

The Toyota Management System. Guiding Principles and Main Tools

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1 Introduction

This handout refers to the book "The Toyota Way – 14 Management Principles of the World's Most Successful Automotive Company" by Jeffrey K. Liker [1]. Jeffrey Liker has followed the company for 20 years and summarized his knowledge about it in the book. He analyzed Toyota's success and discovered 14 methods that enabled Toyota to become the most successful automotive company in the world. In order to understand the success of Toyota, it is necessary to look at the history of the company. This will be described in more detail in the next chapter. The Toyota Production System, another component of success, will be described only briefly. Here we will focus on the management methods that describe Toyota's holistic approach. The individual principles were divided by Liker into 4 categories, also called the 4 P's. Philosophy, Processes, People/Partners and Problem Solving. These categories can be thought of as a pyramid to be seen in Figure 2. Problem solving is the top of the pyramid. The most important is the foundation, the philosophy of the company. This philosophy runs through all management levels and eras. Starting with the founding Toyoda family, which is described in more detail below.

2 History of Toyota

Toyota's history began with Sakichi Toyoda. He started to build looms in 1894. Soon he bought a used steam engine and experimented with it to build a power loom. Together with his son Kiichiro Toyoda, he succeeded. He sold the patent for his automatic loom in Great Britain and got the start-up capital to found Toyoda Automatic Loom Inc. In 1936, the first car model was launched. The company was then renamed Toyota Motor Corporation. Fortunately, the company was able to survive the 2nd World War unscathed. Nevertheless, difficulties arose due to inflation. Kiichiro had to lay off staff. He also left the company and made room for his cousin Eiji Toyoda. Eiji Toyoda made several trips to automobile manufacturers in the USA and returned with the task of outperforming them. He shared this task with Taiichi Ohno, the plant manager, who then developed the Toyota Production System. This system is illustrated in Figure 1. The cornerstones of success are based on this system. Stable and standardized processes, visual management, and Toyota's philosophy form

the foundation. The pillars are the Just-In-Time principle, Jidoka, people and the elimination of non-value elements. This system leads to the best quality, lowest cost, highest safety and high morale. All steps and processes must be seen as a whole. For example, just-in-time deliveries may lead to performance improvements, but may not be beneficial in the long run. It is necessary to constantly analyze and improve the processes. This is what the upcoming managers of Toyota did. They improved processes and introduced principles that increased Toyota's success. All driven by the philosophy and the 14 principles explained below.

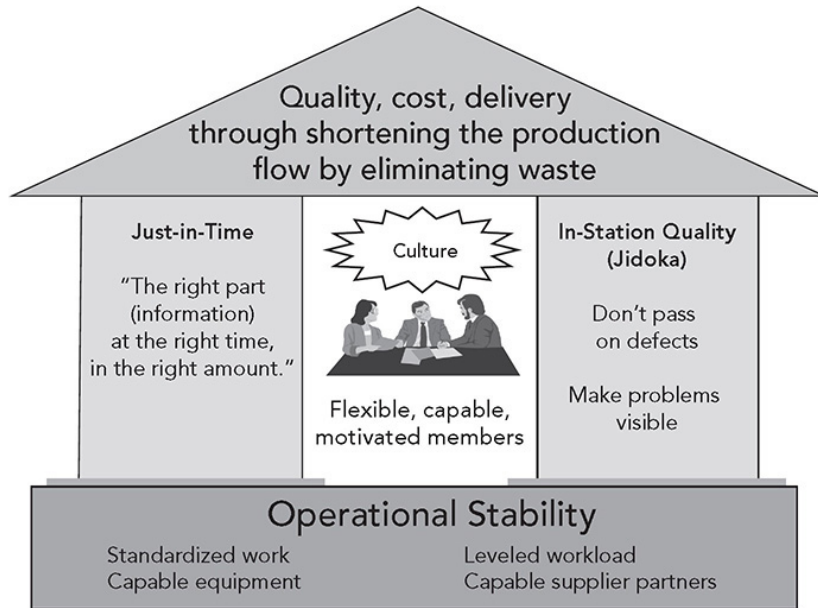


Figure 1: The Toyota Production System

3 Principles

Jeffrey K. Liker divides the principles into four categories – Philosophy, Processes, People and Partners, and Problem Solving. These four categories contain the principles that made Toyota successful. In Figure 2 you can see the pyramid that Liker describes. The foundation is the philosophy which is now described first.

3.1 Philosophy

1. Principle: Long-term thinking

Base your management decisions on a long-term philosophy, even if it is at the expense of short-term profit targets. Toyota's major goals are to generate value for the customer, society and the economy.

Toyota's philosophy is summarized by Liker in 7 points.

- 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.

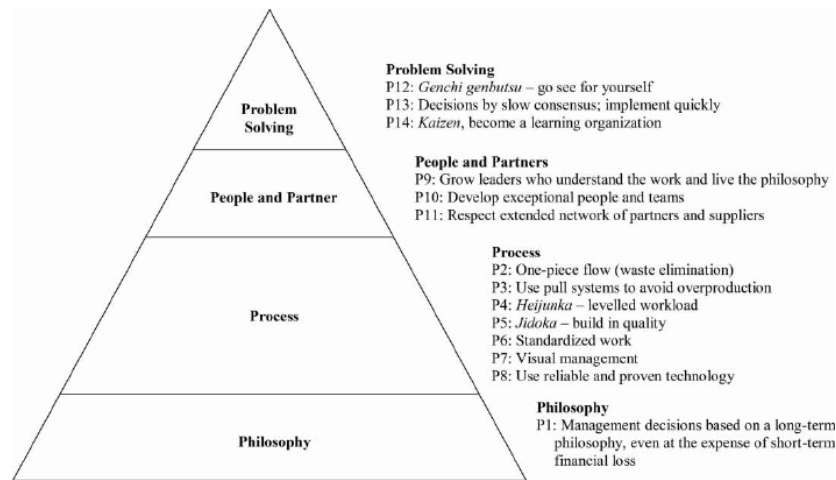


Figure 2: The Toyota Way Model

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

3.2 Process

2. Principle: One-Piece Flow

The main goal here is the elimination of superfluous things, also called muda. These muda, according to Liker, can be the following things:

- Overproduction
- Waiting
- Unnecessary transport
- Overprocessing
- Excess inventory
- Unnecessary movement
- Defects
- Unused employee creativity

In Figure 3 you can see the wastes in a value system. If you eliminate them, you can get the following advantages:

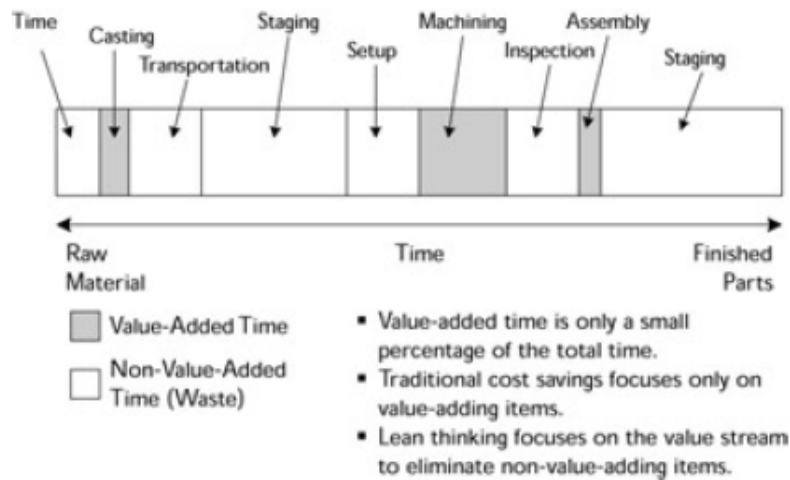


Figure 3: Waste in a value system

- Build-in quality
- Creates real flexibility
- Creates higher productivity
- Frees up floor space
- Improves safety
- Improves moral
- Reduces cost of inventory

3. Principle: Pull-System

The main goal of the pull system is to make what's needed when it is needed. So you can get advantage of small storage costs.

4. Principle: Heijunka: Balanced Workload

Heijunka tools attempt to balance workload and production volume. Yamazumi balances workload within a production process. A balance in both areas leads to a continuous flow of work and materials, from transport to the customer at the end of the chain, to material deliveries from suppliers at the beginning of the chain.

5. Principle: Jidoka: Build-in quality

Create a culture that produces quality right away, rather than a culture of perpetual rework. Providing customers with quality drives your value proposition. Use all available modern quality assurance methods. Equip your machines to be able to identify problems and shut down automatically. Develop a visual system that notifies a team or project manager when a machine or process needs help. Jidoka (self-directed error detection) is the foundation of "in-process" quality. Establish support systems in your organization for rapid problem resolution, and take resolution action. Incorporate into your culture a philosophy of deceleration or interruption of production to get quality right the first time, thus increasing productivity in the long run.

6. Principle: Standardized work

Standardized work steps are the foundation for continuous improvement and the transfer of responsibility to employees. Use stable, repeatable methods everywhere to ensure predictability, regular timing, and regular results from your processes. This is the basis for fluid processes and pull effects. Capture cumulative learning about a process by making best practices the standard. Give room for creative, individual expression to further improve the standard, and incorporate that improvement into the new standard. This way, you can transfer the learning to a successor when an employee leaves the company.

7. Principle: Visual Management

Use visual controls to ensure that no problems remain hidden. Use simple visual signaling devices to help your workers decide if it's a standard situation or an anomaly. Eliminate computer screens if they distract your workers' attention from their workstations. Develop simple visual systems at individual workstations to support fluid processes and pull effects. Wherever possible, reduce your reports to one page, even for your most important financial decisions.

8. Principle: Use only reliable technology

Use only reliable, thoroughly tested technologies that serve people and processes. Use technology to support people, not replace them. It is often best to execute a process manually before adding technological support. New technologies are often unreliable and difficult to standardize. Therefore, they put the "flow" at risk. A proven process that works reliably is far preferable to a new untested technology. Conduct testing before introducing new technologies into business processes, manufacturing systems, or products. Eliminate or modify technologies that conflict with your culture or that threaten the stability, reliability or predictability of the system. Nonetheless, encourage your employees to engage with new technologies as they seek new approaches. Deploy a thoroughly tested technology quickly if it has been proven in testing to improve your process flow.

3.3 People

9. Principle: Leaders

Grow leaders who thoroughly understand the work, live the philosophy and teach it to others. Develop leaders from within your own ranks instead of buying in external leaders. Don't think of the leadership role as simply performing certain tasks and being able to deal well with people. Leaders must serve as role models for a lived corporate philosophy and for the way the company does business. A good business leader must be intimately familiar with the details of day-to-day business. Only then he can be the best teacher of the corporate philosophy.

10. Principle: People and Teams

Develop exceptional people and teams who follow your company's philosophy. Create a strong and stable culture where corporate values and beliefs are shared by all and actively lived for many years. Train above-average employees and teams to work in line

with the corporate philosophy to achieve exceptional results. Work hard to continually strengthen the culture. Use interdisciplinary teams to improve quality and productivity and increase process flow by solving difficult technical problems. Ownership happens when employees use the tools of the business to improve the business. Work tirelessly to show individual employees how to work as a team toward a common goal. Teamwork is something that must be learned.

11. **Principle: Network**

Respect your extended network. Respect your business partners and suppliers, and treat them like an extension of your company. Challenge your external business partners to grow and develop. This shows your appreciation. Set challenging goals and support your partners in achieving them.

3.4 Problem solving

12. **Principle: Genchi Genbutsu**

Solve problems and improve processes by getting to the root of the problem and personally verifying information, rather than writing theoretical papers based on second-hand information or computer data. Everything you say and think should be based on data you have personally verified. Even high-ranking managers and executives should personally see things for themselves so that they fully understand the situation.

13. **Principle: Nemawashi – make decision**

Make decisions wisely and according to the consensus principle. Weigh all alternatives carefully, but implement the decision made expeditiously. Do not become rigid about a direction and take that course before you have thoroughly considered the alternatives. Once you have decided on an alternative, follow that course briskly but carefully. Nemawashi is the process of discussing the problems and their potential solutions with all stakeholders to gather their ideas and gain agreement on a solution. This consensus-based process is time-consuming, but opens up more avenues for solutions. And once the decision is made, the conditions are in place for rapid implementation.

14. **Principle: Kaizen – continuous improvements**

Become a truly learning organization through relentless reflection (hansei) and continuous improvement (kaizen). Once you have a robust process in place, use continuous improvement tools to identify the root causes of inefficiencies and implement effective countermeasures. Develop processes that require virtually no inventory. This will make wasted time and wasted resources visible to all. When waste becomes visible, get your staff to continuously improve processes (kaizen) to eliminate the waste. Protect institutional knowledge by ensuring a stable workforce, slow promotion, and very careful succession systems. Use hansei (reflection) when you reach certain milestones and after a project is completed to reveal any shortcomings of the project. Develop countermeasures to avoid repeating the same mistakes. Learn by making best practices the standard, rather than reinventing the wheel with each new project and each new manager.

References

- [1] Jeffrey K. Liker *Der Toyota Weg; 14 Managementprinzipien des weltweit erfolgreichsten Automobilkonzerns*, 8. Auflage. Finanzbuchverlag, München, 2013.