
2. Rejection
3. Facilities
4. Expenses
5. Indirect labor
6. Design
7. Talent
8. Motion
9. New product run-up

Considering these sources of waste while examining the fourteen principles makes it more apparent why Toyota focuses on them and why they have created such a successful company. With waste creates cost. By eliminating waste, you save money in the end.

Toyota has just expanded its view of what can be considered waste and created guidelines on how to avoid it.

The first of the above fourteen principles is an overarching philosophy that guides the rest. Short-term profits are not how Toyota got to the place it is today. They have accomplished all that they have by seeing themselves as a leading manufacturer from day one and acting like it. By remembering this "slow-and-steady" mantra, they know it is important to avoid the temptation of a quick stock price surge or a high growth for the last quarter, because if a company wishes to be around for a long time, any imprudent decisions will eventually catch up to them.

The Right Process will Produce the Right Results

The first group of principles relates to production. Toyota uses a lean manufacturing process, and these principles are at the heart of their ability to have production items delivered to the necessary stages at exactly the proper moment. By having such a lean process, any problems that do arise in the production process become apparent very quickly since there is no inventory for them to "hide" behind. This relates to principle number 5, since when those problems do surface, they are expected to be fixed immediately so the process can continue as soon as possible. In terms of value, this saves costs because defective products do not generate revenue but still cost money to product.

There are thirteen principles of the TPS that concentrate on specific rules and techniques for production.

1. Awareness
2. 5 S's
    - Seiri – Proper arrangement
    - Seiton – orderliness
    - Seiso – cleanliness
    - Seiketsu – cleanup
    - Shitsuke - discipline
3. Flow manufacturing – sequential production of one unit at a time
4. Standard operations – rules and systems put in place
5. Multi-process handling
6. Reducing work hours – using the minimum number of workers to produce goods
7. Leveling production (Heijunka) – produce the same amount of items a day
8. Automation with a human touch (Jidoka) – install sensors in production process to automatically detect defective products
9. Changeover – change the methods as necessary when specifications require it
10. Quality assurance
11. Kanban
12. Visual control – make processes transparent so everyone can see if there are problems and waste creation
13. Maintenance and Safety – prevent breakdowns because that saves time and cost

Kanban

One of the major tools that Toyota uses to for its just-in-time production is the Kanban method, number eleven from the above TPS principles. In this system, cards accompany items to be used in production in bins. As items are moved and produced and new items are needed, cards are passed down the line, signaling the flow to continue based on the type of Kanban card, i.e. move, produce, order, etc. It creates the "pull" system that makes lean manufacturing possible. It also enables a self-operating production process that eliminates managerial oversight and time-consuming paperwork at most points.

There are many advantages to this system. It forces improvements in productivity, reduces inventory and lead time, and simplifies the factory floor. It also encourages worker participation because it increases visibility so they see and guide the Kanban process. Because the Kanban system is a pull system, it transfers any fluctuations in demand to suppliers thus decreasing market risk.

However, there are some disadvantages. It requires a level schedule and requires standard containers. Although it simplifies floor planning and control, it requires strict discipline. Another difficulty is that daily quotas must be filled and it cannot be used for spare parts or slow items. Also, because there is very little inventory, there are high equipment maintenance requirements since machines must be fixed as soon as problems arise. That said, when executed correctly, the Kanban system can create a very lean production system.

The first figure below gives a simple illustration of the direction of flow of the production items and the Kanban cards. An item is made and stored in temporary inventory at a stage in the production process. Then the next stage takes the item to produce with it. Once that production stage is completed, the item and the Kanban travel to the next inventory point. Then the Kanban travels back signaling the production to continue.

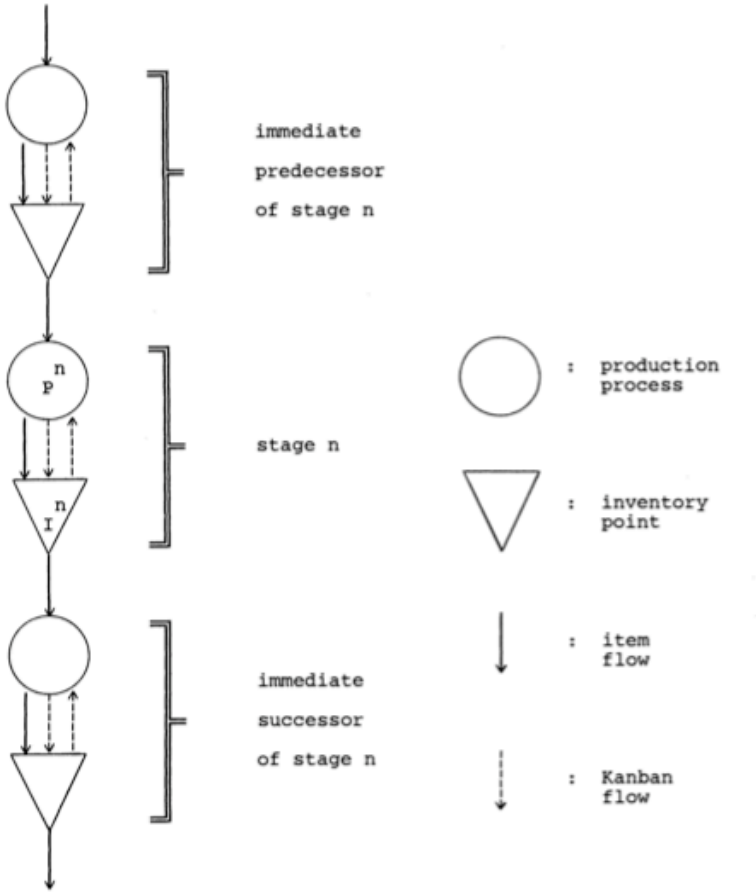

FIGURE 1. Flows of Items and Kanbans.

The next figure is a more detailed pictorial description of the process using two types of Kanban cards, withdraw and produce. If you start with area 7, items from preceding processes are moved to Store A. Then a production ordering Kanban gets sent backwards to

restart the cycle. A withdraw Kanban is sent to the next stage with the items signaling they are ready to be used in the next step of production.

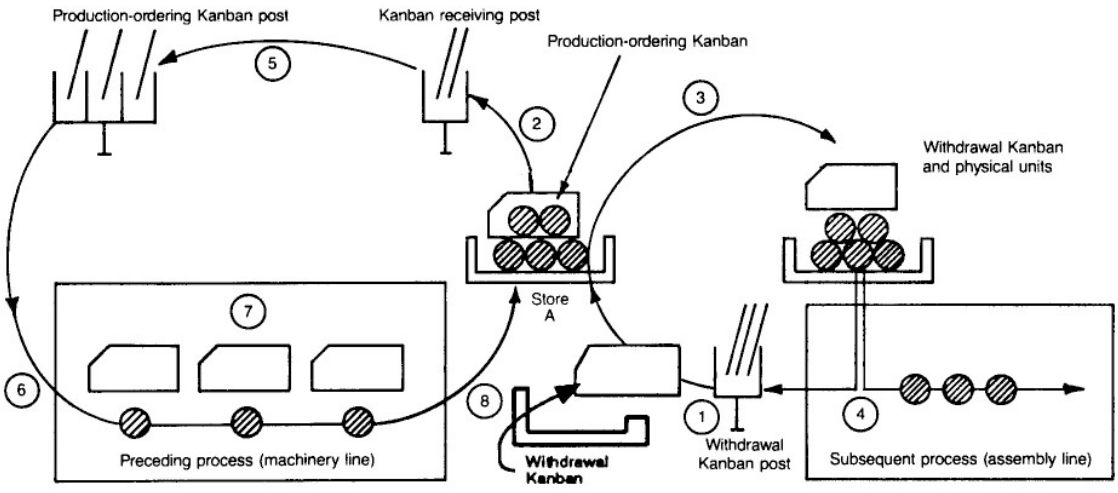

Figure 2.9. Steps involved in using a withdrawal and a production-ordering Kanban.

As noted above, it also creates a very tight production process, so that bottlenecks and other production problems can be seen almost immediately and be fixed. The Kanban system enables continuous improvement and is a tool that makes many of the fourteen principles come to life. In order to utilize it in this way:

1. Compute the number of cards at the beginning of the month.
2. Distribute cards, begin production:
    - If a Kanban card is not attached to a part, or box of parts, perform as indicated, i.e., transfer or produce

- Always attach the unattached Kanban to the part which was moved or produced
- If all Kanban cards are attached, do nothing at this operation.

3. Remove cards, observe bottlenecks and adjust.
4. Productivity improvement.

Production through the Kanban system can be modeled using mathematical equations. Those equations are used to determine production information as well as display relationships between the variables.

First let us define the variables, indexed in term of *i*, the *i*th product per day

y = number of Kanban cards

D^i = expected demand per unit of time

L_p^i = processing time

L_w^i= waiting time

L_p^i= transfer time

L = lead time = $L_w + L_p + L_t$

w = level of buffer stock desired, generally around 10% of D x L

a = container capacity (usually no more than 10% of daily demand)

T = operation time a day

S = Total set-up time

In order to start the process with step one, first you need to determine the number of Kanban cards. This is found using a mathematical equation. In fact, this equation is the heart of the Kanban system.

$$y = \frac{D \times L + w}{a}$$

The point is to minimize the number of Kanban cards. Thus, we can use the equation to easily see the relationships and how to achieve our goals. Obviously by decreasing the lead time (by either decreasing processing, waiting, or transfer time) we can decrease *y*. The numbers of cards will also decrease by decreasing the level of buffer stock, *w*, or increasing container capacity *a*.

Lead time is the amount of time it takes from the time the production process begins until the product is made. In order to further examine decreasing lead time, we can also put it in terms of an equation.

$$L = \frac{S}{T - \sum_i^n L_p^i D^i}$$

This equation show that lead time is proportional to set-up time and inversely proportional to the operation time. If you can decrease set up times, you can decrease lead times and increase efficiency.

Develop and Challenge your People and Partners through Long-Term Relationships

The second group of principles centers around how they treat their employees and their suppliers. Without properly trained employees, who are invested in the outcome of the product, Toyota as a whole suffers. They also support theirs suppliers in a similar way, because Toyota can only be as efficient as the other steps in the production process. They usually have at least two vendors for the same product. This lowers the risk if anything should happen to impede delivery, and it also keeps the suppliers on their feet knowing they are competing for Toyota's business. That said, Toyota does not drop suppliers at the first chance for a cheaper product. They respect the value of a long-term, loyal relationship and invest in teaching their suppliers how they can be better. In fact, they have a very extensive supplier support network that enables suppliers to learn from each other. While this may seem counter-intuitive, competitors opening themselves up to share business practices, Toyota's way has shown to benefit all parties once they can open up the channels of communication.

Quality through Communication

One of the most important aspects of Toyota's success is organization learning. What one person learns, there must be a channel of communication so that the entire organization can benefit from the lesson and the company can create change based on it. This principle extends to Toyota's suppliers as well. Toyota can only be as efficient as the

suppliers it deals with, if they make better goods at a lower cost, Toyota benefits, but if they lack quality control, Toyota sufferers.

They have three main organizations for parts suppliers to come together to benefit from shared knowledge. The first and loosest of these is the supplier association, or kyohokai. It is an organization that fosters sharing of ideas, training, and socialization so that contacts are made for independent and informal contact. They separated this into divisions based on location because Toyota is a big believer in working with others in close geographic proximity. Later they created a similar institution for their equipment suppliers. Toyota then brought the idea to the United States as the Bluegrass Automotive Manufacturers Association (BAMA). The most informal aspect of the organization is a town-hall-type meeting for suppliers to come, share ideas, seek advice, and make contacts with each other. However, it evolved so that suppliers are broken down into committees. Divisional committees are created based on geographic location, parts made, and processes used. For instance, suppliers that make similar parts or parts that go together in the production process would be put together. There are also topic committees, with special focuses, such as quality, cost, and safety, whose job is to identify generally applicable projects to work on in order to improve. They do this by committee meetings, conferences, training, and plant tours. The training is done so that all suppliers have the same understanding and vocabulary to build on and can take advantage of all aspects of the association, such as tours of plants that are considered excellent examples of production practices.

Another important division that supports this learning culture is the Operations Management Consulting Division (OMCD) in Japan, a group of consultants who help Toyota and it's suppliers to enact the Toyota Production System (TPS). This division was instituted in the U.S. with the name of Toyota Supplier Support Center (TSSS). They have two main jobs. The first is that they send consultants to suppliers to improve production. The second is they create jishuken, voluntary learning groups, from their member suppliers.

As a consulting division, suppliers can ask for help free of charge, and consultants will be sent in to fix problems or just generally assess the efficiency of production. These projects take on average a year and a half, and companies are chosen based on desire to learn and potential of success. The only thing Toyota asks in return is that suppliers agree to let other member suppliers come in and see their facilities and learn from the changes. Using past consultation projects as examples for the future ones is the crux of the idea. If Toyota invests the time and resources into helping a supplier increase efficiency—and studies show that companies that have completed these consulting projects have seen on average a 75% reduction in inventory and 124% increase in worker productivity—Toyota wants to be able to use those successes as tools for future projects. Suppliers can see the benefit of Toyota's consultants and learn how to better their own factories by seeing these prime examples for themselves. It also helps break the barriers between suppliers to create openness. While this openness is the only requirement of the program, suppliers often pass on the saving to Toyota as well.

The voluntary learning groups, is the second aspect of this department. The U.S. version of the jishuken is the Plant Development Activity, or PDA. These groups are somewhat similar to the committees in the BAMA. Small groups are created, and recreated every few years, from suppliers based on geographic location, competition, and experience. (Important to note, in this case, direct suppliers are not put in the same groups.) Also similarly to the kyohokai, they are given a project for the year to focus on that will improve productivity and quality. However, while the kyohokai is focused more on knowledge sharing, the jishuken is used for more active learning and problem solving. Suppliers go into each other's factories, identify problems, create solutions, and actively work and experiment to all benefit from an ideal solution. Toyota will send experts who act as coaches during the process, but Toyota benefits because these coaches learn what the suppliers groups are learning and can return with the knowledge to Toyota. They then have presentations at the end of the year so that the other groups, as well as Toyota, can benefit as fully as possible from the learning that occurred in each of the individual groups.

The final department is Toyota's Quality Assurance Division (QAD). The QAD has a more specialized function, in that it is based on fixing specific problems. When a problem at a supplier arises, this division sends in a team to identify the cause. It then hands over the responsibility of solving the specific problem to the appropriate department in Toyota. An interesting aspect of this process is that sometimes a supplier's problem can be best fixed using information from its direct competitor. In this case, Toyota coordinates sharing the

information so that the struggling supplier can benefit from the expertise of the other. While this may seem strange, it supports Toyota's two-vendor policy, and fosters the long-term relationships it values. Feedback is another important part of knowledge and learning, and the QAD is also responsible for quality audits of suppliers.

Obviously Toyota has a vast organization set-up that allows intense learning at all levels of production. Emulating such a network will take a lot of investment and planning. However, Toyota has succeeded because of its underlying philosophy, and that is what is the most important aspect to gain from the above overview. By creating contacts and a network among suppliers and even competitors, learning can help all parties gain. One main obstacle to overcome before this openness can occur is to minimize what knowledge is considered proprietary. Toyota made this work because they first opened themselves up to suppliers. They do not consider production knowledge prosperity, but instead make information flow as easy as possible so that instead of leaks it is a steady, and most importantly, a two-way stream.

Problem Solving and Continuous Improvement Drive Organizational Learning

The final group of principles reflects Toyota's commitment to problem solving and continuous improvement, or kaizen. We have already shown how Toyota implements some of these principles above. Toyota's fully developed organization learning systems are structured so that all members of all stages of production are involved in the process of

problem solving and improvement. However those departments are mainly focused on suppliers and outside development. Obviously Toyota needs to start from within. We have discussed how the lean management brings problems to the surface immediately so they can be dealt with as they present themselves. Toyota addresses these problems using eight specific steps based on the PDCA, which enact a scientific and methodical procedure to carefully identify successful processes as well as the exact root of any problems.

Toyota's 8 Steps of Problem Solving

1. Clarify the problem
2. Break down the problem
3. Target setting
4. Root cause analysis
5. Develop countermeasures
6. See countermeasures through
7. Monitor both results and processes
8. Standardize successful processes

At Toyota, managers are responsible for problem solving by guiding their team from the very start of the process. Once a problem is identified, by either the manager or workers, the manager guides the investigation. The employees are encouraged to gather facts and understand the problem for themselves, not rely on other employees' interpretations (genchi genbutsu). Managers stay involved so that they too have a clear understanding of the facts and the problem. Since managers encourage worker involvement from the start, it naturally

follows that those tied directly to the manufacturing process are the ones to discover the solutions, which they automatically implement because they have taken ownership from the beginning. This is as opposed to a top-down process where solutions are imposed. By teaching problem solving and delegation, managers are able to coach workers so they are not responsible for directly running the whole process, which would be impossible. It also enables organizational learning because the "why" aspect is so transparent. This is the general process for any team, but Toyota is so successful as a company because it implements these steps on all levels. Every team is responsible for handling their problems as such, and only when they are outside the scope of the team do higher levels step in to take over the problem.

Managers use the PDCA cycle to implement these eight steps. The first five are part of the overall Plan step. This shows how much Toyota emphasizes evaluation and true understanding of the problem. In fact, empirical analysis of managerial feedback shows that managers spend the most time on step 2, breaking down the problem, i.e. figuring out when, where, what, and who are causing it. The second most emphasized step of the PDCA cycle is the Check phase (number 7, monitor both results and processes). Toyota's approach is very scientific. Ideally they develop counter measures that are perfect control groups; they can be switched on or off and consequently directly linked to a positive result. Only when this link is clearly made will they proceed.

Once all of these steps have been successfully completed, only then can kaizen, continuous improvement, occur. In order to improve, i.e. raise a standard, the standard must be instituted, because it is very difficult to apply this cycle to a non-stable process.

General Problems

Recently, Toyota has faced some setback due to various reasons. However, the main thread running through these problems is that when trying to solve them, they strayed from all of the above-mentioned philosophies. They are their own example and counter-example of how successful the Toyota Way is.

Appreciation of the Yen

As Japan has become more industrialized and grown in wealth, the Yen has appreciated (see chart below). This has created losses for Toyota, and thus the need to move productions out of Japan, specifically overseas to the United States where a large customer base already exists. While this is not something they can obviously control, this globalization had created problems.

Globalization

Toyota has made some errors as they worked to globalize production. Toyota has always seen the value of close relationships with all of their suppliers, and specifically the value of close geographic proximity to them. When it moved production overseas, it created the obstacle of cross-continental organization and communication. As with all big corporations, the bureaucracy and red tape that comes from chain of command can lead to many problems, especially in such a lean system where quick fixes need to be implemented to keep the process going. Often managers in the United States, who encountered problems in production, had to wait a significant amount of time to get responses back from Japan because all decisions were still being made from the managerial silos in the home country. North American managers were not given the autonomy to act and thus Toyota was undermining some of its own principles.

In order to learn from Toyota's mistakes, it is important to make sure that communication channels are working and the appropriate people are making decisions. Make sure you are following the last three principles to avoid authority problems that can stunt a business when it is supposed to be taking advantage of an opportunity to grow.

Construction of Cost Competitiveness for the 21st Century (CCC_{21})

In 2004, the current president, Katsuaki Watanabe, instituted the Construction of Cost Competitiveness for the 21st Century (CCC_{21}), to cut five-year costs. This should have been the first signal of trouble since the first of the fourteen principles of Toyota highlights the importance of long-term goals. However, these cost cutting measures were unsuccessful and placed a large strain on the relationship with suppliers, violating another principle.

The CCC_{21} is an important reminder that even Toyota, a company rich in history and tradition can get swept up in the temptation of short-term gains. However, it is also a reminder that even a company with such a firm foundation of Toyota can suffer from giving into this temptation. Perhaps it was an invincibility complex that motivated Watanabe, but Toyota proved not immune to the consequences, and if even Toyota is not invincible, then it would follow that no other production companies are either.

The Recalls of 2009-2010, Accelerator Issues

Background

From 2009 to early 2010, Toyota was forced to recall over eight million vehicles, ranging across many of its models, due to accelerator problems. One of the main causes was an ill-fitting floor mat that jammed the accelerator. The second cause was a faulty pedal, which was caused by a standardized part from one supplier (CTS) that was used across many models. There was also speculation that the electromagnetic parts of the pedals were faulty, but this was proven to be untrue.

In fact, a thorough investigation by the National Highway Transportation Authority (NHTSA) showed that not only were there no electronic problems with the cars, but very few accidents were caused by the floor mat and sticky accelerator problems. Most occurrences of sudden acceleration were driver error, not mechanical flaws.

Also notable, many experts have stated that although the Toyota recall was very large, it was not the largest by any means. It also had comparatively few casualties, and those injuries that did occur were so statistically small it was difficult for the company to recognize them as potential problems.

However, Toyota still suffered from a poor market perception after the recalls. Their stock dropped significantly, and the media portrayed Toyota as the bad guy who didn't care about customer safety. They had to do something drastic to save face and regain the positive reputation they had for so many years.

Toyota's Reaction

Although these facts exonerated Toyota from much of the blame, they did not reveal themselves until much later. Therefore, Toyota's reaction to the customer complaints and recalls was what they should have focused on and where they fell short. They were slow to identify the problem and actually issue a recall. The NHTSA was forced to stop them from selling the vehicles because Toyota continued to do so despite the acknowledged problem. One reason was they simply could not determine the problem right away. However, they violated their own fifth principle by continuing to produce and sell faulty products instead of immediately stopping to solve the problem.

However, finally in February of 2010, new president, Akio Toyoda, publically addressed the matter in front of a congressional oversight board. He personally apologized

for failure to handle the situation in a more efficient manner. He specifically cited the centralized decision making of the company as a source of error, since Japanese managers were not always knowledgeable enough about the problem to make effective and informed decisions. He has also since made many large changes to management. He reduced the board of directors and created instead a small, weekly advisors meeting where decisions are discussed thoroughly and then made quickly, which returns back to principle thirteen: make decisions slowly by consensus, thoroughly considering all options; implement decisions rapidly. It is also this principle they strayed from when they let globalization and bureaucracy impede proper and informed decision-making. Thus, Toyoda also eliminated some layers of management to help with the administrative problems, and he created the Automotive Center of Quality Excellence to insure all information had a proper and efficient channel to go through.

He has made Toyota committed to make better cars, which he tests himself regularly. Toyoda is working to shift the company's focus to creating a more "emotional" connection with the cars instead of simply necessary objects.

Tsunami

The commitment that Akio Toyoda and his management team made to these new ideals, and the success that they achieved by returning to the Toyota path, was highlighted by their reaction to the tsunami of March 2011. They reacted quickly and sent engineers to factories and suppliers, who were empowered to make quick decisions on how to best restart

production. This delegation is one of the ways they lead. Identifying the problem and sending out workers to solve it achieves the maximum level of efficiency. Soon after, most parts were available again, with a small portion needing more time before they were ready. They learned again from this experience and realized the need for diversity of suppliers, which they have long known. However, it turns out many of their "different" suppliers got sub-parts from the same supplier, thus eliminating the benefits of diversity in the chain.

Conclusion

Toyota has been so successful with quality because of the principles and the culture it embodies. They take a long term, organization approach to all processes, where learning and improving are constant objectives and long-term initiatives. By following their example you can have a successful production process focused on quality and efficiency. I have outlined specific tools and procedures, but the most important thing to take from the Toyota way is the underlying philosophies. Every company is different, so the most important lesson is learning the how and why of implementation of processes.

Toyota is its own best example, but they are not the only company that has benefited from the TPS. Unfortunately, in some instances they strayed from those principles. In those cases, that is where the errors in judgment occurred. However, they were not nearly as grievous as the American press often claimed. In the case of the recall, once Toyota

discovered and owned up to the problem, it was confirmed as the true source, despite extensive investigation by the NHTSA to prove deeper flaws.

Now, a couple years after the scandal, Toyota is re-energized by a new leader passionate about cars. Toyota is staying on the same path and continuing to stick to the "Toyota Way," which has proven successful. Even through their mistakes Toyota proves a useful example of excellence in production and quality, and a reminder that their processes work.

Appendix I

Glossary

Eihoukui – equipment supplier association

Genchi Genbutsu - Go and see for yourself to thoroughly understand the situation

Hansei - become a learning organization through relentless reflection of the implementation of processes

Heijunka - Level out the workload

Jidoka - quality through human-controlled automation

Jishuken – organized focus groups, voluntary learning teams

Kanban – card or tag, lean inventory system that uses cards to signal next step in production

Kaizen - continuous improvement

Kyohokai – parts supplier association

Seiketsu – cleanup

Seiri – Proper arrangement

Seiso – cleanliness

Seiton – orderliness

Shitsuke - discipline

Appendix II

Income Statements

ITEM 6. SELECTED FINANCIAL DATA

(Dollars in millions)	Fiscal years ended March 31, 2011	2010	2009	2008	2007
INCOME STATEMENT DATA					
Financing revenues:					
Operating lease	$ 4,888	$ 4,739	$ 4,925	$ 4,433	$ 3,624
Retail	2,791	3,086	3,317	3,112	2,539
Dealer	385	338	558	647	547
Total financing revenues	8,064	8,163	8,800	8,192	6,710
Depreciation on operating leases	3,353	3,564	4,176	3,299	2,673
Interest expense	1,614	2,023	2,956	4,151	2,662
Net financing revenues	3,097	2,576	1,668	742	1,375
Insurance earned premiums and contract revenues	543	452	421	385	334
Investment and other income, net	236	228	11	301	252
Net financing revenues and other revenues	3,876	3,256	2,100	1,428	1,961
Expenses:					
Provision for credit losses	(433)	604	2,160	809	410
Operating and administrative	1,059	760	799	841	758
Insurance losses and loss adjustment expenses	247	213	193	158	126
Total expenses	873	1,577	3,152	1,808	1,294
Income (loss) before income taxes	3,003	1,679	(1,052)	(380)	667
Provision for (benefit from) income taxes	1,150	616	(429)	(157)	233
Net income (loss)	$ 1,853	$ 1,063	$ (623)	$ (223)	$ 434

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