

# Sociotechnical systems



1) Compare Frederick Taylor's mass production and Eric Trist's socio-technical team-based production approaches to the design of work systems.

a) What are the characteristics and key features of each? b) Discuss the fundamental differences between them including underlying theory, methods, principles, and role of management. c) Cover the advantages and disadvantages of each system – in which context does each perform best? d) What has led to the decline of mass production in the U. S. , and how can socio-technical systems improve productivity and quality? It is amazing how humans can steadily develop new and innovative ideas that help make the world a better place economically, physically, etc; From factories and work floors to management and office buildings, many approaches were used and disposed through the ever-changing economy and great demand of change and improvement; which in some cases lead to revolutionize certain industries of our economies around the world. Frederick Winslow Taylor is the developer of scientific management, or Taylorism.

A book was published in 1911, called *The Principles of Scientific Management*. Then during the 1960's Eric Trist developed *Socio-Technical Systems*. *Socio-Technical Systems* or STS is similar to Frederick Taylor's concept of scientific management but eliminates bureaucracy in the workforce. In the following paragraphs I will explain the main characteristics and key features of each approach; the fundamental differences between them including underlying theories, methods, and principles; the disadvantages and advantages of each system; and what has led to the decline of mass production in the U. S. and how can STS improve

productivity and quality. Taylor first started introducing scientific management through the Bethlehem Steel Company.

Taylor and his team observed 75 pig-iron handlers, whom on averaged loaded 12.5 long tons per day, and each pig iron weighing about 92 pounds. Out of the 75 workmen Taylor chose one who he considered to be highly qualified of loading 47 tons of pig iron per day. Selection is one of many key characteristics of scientific management. In general scientific management entails finding the best method of doing work and at the lowest-cost.

Management wants to achieve maximum production levels from their employees at the cheapest rate. Scientific management does not solely rely on the workmen because management prepares and plans how certain tasks of each job will be carried out in its most efficient manner.

Taylor writes, “The man in the planning room, whose specialty under scientific management is planning ahead, invariably finds that the work can be done better and more economically by a subdivision of the labor...an almost equal division of the responsibility and the work between the management and the workman” (38 Taylor). So in other words, the employee is being told what to do and how to do a job because management has already established the most effective way of completing each task. This differs from the socio-technical systems approach. In STS, instead of being told what to do and how to do a certain task, employees are exclusively on their own. Management is there to guide them in the right direction to make sure goals and business strategies are being met. These employees are highly skilled and they work together as a group unlike in scientific management where each employee has their own individual jobs. Companies who use the <https://assignbuster.com/sociotechnical-systems/>

STS approach find that the employees are multi-skilled and also have a low turnover rate.

One main difference between Taylorism and STS is that Taylorism uses redundancy of parts and STS uses redundancy of functions. For example, in Ford's Model-T assembly line there are employees who only work on certain parts of the car. One employee puts on the wheel, another puts on the windshield, and another puts on the door, etc. But in STS all the employees' work as a team that may consist of three to ten person team and each individual knows how to carry out every single job that is assigned to their team members. Essentially, if one team member is absent the whole group can still carry on because all the employees are capable of filling the absentee shoes. Unlike on the assembly line if the employee that puts on the windshield is absent, the employee that only puts on the wheel will not know what to do because that is not their area of expertise. The fundamental theory behind scientific management is breaking down each part of a job to its science (Taylor).

In the Principles of Scientific Management, Taylor talks about pig iron handlers, shoveling and bricklaying as a few examples in which he implemented scientific management. He proposed four important elements that are essential to scientific management. In this example Taylor discusses the science of bricklaying. First management must develop the science of bricklaying with standard rules of each task. Every task is designed to be perfect and standardized. The second element is selection and training. This step is important because Taylor wants an employee who is "first class," meaning that they are the best at what they do, follow instructions and will

not refuse to listen or adopt the new methods that management is executing.

The third element is teaching the first class employee the science of bricklaying broken down by management. At this stage management is instructing the employee what to do, how to do it, and the best way to do it. Management is there to help them and watch that they are doing it “ their” way and not the wrong way. Also management is paying each man a bonus, which is more or less the employees’ initiative to work better and faster. The last element is the responsibility and work divided equally between the employees and management. Throughout the course of the workday, management works with employees side by side helping and encouraging them (Taylor pg 85). Scientific management is like being spoon-fed an employee’s daily tasks that management has already prepared for them.

Unlike scientific management, STS does not involve being spoon-fed. The fundamental theory of STS is working collectively as group without bureaucratic tensions between management and employees. Management does not stay with the employees and instruct them what to do and how to do their daily tasks. Employees’ work together as team and each member can carry out each others’ daily tasks if one or two of them were absent. Some of the main principles of STS are as follows: “ The work system, which comprised a set of activities that made up a functioning whole, now became the basic unit rather than the single jobs into which it was decomposable. Correspondingly, the work group became central rather than the individual jobholder. Internal regulation of the system by the group was thus rendered possible rather than the external regulation of individuals by supervisors.

A design principle based on the redundancy of functions rather than the redundancy of parts characterized the underlying organizational philosophy, which tended to develop multiple skills in the individual and immensely increase the response repertoire of the group. This principle valued the discretionary rather than the prescribed part of work roles. It treated the individual as complementary to the machine rather than as an extension of it. It was variety increasing for both the individual and the organization rather than variety decreasing in the bureaucratic mode. (pg 11, Trist) One can clearly see the differences between scientific management and socio-technical systems. The differences are obvious within the bureaucratic modes of management, working alone as individual to working collectively as a group, and redundancy of functions rather than redundancy of parts. These are the fundamental differences in each approach, but which approach performs better? It may seem like scientific management may have more cons than pros but it all depends on what industry a company is in and what their business strategy focuses on.

Some disadvantages of scientific management are high turnover rate and employees are easily replaceable. Some advantages of scientific management is that it is capable of mass production and it does not require much skill so anyone can will be able to work. Scientific management would perform best in industries like fast food and manufacturing automobiles. For example for fast food, say McDonalds: One person makes the French fries, another person takes the order, another gets the drinks, another person makes the bun...etc. Some advantages of STS are low turnover rate, all team members understand and know how to accomplish the daily tasks of the

group, and the high quality of work being done. Some disadvantages of STS are that some members may not work up to their full capabilities. STS would perform best in industries that include innovative design and technology such as Apple or an architectural firm.

The decline of mass production was caused by differences and change in economic focus. Companies across the U. S. evolved accordingly to the economy and companies around the world. New work systems have been put in to place and have been known to be effective and have been working for years. Mass production was glorified in the days of the assembly line, but now in the 21st century the glory days have lost its shine. Some companies are no longer looking for mass production of items or materials, it is not much of quantity any more, but quality.

There may be many reasons that can explain the decline of mass production: from new approaches such as socio-technical systems and lean production to the uncertainty of the economy that may cause companies to change their business strategies to save money and jobs. Socio-technical systems can improve productivity and quality because when employees work as a team, the selfishness and individual aspect is eliminated. Employees work not for self-indulgence, but for success of the team and the company as a whole. Which in part improves productivity around them, sort of a snowball effect.