

The toyota company



Introduction

Toyota is a multinational automobile manufacturing corporation headquartered in Japan. The company was founded by Kiichiro Toyoda in 1937 as a spin-off from his father's company Toyota Industries to create automobiles. In its inception Toyota manufactured cars through mass production system. Mass production system was developed by Henry Ford found of Ford Motor Co. At that Time Mass production system was considered the most ideal method for manufacturing cars, but Taiichi Ohno a production engineer found some flaws in the method. So, he tried to introduce some changes in this method. The method he established was later known as lean production system. Since its development Lean production system has always worked as the competitive advantage for Toyota for making quality cars for a very affordable price.

What started in 1937 with a single plant has now become an enormous company with 52 plants in 26 countries. In the financial year ending March 2007 it earned \$11 billion net profits on sales of \$152 billion. By some measures it also surpassed General Motors to become the largest automobile company in the world.

Key concepts

Lean production system, overseas production, Joint venture

Question-1. Compare and contrast Toyota's revolutionary lean production system with the traditional mass production system for making automobiles. How is Toyota's system superior?

Answer: The mass production for producing cars was pioneered by Henry Ford in Ford Motors. In that time Mass production system was widely

accepted as the ideal system for car production. The basic philosophy behind mass production system was to produce a limited product line in massive quantities to gain maximum economies of scale.

In 1950s, a production engineer name Ohno Taiichi working for Toyota found some flaws in mass production system. So, he created a new type of production system named the lean production system. There are many significant differences of lean production system with mass production system. We can see them below.

Mass production system

1. Long production runs for producing car body parts and saving them in warehouses until they were needed in the assembly plant.
2. Each assembly worker would perform only one task rather than a variety of tasks to achieve specialization.
3. Assembly workers were overseen by a foreman who would only manage the worker but won't perform any assembly works.
4. If any errors occur it would be fixed at the end of the assembly line in a rework area.
5. Most of the components or parts are made in-house.

Lean Production system

1. Small production runs and body parts were made in small lots. Warehousing wasn't necessary because parts would be produced when needed.
2. Assembly workers would perform a variety of tasks as a team.

3. Assembly workers as a team would look after each others work hence foreman weren't needed.
4. Errors are fixed during assembly of cars.
5. Most of the components or parts are contracted out to other suppliers.

Superiority of Toyota's System

Toyota's lean production system was superior compared to mass production system because...

1. In Mass production system, production runs are long due to the long setup time needed to set up the equipment for producing body parts. Long production runs create massive inventories that have to be stored in large warehouses. This generates inventory maintenance costs and also capital is tied up in unproductive uses.
2. In Lean production system, production runs are small because set up of equipments is short also parts are made in small lots. This reduces the need for inventory and inventory maintenance cost. As inventory isn't maintained valuable capital doesn't remain tied up in unproductive uses.
3. In Mass production system, if the initial machine setting are wrong, long production runs results in the production of a large number of defects.
4. In Lean production system, production runs are small and parts are produced in small lots. So, if there is any defect than it would be also small.
5. In Mass production system, Assembly workers would perform only one task and they would be managed by a foreman. Also the maintenance

of quality wasn't in the hands of assembly workers, a quality inspector would be appointed to check the quality of the production. This raises the costs.

6. In Lean production system, Assembly workers perform in teams. Each member of the team will look after another works and manage the work themselves. This reduces the cost of specialists such as foreman, quality inspector.
7. In Mass production system errors are fixed at the end of production line in a rework area. This method is cumbersome because once a defective part had been embedded in a complex vehicle an enormous amount of rework would be required.
8. In Lean production system, errors are fixed immediate after they are spotted. This reduces the defects and also the enormous amount of rework required in mass production system isn't required.
9. In Mass production system, most of the components and parts required for car assembly are made in-house through massive vertical integration. In this case the producer doesn't integrate supplier with production process and fails to get an insight that a supplier can provide which helps in designing the product.
10. In Lean production system, production of components and parts are contracted out to suppliers and producer gets ideas and concepts from the supplier. This helps in making the final product a better one.

Question-2. Compare and contrast the arm's length relationships that Toyota used to manage suppliers in Japan with the approach traditionally taken by U. S. automobile manufacturers. What were the benefits of the Toyota system? Can you see any drawbacks?

Answer: In general U. S. motor manufactures such as Ford and General Motors made most of the components in-house by massive vertical integration. The belief behind this was, control over the supply chain would allow management to coordinate the flow of component parts into the final assembly plant. Where they didn't vertically integrate they tried to reduce procurement costs through competitive bidding-asking a number of companies to submit contracts and giving orders to suppliers offering the lowest price.

Toyota, on the other hand made in-house only those parts that were very essential. They contracted out production of most of the parts for auto manufacturing. Toyota spun off some of its own in-house supply operations into quasi-independent entities during 1950s and 1960s. In which it took a minority stake. Toyota also recruited a number of independent companies with a view to establishing a long term relationship with them for the supply of critical components.

Benefits and drawbacks of Toyota system

Benefits: ---

1. To produce parts and components in-house a large amount of capital is needed. But in Toyota system most of the production of parts is transferred to suppliers thereby reducing the need for large amount of capital.

2. When producing parts in-house, wages have to be paid to workers according to the scale established in the company. Generally wage scale of workers is much high in auto manufacturing companies than typical parts suppliers wage scale. This increases the cost of components. Therefore when Toyota contracts out production to other suppliers it gets products at a cheap rate.
3. Toyota engages in long-term relationship with its suppliers. Because of this long term relationship Toyota gets ideas and concepts from suppliers about product design, inventory control. This adds value to the product.

Drawbacks: ---

Because competitive bidding isn't used the supplier can take advantage by asking for a higher price.

Question-3. What drove the development of Toyota's revolutionary "lean production system" during the 1950s to 1980s? To what extent were factors unique to Japan during this time frame responsible for the development of the lean production system?

Answer: Lean production system was developed by Taiichi Ohno during 1950s. After working for Toyota for five years and visiting Ford's U. S. plants. Ohno became convinced that the basic mass-production philosophy was flawed. He saw five problems with mass-production system.

1. Long production runs created massive inventories that had to be stored in large warehouses. This was expensive both because of the cost of warehousing and because inventories tied up capital in unproductive uses.

2. If the initial machine settings were wrong, long production runs resulted in the production of a large number of defects.
3. The sheer monotony of assigning assembly line workers to a single task generated defects since workers became lax about quality control.
4. The extreme division of labor resulted in the employment of specialists such as foremen, quality inspectors and tooling specialist, whose jobs logically could be performed by assembly line workers.
5. The mass-production system was unable to accommodate consumer preferences for product diversity.

Ohno wanted to eliminate these flaws. This drove the development of lean production system.

Factors unique to Japan that contributed in developing lean production system

1. After WWII Japan's economy was in a critical situation. Japanese economy was starved of capital this made difficult to raise funds for mass production system.
2. The Japanese market was too small during 1940s and 1950s to support efficient-scale mass-production facilities such as those common in America that time.

These two factors called on for developing a new production system “ Lean production”.

Question-4. Why did Toyota enter into the NUMMI Joint venture with General Motors in 1984? What were the benefits of this venture to Toyota?

Answer: After its inception in 1937 Toyota wanted to expand it's production overseas. Therefore in 1957 the company set up a U. S. subsidiary in California and began to sell cars in early 1958, hoping to capture the

American small car market. The result was horrible Toyota's cars performed poorly in road tests on U. S. highways. The basic problem was that the engines of Toyota cars were small for prolonged high speed driving and tended to overheat and burn oil. Sales were slow and in 1964 Toyota closed the subsidiary.

In 1967 the company again wanted to penetrate U. S. market. This time with improved quality cars designed for U. S. In the late 1960s Toyota reentered U. S. market. Although the sales were slow initially, they were raising steadily. Moreover in 1973 OPEC engineered increase in oil prices gave Toyota an unexpected boost. U. S. consumers were turning to fuel efficient cars that were designed by Toyota. Sales soared from 157882 units in 1967 to 856352 units by 1974.

The success they got brought its own problems. Toyota was politically pressurized to agree to “voluntary” import quotas.

To bypass these restrictions in 1984 Toyota entered into a 50/50 Joint venture with General Motors in the New United Motor Manufacturing (NUMMI).

Benefits of this venture to Toyota

- It provided a chance for Toyota to find out whether they can build quality cars in U. S. using American workers and suppliers. Which they later did in 1988 by establishing a manufacturing plant in Georgetown, Kentucky
- In NUMMI General Motors role was marketing and distributing plants output whereas Toyota designed and manufactured the product.

Through this venture Toyota got the opportunity to learn about marketing and distribution to U. S. customers from General Motors.

Question-5. What drove Toyota's subsequent expansion of production facilities in the United States and Europe?

Answer: Toyota first entered overseas in 1984 by establishing a Joint venture with General Motors called New United Motor Manufacturing (NUMMI). Then in 1988 Toyota built a separate plant for producing Toyota cars in Georgetown, Kentucky. In 2006 Toyota had expanded its operations to 26 countries with 52 plants. It had plants in USA, U. K., Mexico, France, China and different other countries. The main reason behind this expansion was to circumvent voluntary import quotas enforced by different countries. In addition to this Toyota wanted to become a global corporation because to reach the ultimate peak of success globalization is crucial. However in 1997 when Toyota entered into France it was for totally different reasons. Toyota established plants in France because French authorities offered subsidies to Toyota in the form of tax breaks and aid for training workers.

Question-6. What is the role of national culture in shaping Toyota's lean production system.

Answer: We all know about Geert Hofstede, a dutch sociologist who studied interactions between national and organizational culture. Hofstede found 5 dimensions from which a culture can be analyzed. They are...

- Power distance: Measures how a society deals with the fact that people are unequal in physical and intellectual capabilities. In low power distance cultures people relate to one another more as equals regardless of formal positions. In high power distance cultures the opposite happens.

- Individualism vs. Collectivism: Focuses on how much members of the culture define themselves apart from their group memberships. In individualistic societies individual achievement and freedom are highly valued. In collectivist societies people are defined and act mostly as a member of a long-term group.
- Uncertainty avoidance: This dimension measures how much members of a society are anxious about the unknown, and attempt to cope with anxiety by minimizing uncertainty. High uncertainty avoidance culture people prefer consistency and are resistant to change. In low uncertainty avoidance culture people are willing to take risks and less resistant to change.
- Masculinity Vs Femininity: This dimension measures the value placed on traditionally male or female values. In masculine cultures, people value competitiveness, assertiveness, ambition. In feminine cultures people value relationships and quality of life.
- Long Vs. Short term orientation: Importance attached to the future versus the past and present. In long term oriented cultures people value actions and attitudes that affect the future. In short term oriented cultures people value past and present more than future.

Hofstede scored different cultures based on these 5 dimensions

Hofsted Scores

We can see from the chart that Japan is High in Power distance, Low in Individualism, High in Masculine values, High in uncertainty avoidance and High in Long ter orientation. These dimensions helped in developing the lean production system in the following way

- Uncertainty avoidance: The Japanese are highly uncertainty avoidant people. This has helped shaping the lean production system. In Lean production during car assembly, assembly lines must be stopped immediately if any defects are found and they must be corrected right there. They don't want any errors to get pass them.
- Individualism Vs. Collectivism : Team has great significance in lean production system. In Toyota assembly workers work as a self managed team who look after each others work. This was possible because of Japan's high value on collectivism.
- Long Vs. Short Term orientation : In mass production system parts and components of car making were made mostly in-house. Parts which weren't made in-house were contracted out to other suppliers by competitive bidding to keep costs low.

Toyota instead of looking for low costs looked for long-term relationship with quality suppliers who will supply parts Just-In-Time (when demand arises). This Just-In-Time philosophy is important in lean production system because lean production system doesn't support inventory maintenance. In this way Japanese Long term orientation helped in developing lean production system.

These Japanese culture originated values were applied in Toyota's foreign plants in the form of lean production. This helped in achieving the same productivity level that Toyota achieved in it's Home plant.

Question-7. What evidence is there in the case that Toyota is becoming more of a global corporation? What are the implications of this for the long term competitive advantage of the company?

Answer: After establishment in 1937 in Japan with only one plant, Toyota expanded it's operations to 26 countries with 52 plants. In the financial year ending March 2007 Toyota earned \$11 billion net profits on sales of \$152 billion. It had more profits than General Motors, Ford and Daimler Chrysler Combined. By some measures Toyota overtook General Motors to become the largest automobile company in the world.

All of this suggests that Toyota has now become more of a global corporation.

Implications of this for the Long term competitive advantage of the company

Toyota has been working closely with it's suppliers all over the world from the start. This is helping to cut the costs of different products dramatically and this will continue to the future. In 2000 Toyota introduced an initiative known as " Construction of Cost Competitiveness for 21st Century or CCC21. This initiative has a goal of slashing component cost parts by 30 percent on all new models. To an extent this initiative has proven to be successful. Moreover, Toyota developed a new assembly process known as " Global Body Line" or GBL. The GBL system replaced Toyota's Flexible Body Line assembly philosophy that has been in place since 1985. The GBL system is based upon a series of programmable robotic welding tools. The GBL system allows two assembly lines to be placed in the space traditionally required for one, effectively doubling plant capacity. Moreover, using GBL technology as many as eight different models can be produced on a single assembly line.

This shows that in the long term Toyota's competitive advantage would be the low cost of manufacturing and variety of cars it would have in it's inventory.