

The Early Days of Ford Motor Company and the Model T

When Henry Ford incorporated the Ford Motor Company in 1903, automobiles were expensive, custom-made machines purchased as a luxury item by the wealthy. Workers at the Ford factory in Detroit produced just a few cars a day.



Henry Ford's ambition was to make “a motor car for the great multitude.” He wanted to build a high-quality automobile that would be affordable to everyday people. He believed the way to do this was to manufacture one model in huge quantities.

Ford and his company ' s engineers designed a car named the Model T. First offered for sale in 1908, the Model T was produced like other cars—one vehicle at a time. But the Model T was more sturdy and powerful than other cars. Considered relatively simple to operate and maintain, the auto offered no factory options, not even a choice of color. The Model T was also less expensive than most other cars. At an initial price of \$950, 10,000 autos were sold the first year—more than any other model.

The Moving Assembly Line

Like parts for other cars of the time, parts for the Model T were initially purchased made-to-order from other businesses. Teams of two or three skilled mechanics in the factory would gather these parts and put them together at a workstation, using everyday tools. When parts did not fit together as needed, workers would use files and hammers to make them fit.



Henry Ford realized that a more efficient production process was needed to lower the price and meet increasing consumer demand for his popular new car. He needed to improve productivity—the amount of goods and services produced from a given amount of productive resources. Economists refer to

goods and services as output. Henry Ford's output was the Model T. The productive resources used in production—natural resources, capital resources, and human capital—are inputs. Ford's inputs were the steel, workers, and other resources required to manufacture the car.

Ford looked at other industries and found strategies that he could apply to making the Model T such as **interchangeable parts** and the **assembly line**.

Using interchangeable parts required making the individual pieces of the car the same every time. All pieces would fit with all others. Any valve would fit any engine and any engine would fit any frame. The standardization of parts made it possible to break down assembly of the Model T into distinct steps. Each worker was trained to do just one step or a very few steps. Economists refer to this practice as **specialization** or the division of labor.

In 1913, the Ford Motor Company established the first moving assembly line ever used for large-scale manufacturing. On a trip to Chicago, Henry Ford observed meat packers removing cuts of beef from a carcass as it was passed along by a trolley until nothing was left. He was inspired to reverse the process for the production of his automobile.



Parts were attached to a moving Model T chassis in order, from axles at the beginning to bodies at the end of the line. As vehicles moved past the workers on the line, each worker would do one task. Some components took longer to put together and attach than others. Subassemblies were established for these. For example, each radiator with all its hose fittings was put together on a separate line feeding into the main assembly line. The interval between delivery of the car and its components was carefully timed to maintain a continuous flow.

Watch this video - [Model T Ford Assembly Line](#)

The home for this new production system was the Highland Park Plant near Detroit, Michigan which Ford opened in 1910. Assembly wound downward in the factory starting on the fourth floor where body panels were hammered out. On the third floor workers placed tires on wheels and painted auto bodies. After the assembly was completed on the second floor, the autos moved down a ramp past the first-floor offices.

The Highland Park Plant

The Ford Motor Company's construction of the Highland Park Plant was an investment in capital. At the time it opened in 1910, the four-story factory was the largest building under one roof in the state of Michigan. It was considered the model for factory design. Large, open floors allowed for the efficient arrangement of machinery. To enhance natural lighting and ventilation, there were massive windows. About 75 percent of the wall space was glass, and there were skylights as well.

Vertical Integration

A complex surrounding the Highland Park Plant included a power plant, machine shop, and foundry. Ford was starting to bring together the various stages in the manufacture of automobiles, a strategy called vertical integration. By the 1920s, Ford had purchased a rubber plantation in Brazil, coal mines in Kentucky, acres of timberland and iron-ore mines in Michigan and Minnesota, a fleet of ships, and a railroad. These efforts to vertically integrate helped Ford make sure his company would have raw materials and parts when they were needed, guaranteeing a continuously operating assembly line. These efforts also enabled the company to profit from more of the processes involved in producing the automobile.

Single-purpose machines and tools were created for the different steps in the manufacturing process. New power technologies such as electricity were used to run machines more efficiently than humans could run them. Electrical lighting was a key factor in making it possible to operate the factory by day and night, in three shifts.

To facilitate the moving assembly line, an “endless chain-driven” conveyor was built to move each chassis from one workstation to another. Work slides, rollways, trolleys, elevators and other devices were also created to move cars and parts to workers so that workers could repeat their assigned tasks without having to move their feet.



Henry Ford also invested in human capital to improve productivity. He realized that good health, education, and training all contributed to a worker's productivity. Thousands of immigrants from dozens of countries worked side by side at Highland Park. Many did not read, write, or speak English.

The Ford Motor Company established a school where workers were taught English so they could be safe and more productive on the job. A plant hospital provided health care.

What was the impact of all these changes? Production doubled in each of the first three years the Highland Park Plant operated—from 19,000 cars in 1910, to 34,500 in 1911, to a staggering 78,440 in 1912.

The \$5 Work Day

With a new factory, new machines, and new ways of organizing production, everything should have been great--but it wasn't. Spending hours and hours doing the same task over and over was unpleasant for workers. In addition, the work was dangerous. Morale was often low. Workers couldn't be counted on to show up on a regular basis. Many just quit and looked for jobs elsewhere.

Given these problems, it was difficult to keep the line running smoothly. Making matters worse, new workers required a costly break-in period that reduced productivity. Ford found himself spending \$100 to train each new worker, but many of these men only stayed a month or two before quitting.

Ford's solution? He provided an incentive to maintain a stable and productive workforce. He boosted pay to \$5 a day.

Ford's \$5 day sent shockwaves through the auto industry. Many businesspeople including stockholders in the Ford Motor Company regarded the pay increase as crazy. Many thought the company would soon go out of business. But Ford believed that retaining more skilled, satisfied employees would increase productivity and lower production costs. He was right! Turnover and absenteeism disappeared almost overnight. In addition Ford greatly increased the size of his plants by adding new and additional equipment to further raise the productivity of his workforce.

- In 1914, 13,000 workers at Ford made 260,720 cars. By comparison, in the rest of the industry, it took 66,350 workers to make 286,770 cars.
- Between 1914 and 1916, Ford's profits doubled, going from \$30 million to \$60 million.

Ford was producing cars at a record-breaking rate. In the early days of Model T production, completing one vehicle required 12 hours. By 1914, vehicles rolled out of the Highland Park Plant at the rate of one every 93 minutes. In 1920, a Ford was turned out every minute, and one out of every two automobiles in the world was a Model T. At one point, the pace picked up to one Ford being manufactured every 24 seconds!