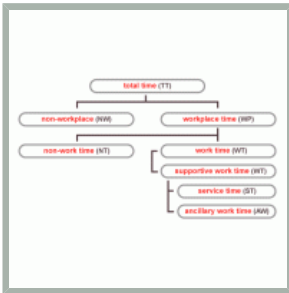


## scientific management



### characteristics

author:	Taylor, Frederick Winslow
country:	United States
period:	1911
type:	theory
role:	consultant
activity:	analyse and design
topic:	org. design & development and technology & operations
abstr. level:	organisation
perspective:	rational
status:	final
module:	classics I
comments:	3

### related models

bounded rationality
fourteen principles of management
four principles of the marketing mix
hawthorne effect

### description:

At the turn of the 20th century, the American engineer, Frederick Winslow Taylor, proposed scientific methodologies to improve the productivity of shop floors at large plants. He argued that labour problems such as low productivity, high turnover, soldiering, and a conflict-driven relationship between management and staff were caused by improper production and organisation methods.

Taylor was trained as an engineer and practised engineering for much of his professional life. The core of his Scientific Management is that an organisation operates like a machine. Taylor treated individual work tasks as gears in a machine. Specific tasks were minutely examined and grouped together based on their characteristics. Contrary to Fayol's view, Taylor saw organisational design as a bottom-up process where the administrative side is a derivative of the operational side.

Taylor developed his ideas at Midvale Steel with its 2,000 employees, and Bethlehem Iron with 4,000 workers. The size of these industrialised firms had forced management to adopt new methodologies to allocate and control labour. Taylor used empirical study to redesign the routine tasks in the manufacture of industrial products. His consultancy firm implemented his recommendations in over 180 factories in the United States and Europe.

The aim of Scientific Management was to increase efficiency from specialised, physical work through pre-described activities and close supervision. The "one best way" to execute such basic managerial functions as selection, promotion, compensation, training, and production had to be discovered, applied and checked on a continuous basis.

Taylor advocated:

#### 1. Systematic analysis of each distinct operation

'Create an elaborate set of rules to regulate every aspect of worker behaviour at the workplace' instead of relying on rule of thumb. Subdividing production processes into individual tasks to achieve task specialisation, using time and motion studies to determine the most efficient method for performing each work task and providing necessary rest periods were part of his analysis. Taylor's famous phrase 'Time is Money' relates to such studies.

#### 2. Uncoupling direct and indirect activities

Stripping all preparation and servicing tasks from unskilled operator jobs and grouping them into service jobs that are executed by higher skilled maintenance workers.

#### 3. Carefully designing wage payments to maximize employee work effort

Providing a piece-rate system of compensation of meritorious bonuses. Taylor hated "soldiering", a term describing the group process in which workers slow their pace of work to suit the average worker's needs. "Pay the Worker, Not the Job".

#### 4. Adopting formal training activities

Selecting and training employees by thoroughly investigating personalities and skills so individual workers could not acquire unique knowledge that could raise their position of power.





#### 5. Centralized planning

Uncoupling planning and operations. Workers execute the will of the managers rather than exercise their own judgement. Workers were seen as replaceable gears in a larger machinery, or in Taylor's words: "In the past the man has been first; in the future the system must be first".

#### 6. Provision of clear instruction

Readdressing the foreman's role as overseer over all aspects of production, and subdividing the function of the shop-floor inspector into four areas: setting-up boss, speed boss, quality inspector, and repair boss, each controlled by a planning department to coordinate and integrate the instructions required to run large and complex organisations. Subjecting the foremen and their staff to the rule of administrative clerks through systems of abstract rules and hierarchal power.

### assets:

	job enrichment evaluation form ProvenModels • editor PM • version 0.1 • 21 KB
	time study classification ProvenModels • editor PM • version 0.1 • 60 KB
	time study template ProvenModels • editor PM • version 0.1 • 81 KB
	work enrichment variables ProvenModels • editor PM • version 0.1 • 37 KB

### pros:

- When properly applied to large production systems, Scientific Management could greatly increase productivity. For instance, at Bethlehem Iron, Taylor increased production over 350% and reduced

workers by 70% by increasing the shovel size He promoted rationalisation to create prospering organisations.

- Taylor believed that his principles resulted in a win-win situation for workers and managers and overcame this conflict-driven relationship. Taylor spoke of '... an emphasis on harmony, not the discord of competition'. He regarded the interests of workers and manager as mutually dependent and that improving organisational efficiency led to wage increases.
- Taylor provided a justification for management by being the first to describe management as a profession and providing practical tools for managers to better control their organisations. He broke the power of craftsmanship and handed it to managers as guardians of organisations.
- Taylor's methodology was the first to use statistical control to analyse work and provided a basis for time motion studies, an essential tool in job design efforts. He paved the way for the development of Ford's T-Ford assembly line in the 1920s.
- Taylor laid the foundation for separating the "staff" and "line" functions required to run large organisations. His intent was to solve the issue of conflicting instructions by setting up specialised departments responsible for work study, personnel, maintenance and quality control. His ideas were very influential and adopted by firms in industrialising countries as far as Japan and France.

#### cons:

- In the 1950s, Herbert Simon criticised Taylor's belief that there was a "best way to do anything". Scientific Management was internally oriented where optimising current resources was more important than effectively allocating resources over time. He neglected the issue of organisational restructuring required by changes in customer needs. Taylor argued that firms must always increase their size to maximize advantages from division of labour and specialization of tasks.
- The win-win situation between workers and managers did not materialise as Taylor had envisioned. Trade unions saw the method as dehumanising workers and undermining craftsmanship. Although Taylor required workers to be willing to cooperate during the implementation of Scientific Management, they often falsified figures during the analysis phase or otherwise sabotaged the new job designs to protect their interests.
- Taylor not only exaggerated the benefits of his classic case on the loading of pig iron at Bethlehem Iron, the example's increase in results barely outweighed the implementation effort.
- Taylor held a limited view on motivation and group dynamics. For him, workers cared more about money than about work. Herzberg's Two Factor Theory showed a different ordering. Furthermore, Taylor saw teamwork as the root cause of 'soldering' and had to be strictly regulated by management, limiting the team size to four for a maximum of one week. His absolute division between planning and execution downplayed the role of continuous learning within operations. The benefits of group behaviour were observed in the late 1920s during the Hawthorne experiments and later refined by the Human Relations School.

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