

21.6: Scientific Management Theory

Learning Objectives

- Summarize the four principles of Frederick Taylor's scientific management theory
- Summarize the contributions of Frank and Lillian Gilbreth to scientific management

Just over one hundred years ago Frederick Taylor published *Principles of Scientific Management*, a work that forever changed the way organizations view their workers and their organization. At the time of Taylor's publication, managers believed that workers were lazy and worked slowly and inefficiently in order to protect their jobs. Taylor identified a revolutionary solution:

The remedy for this inefficiency lies in systematic management, rather than in searching for some unusual or extraordinary man.

You might think that a century-old theory wouldn't have any application in today's fast-paced, technology-driven world. You'd be wrong, though! In fact much of what you've already learned in this course is based on Taylor's work, and plenty of what you'll experience in the workplace will be indebted to him, too. If you recognize any of the following, you have already seen his principles of scientific management in action: organizational charts, performance evaluations, quality measurements and metrics, and sales and/or production goals.

Scientific management is a management theory that analyzes work flows to improve economic efficiency, especially labor productivity. This management theory, developed by Frederick Winslow Taylor, was popular in the 1880s and 1890s in U.S. manufacturing industries.

While the terms "scientific management" and "Taylorism" are often treated as synonymous, a more accurate view is that Taylorism is the first form of scientific management. Taylorism is sometimes called the "classical perspective," meaning that it is still observed for its influence but no longer practiced exclusively. Scientific management was best known from 1910 to 1920, but in the 1920s, competing management theories and methods emerged, rendering scientific management largely obsolete by the 1930s. However, many of the themes of scientific management are still seen in industrial engineering and management today.

Frederick Winslow Taylor



Figure 21.6.1: Frederick Taylor (1856–1915) is called the Father of Scientific Management.

Taylor was a mechanical engineer who was primarily interested in the type of work done in factories and mechanical shops. He observed that the owners and managers of the factories knew little about what actually took place in the workshops. Taylor believed that the system could be improved, and he looked around for an incentive. He settled on money. He believed a worker should get "a fair day's pay for a fair day's work"—no more, no less. If the worker couldn't work to the target, then the person shouldn't be working at all. Taylor also believed that management and labor should cooperate and work together to meet goals. He was the first to suggest that the primary functions of managers should be planning and training.

A significant part of Taylorism was time studies. Taylor was concerned with reducing process time and worked with factory managers on scientific time studies. At its most basic level, time studies involve breaking down each job into component parts, timing each element, and rearranging the parts into the most efficient method of working. By counting and calculating, Taylor sought to transform management into a set of calculated and written techniques.

Taylor proposed a “neat, understandable world in the factory, an organization of men whose acts would be planned, coordinated, and controlled under continuous expert direction. ” Factory production was to become a matter of efficient and scientific management—the planning and administration of workers and machines alike as components of one big machine.

In 1909, Taylor published *The Principles of Scientific Management*. In this book, he suggested that productivity would increase if jobs were optimized and simplified. He also proposed matching a worker to a particular job that suited the person’s skill level and then training the worker to do that job in a specific way. Taylor first developed the idea of breaking down each job into component parts and timing each part to determine the most efficient method of working.

One of Taylor’s most famous studies was from his time at the Bethlehem Steel Company in the early 1900s. He noticed that workers used the same shovel for all materials, even though the various materials differed in weight. By observing the movements of the workers and breaking the movements down into their component elements, Taylor determined that the most efficient shovel load was 21½ lb. Accordingly, he set about finding or designing different shovels to be used for each material that would scoop up that amount.

Scientific management has at its heart four core principles that also apply to organizations today. They include the following:

- Look at each job or task scientifically to determine the “one best way” to perform the job. This is a change from the previous “rule of thumb” method where workers devised their own ways to do the job.
- Hire the right workers for each job, and train them to work at maximum efficiency.
- Monitor worker performance, and provide instruction and training when needed.
- Divide the work between management and labor so that management can plan and train, and workers can execute the task efficiently.

? Practice Question

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Frank and Lillian Gilbreth

While Taylor was conducting his time studies, Frank and Lillian Gilbreth were completing their own work in motion studies to further scientific management. The Gilbreth name may be familiar to anyone who has read the book *Cheaper By The Dozen* (or seen the movie the book inspired). The book is a biographical novel about the Gilbreth family, their twelve children, and the often humorous attempts of the Gilbreths to apply their efficiency methods in their own household.

The Gilbreths made use of scientific insights to develop a study method based on the analysis of work motions, consisting in part of filming the details of a worker’s activities while recording the time it took to complete those activities. The films helped to create a visual record of how work was completed, and emphasized areas for improvement. Secondly, the films also served the purpose of training workers about the best way to perform their work.

This method allowed the Gilbreths to build on the best elements of the work flows and create a standardized best practice. Time and motion studies are used together to achieve rational and reasonable results and find the best practice for implementing new work methods. While Taylor’s work is often associated with that of the Gilbreths, there is a clear philosophical divide between the two scientific-management theories. Taylor was focused on reducing process time, while the Gilbreths tried to make the overall process more efficient by reducing the motions involved. They saw their approach as more concerned with workers’ welfare than Taylorism, in which workers were less relevant than profit. This difference led to a personal rift between Taylor and the Gilbreths, which, after Taylor’s death, turned into a feud between the Gilbreths and Taylor’s followers.

? Practice Question

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Even though scientific management was pioneered in the early 1900s, it continued to make significant contributions to management theory throughout the rest of the twentieth century. With the advancement of statistical methods used in scientific management, quality assurance and quality control began in the 1920s and 1930s. During the 1940s and 1950s, scientific management evolved into operations management, operations research, and management cybernetics. In the 1980s, total quality management became widely popular, and in the 1990s “re-engineering” became increasingly popular. One could validly argue that Taylorism laid the groundwork for these large and influential fields that we still practice today.

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